

Cambridge International AS & A Level

Chuyên luyện thi IELTS/SAT → AP / IB / A-levels



Cambridge International AS & A Level Economics

Giáo trình luyện thi chuyên sâu

Song ngữ Anh-Việt

8020 ENGLISH

5A/2 Trần Phú, P.4, Q.5, TP.HCM · luyenthi8020.com

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Lời mở đầu • Foreword

Cuốn sách này thuộc bộ giáo trình luyện thi chương trình quốc tế của **8020 English (8020 Education)** — trung tâm luyện thi trọng điểm **IELTS • SAT • AP • IB • A-level • IGCSE** và sẵn học bổng du học. Toàn bộ nội dung được biên soạn bởi đội ngũ **Giáo sư • Tiến sĩ • Thạc sĩ** tốt nghiệp các trường top đầu thế giới, bám sát khung chương trình chính thức, trình bày đầy đủ lý thuyết, ví dụ mẫu, hình minh họa và hệ thống bài tập có lời giải chi tiết.

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Thành tích 8020 English

9.0 IELTS cao nhất

1570 SAT cao nhất

5/5 AP — điểm tuyệt đối

90/100 IB Diploma

100% GV $\geq$ 8.0 IELTS / 1500 SAT

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Đội ngũ tiêu biểu: Thầy Châu Cát Tường (Academic Head, ThS Western Sydney, top 1% IELTS 8.5) · TS Nguyễn Anh Huy (Carnegie Mellon, cựu kỹ sư Amazon) · TS Nguyễn Phước Trường (Toán, ĐH Klagenfurt) · cùng đội ngũ giảng viên SAT 1500–1600, IELTS 8.0–8.5.

Kết quả học viên — điểm thi thật: IELTS 8.0–9.0 · SAT 1550 / 1570 / 1590 · AP 5/5 (Calculus BC, Microeconomics) · IB 90/100 (Economics) · Duolingo 110 · PTE 90 · TOEFL 120. **Bảng vàng SAT:** Khánh Đăng 1510 · Thảo Nguyên 1520 · Tâm Anh 1530.

“Cuối cùng đã đậu vào trường top như mong muốn.” — Phan Thị Thanh Hằng, IELTS Overall 8.5.

Cách dùng sách hiệu quả: mỗi Unit gồm (1) **Lý thuyết trọng tâm** tiếng Anh kèm **giải thích tiếng Việt**; (2) **Ví dụ mẫu** có lời giải; (3) **Hệ thống bài tập** kèm **lời giải chi tiết**. Hãy tự làm bài trước khi xem lời giải để đạt hiệu quả tối đa.

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ĐỘI NGŨ GIÁO VIÊN TẬN TÂM

***Tối thiểu 8.0 IELTS Overall**



Gv. Nguyễn Nhật Nam
IELTS 8.5 Overall



Gv. Nguyễn Khanh
IELTS 8.0 Overall



Gv. Nguyễn Đan Vy
IELTS 8.0 Overall







Giảng viên 8020 — IELTS 8.5 & 8.0 Overall (British Council • IDP • Cambridge)

KẾT QUẢ HỌC VIÊN

THÀNH TÍCH HỌC VIÊN

Bảng điểm thi thật – chất lượng được giám sát nghiêm ngặt. Một số học viên chỉ cần 1–2 khóa để đạt kết quả mong muốn.







Học viên 8020 — IELTS 8.0 Overall (bảng điểm thật)

ĐỘI NGŨ

ĐỘI NGŨ GIÁO VIÊN TẬN TÂM

*Tối thiểu 1500 SAT Overall

8020
ENGLISH

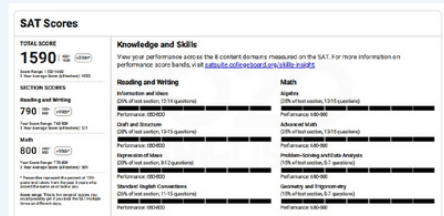
Thầy Quang Minh

Đại học Bách Khoa Hà Nội



SAT 1590

IELTS 8.0



THẾ MẠNH & KINH NGHIỆM

- Học sinh đạt 1450–1560 SAT
- Day nhanh band 1400–1550+
- Chiến thuật làm bài & quản lý thời gian

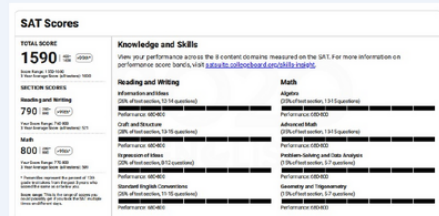
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Đại học Ngoại thương



SAT 1590

IELTS 8.0



THẾ MẠNH & KINH NGHIỆM

- SAT Verbal Instructor (Springboard, QAS)
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Giảng viên 8020 – SAT 1590 (ĐH Bách Khoa Hà Nội & ĐH Ngoại thương)

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TUTOR 1-1 – ĐIỂM SỐ ẤN TƯỢNG

8020
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SAT

Your Scores

Name: Tam T Nguyen
Grade: 12
Test administration: SAT May 3, 2025
Tested on: May 3, 2025
Record Locator: 410244771



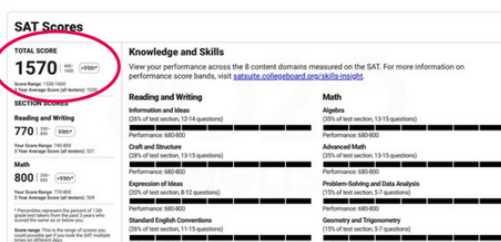
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SAT

Your Scores

Name: Linh Pham
Grade: 12
Test administration: SAT December 7, 2024
Tested on: Dec 7, 2024
Record Locator: 409986376



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Học viên 8020 – SAT 1550 & 1570 (College Board)

KẾT QUẢ HỌC VIÊN

BẢNG VÀNG HỌC VIÊN

SAT
CHAU CÁT TƯỜNG
Tư vấn hướng nghiệp học & điểm số8020
ENGLISH

Bảng vàng học viên



Bé Khanh Đăng

SAT Bứt phá + Năng cao Cam kết 140++ => Kết quả 1510



Bé Phan Nguyễn Thảo Nguyễn

SAT Năng cao



Bé Lê Tâm Anh

SAT Bứt phá + Năng cao Cam kết 140++ => Bứt phá kết quả 1530

KHÁNH ĐĂNG – SAT 1510

“SAT Bứt phá + Năng cao cam kết 140++ → 1510”

THẢO NGUYỄN – SAT 1520

“SAT Năng cao → 1520”

TÂM ANH – SAT 1530

“SAT Bứt phá + Năng cao cam kết 140++ → 1530”

Bảng vàng SAT – Học viên đạt 1510 · 1520 · 1530

KẾT QUẢ HỌC VIÊN

ĐIỂM SỐ AP

8020
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AP Biology: 4 · AP Chemistry: 4



AP Calculus AB: 5



AP Calculus BC: 5



AP Chemistry: 5

Bảng điểm AP thật của học viên – nhiều môn đạt điểm 4 & 5

Điểm AP thật – Calculus AB/BC 5/5 · Biology & Chemistry 4–5 (College Board)

Mục lục • Contents

1	Scarcity, Choice and Resource Allocation	7
1.1	The economic problem	7
1.2	Opportunity cost and rational decision-making	10
1.3	The production possibility curve (PPC)	12
1.4	Positive and normative economics	15
1.5	Resource allocation and economic systems	16
1.6	Problem bank	18
2	Elasticity of Demand and Supply	27
2.1	Price elasticity of demand (PED)	27
2.2	PED and total revenue	29
2.3	Applications of PED	31
2.4	Cross elasticity of demand (XED)	32
2.5	Income elasticity of demand (YED)	34
2.6	Price elasticity of supply (PES)	36
2.7	Practice question bank	38
3	Demand, Supply, Market Equilibrium and Surplus	48
3.1	The Theory of Demand	48
3.2	The Theory of Supply	51
3.3	Market Equilibrium	54
3.4	Simultaneous Shifts of Demand and Supply	55
3.5	Consumer and Producer Surplus	57
3.6	The Price Mechanism as a Resource-Allocation Tool	59
3.7	Practice Questions	60
4	Costs, Revenue and the Theory of the Firm	70
4.1	Short-run production and the law of diminishing marginal returns	70
4.2	Short-run costs of production	73
4.3	The shutdown decision in the short run	75
4.4	Long-run costs: economies and diseconomies of scale	77
4.5	Revenue	79
4.6	Objectives of firms	81
4.7	The growth of firms	83
4.8	Practice questions	85
5	Market Structure and the Behaviour of Firms	95
5.1	Perfect Competition	95
5.2	Monopolistic Competition	98
5.3	Oligopoly	101
5.4	Monopoly	104
5.5	[A2 extension] Contestable Markets	108
5.6	Comparing Market Structures and Efficiency	109
5.7	Practice Questions	110

6	Market Failure and Government Microeconomic Intervention	120
6.1	Types of Goods	120
6.2	Externalities	122
6.3	Public Goods and the Free-Rider Problem	124
6.4	Information Failure	124
6.5	Indirect Taxes and Subsidies	125
6.6	Price Controls	128
6.7	Other Government Policy Tools	129
6.8	Government Failure [A2 extension]	130
6.9	Practice Bank	132
7	National Income, Economic Growth and the AD-AS Model	143
7.1	The circular flow of income	143
7.2	Measuring national income	145
7.3	Uses and limitations of national income statistics	147
7.4	Economic growth	150
7.5	Aggregate demand and aggregate supply	152
7.6	Practice question bank	155
8	Inflation, Unemployment, Money and the Business Cycle	166
8.1	Measuring inflation	166
8.2	Causes and types of inflation	168
8.3	The costs of inflation and deflation	169
8.4	Unemployment	171
8.5	The Phillips curve	173
8.6	The business cycle	174
8.7	Money and banking	175
8.8	Practice question bank	176
9	Fiscal and Monetary Policy	186
9.1	Fiscal policy fundamentals	186
9.2	The multiplier [A2 extension]	188
9.3	The accelerator [A2 extension]	190
9.4	The multiplier–accelerator interaction [A2 extension]	191
9.5	Monetary policy	191
9.6	Supply-side policy	193
9.7	Policy conflicts and trade-offs	195
9.8	Practice question bank	196
10	International Trade, Exchange Rates and the Balance of Payments	205
10.1	Absolute and comparative advantage	205
10.2	Terms of trade	208
10.3	Protectionism	209
10.4	Trading blocs and the World Trade Organization	211
10.5	Exchange rate systems	212
10.6	The balance of payments	213
10.7	Correcting a balance of payments deficit	216
10.8	Practice question bank	217

Scarcity, Choice and Resource Allocation

Mục tiêu Unit: Vấn đề kinh tế cơ bản (khan hiếm, nhu cầu vô hạn), hàng hoá tự do và hàng hoá kinh tế, ba câu hỏi kinh tế cơ bản, các yếu tố sản xuất và tính linh hoạt của chúng, chi phí cơ hội và phân tích cận biên, đường giới hạn khả năng sản xuất (PPC) với ba trường hợp dịch chuyển, kinh tế học thực chứng và chuẩn tắc, cơ chế giá và so sánh các hệ thống kinh tế (thị trường, kế hoạch hoá, hỗn hợp).

1.1 The economic problem

1.1.1 Scarcity and unlimited wants

Every society faces the **central economic problem**: resources are **scarce** (finite in supply) while human wants are **unlimited**. Scarcity is not the same as poverty – even the richest economy on earth cannot satisfy every want of every citizen, because wants regenerate and expand as incomes rise. Because resources are scarce relative to wants, every economic decision-maker (consumers, firms, governments) is forced to **choose**, and every choice involves giving something up. This is the origin of **opportunity cost**, developed fully in Section 1.2.

A useful distinction is between:

- **Free goods:** goods that are not scarce, so no opportunity cost is involved in their consumption – e.g., sunlight, air (in most contexts). No factors of production are used to make them available.
- **Economic goods:** goods that are scarce relative to demand, so factors of production must be used to produce them, and producing more of one thing means producing less of something else. Almost everything bought and sold in an economy is an economic good.

Khái niệm cốt lõi

Scarcity = finite resources vs. infinite wants $\Rightarrow$ choice is unavoidable $\Rightarrow$ every choice has an **opportunity cost**. This chain of reasoning (scarcity $\rightarrow$ choice $\rightarrow$ opportunity cost) underlies almost every diagram and argument in this book.

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Khan hiếm (scarcity) nghĩa là nguồn lực có giới hạn trong khi nhu cầu con người là vô hạn. Đây không đồng nghĩa với nghèo đói – ngay cả nước giàu nhất cũng không thể thoả mãn mọi mong muốn của mọi người dân. Vì khan hiếm, mọi quyết định kinh tế đều buộc phải **lựa chọn**, và mỗi lựa chọn đều có **chi phí cơ hội** (cái phải từ bỏ). Hàng hoá tự do (free goods) như ánh nắng không cần yếu tố sản xuất và không có chi phí cơ hội; hàng hoá kinh tế (economic goods) thì khan hiếm và cần yếu tố sản xuất để tạo ra.

1.1.2 The three fundamental economic questions

Because no economy has unlimited resources, every economic system – however it is organised – must answer three questions:

1. **What to produce?** Which goods and services, and in what quantities, should be produced with the available scarce resources?

2. **How to produce?** What combination of factors of production and which techniques (labour-intensive vs. capital-intensive) should be used?
3. **For whom to produce?** How should the output be distributed among members of society – who gets to consume what has been produced?

Different economic systems (Section 1.5) answer these three questions in very different ways – through market prices, through government planning, or through a mixture of both.

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Mọi nền kinh tế đều phải trả lời ba câu hỏi cơ bản: (1) Sản xuất **cái gì**? (2) Sản xuất **như thế nào** (kết hợp yếu tố sản xuất ra sao)? (3) Sản xuất **cho ai** (phân phối sản phẩm cho ai)? Các hệ thống kinh tế khác nhau (thị trường, kế hoạch hoá, hỗn hợp) trả lời ba câu hỏi này theo cách khác nhau.

1.1.3 Factors of production and their rewards

Resources used to produce goods and services are grouped into four **factors of production**:

Factor	Description	Reward
Land	All natural resources: soil, minerals, water, forests, sites for building	Rent
Labour	Human physical and mental effort used in production	Wages
Capital	Man-made aids to production: machinery, tools, factories, infrastructure	Interest
Enterprise	Entrepreneurs who organise the other three factors, innovate and bear risk	Profit

Table 1.1 – The four factors of production and their factor rewards.

(!) **Lỗi thường gặp:** Students frequently confuse **capital** with **money**. In economics, capital means physical, man-made goods used to produce further goods (machines, tools, buildings) – **not** cash or savings. Money itself produces nothing; it is simply a means of acquiring real capital goods. Likewise, **land** in the economic sense includes all natural resources, not just physical plots used for farming or building.

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Bốn yếu tố sản xuất: **đất đai** (land – tài nguyên thiên nhiên, phần thưởng là tiền thuê/rent), **lao động** (labour – sức lao động chân tay và trí óc, phần thưởng là tiền lương/wages), **vốn** (capital – máy móc, nhà xưởng do con người tạo ra, phần thưởng là lãi suất/interest), và **doanh nhân** (enterprise – người tổ chức ba yếu tố trên, chịu rủi ro, phần thưởng là lợi nhuận/profit). Lưu ý: vốn (capital) trong kinh tế học KHÔNG phải là tiền mặt, mà là tư liệu sản xuất vật chất như máy móc, nhà xưởng.

Mobility of factors of production

Factors of production are not perfectly mobile, and this affects how quickly and smoothly an economy can respond to changing patterns of demand.

Occupational mobility is the ease with which a factor can move between different uses or occupations. Labour has limited occupational mobility because of:

- lack of relevant skills or qualifications for the new occupation (requires retraining, which is costly and time-consuming);
- professional or trade union barriers to entry (licensing, certification requirements);
- natural ability constraints (not everyone can retrain as a surgeon or a concert pianist).

Capital is often even less occupationally mobile than labour: a blast furnace or a fishing trawler is highly specific and cannot easily be converted to another use, whereas a generic machine tool or a general-purpose lorry can be redeployed relatively easily.

Geographical mobility is the ease with which a factor can move between different locations. Labour has limited geographical mobility because of:

- family and social ties to a particular area;
- the cost and availability of housing (moving to a high-wage region may mean unaffordable housing);
- imperfect information about job opportunities elsewhere;
- legal barriers to migration between countries.

Land is completely geographically immobile by definition (though it can sometimes be put to a different use – occupational mobility – such as converting farmland into a housing estate). Low factor mobility matters because it is a root cause of **structural unemployment**: workers made redundant in a declining industry may lack the skills or willingness to relocate to where new jobs are being created (a theme developed further in the macroeconomics chapters).

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Tính linh hoạt của yếu tố sản xuất gồm hai loại: **linh hoạt theo ngành nghề** (occupational mobility – khả năng chuyển đổi giữa các công việc/ngành nghề khác nhau, bị cản trở bởi thiếu kỹ năng, yêu cầu bằng cấp, giới hạn năng lực tự nhiên) và **linh hoạt theo địa lý** (geographical mobility – khả năng di chuyển giữa các vùng, bị cản trở bởi ràng buộc gia đình, chi phí nhà ở, thiếu thông tin, rào cản pháp lý di cư). Đất đai hoàn toàn không di chuyển được về mặt địa lý. Linh hoạt yếu tố sản xuất thấp là nguyên nhân gốc rễ của thất nghiệp cơ cấu (structural unemployment).

Division of labour and specialisation

Specialisation occurs when individuals, firms, regions or countries concentrate on producing a narrow range of goods or a particular stage of a production process, rather than trying to be self-sufficient. **Division of labour** is a specific form of specialisation within the production process itself, where a job is broken down into many small, repetitive tasks, each performed by a different worker.

Advantages of division of labour and specialisation:

- **Higher productivity**: workers become highly skilled and efficient at one repetitive task ("practice makes perfect"), raising output per worker.
- **Time saved**: workers do not need to switch between different tools and tasks, avoiding the time lost in changeovers.
- **Use of comparative advantage**: workers, firms and countries can concentrate on what they do relatively best, raising total output from a given set of resources (the same logic underlies international trade, covered in a later unit).
- **Use of specialist machinery**: producing a narrow range of tasks makes it worthwhile to invest in specialised, task-specific capital equipment, which further raises productivity.

Disadvantages of division of labour and specialisation:

- **Monotony and worker alienation:** highly repetitive tasks can be boring, lowering job satisfaction and potentially increasing absenteeism and error rates.
- **Structural unemployment risk:** workers with only one narrow skill are vulnerable if that skill or industry becomes obsolete, and low occupational mobility (Section 1.1) makes it harder for them to move to new jobs.
- **Over-dependence and lack of variety:** an economy or firm that specialises very narrowly becomes dependent on continuing demand for that narrow output, and is more exposed to external shocks (e.g., a country dependent on one export commodity).
- **Quality concerns:** on a production line, a single worker no longer has a sense of ownership over the whole finished product, which can (though need not) reduce quality consciousness.

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Chuyên môn hoá (specialisation) là khi cá nhân, doanh nghiệp, vùng hoặc quốc gia tập trung sản xuất một loại hàng hoá/dịch vụ hẹp thay vì tự cung tự cấp. Phân công lao động (division of labour) là một dạng chuyên môn hoá trong đó công việc được chia nhỏ thành nhiều bước, mỗi công nhân làm một bước. **Lợi ích:** năng suất cao hơn, tiết kiệm thời gian, tận dụng lợi thế so sánh, dùng được máy móc chuyên dụng. **Hạn chế:** công việc nhàm chán, rủi ro thất nghiệp cơ cấu nếu kỹ năng trở nên lỗi thời, phụ thuộc quá mức vào một lĩnh vực hẹp.

The role of money

Specialisation and division of labour would be almost impossible without **money**, which solves the problem of **barter** (the "double coincidence of wants" – under barter, a trade only happens if each party happens to want exactly what the other is offering). Money performs four functions:

1. **Medium of exchange:** money is universally accepted in exchange for goods and services, removing the need for barter.
2. **Unit of account:** money provides a common measure of value, so the price of every good can be compared on the same scale.
3. **Store of value:** money can be saved and used to purchase goods and services at a later date (provided its value is not eroded too quickly by inflation).
4. **Standard of deferred payment:** money allows debts and future payments (e.g., loans, wages owed) to be specified in agreed, comparable terms.

These functions are examined in much greater depth, alongside the banking system and monetary policy, in the macroeconomics units of this book.

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Tiền tệ có bốn chức năng: **phương tiện trao đổi** (thay thế hàng đổi hàng/barter), **đơn vị tính toán giá trị** (so sánh giá cả), **phương tiện cất trữ giá trị** (tiết kiệm để dùng sau), và **tiêu chuẩn thanh toán trả chậm** (dùng cho các khoản nợ, hợp đồng tương lai). Nội dung này sẽ được mở rộng trong các chương kinh tế vĩ mô.

1.2 Opportunity cost and rational decision-making

1.2.1 Defining opportunity cost

Opportunity cost is the value of the next best alternative forgone when a choice is made. Because resources are scarce, choosing to use them in one way always means they cannot simultaneously be used in another way – the benefit that would have been gained from the best alternative use is the opportunity cost of the choice actually made.

Opportunity cost = value of the *next best alternative* sacrificed. It applies to consumers (spending an hour of free time studying instead of working a part-time job), firms (using a factory to make product A instead of product B), and governments (spending tax revenue on healthcare instead of education).

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Chi phí cơ hội (opportunity cost) là giá trị của lựa chọn tốt nhất tiếp theo bị bỏ lỡ khi ta ra quyết định. Vì nguồn lực khan hiếm, chọn dùng chúng theo cách này nghĩa là không thể dùng theo cách khác cùng lúc. Khái niệm này áp dụng cho người tiêu dùng, doanh nghiệp, và cả chính phủ.

1.2.2 Marginal analysis: decision-making "at the margin"

Rational economic agents rarely make all-or-nothing decisions; instead, they typically decide whether to do a **little bit more or a little bit less** of something. This is called deciding "**at the margin**". The key decision rule of marginal analysis is:

Undertake the activity if **Marginal Benefit (MB) > Marginal Cost (MC)**, stop when $MB = MC$.

Marginal benefit is the extra benefit (utility, revenue, welfare) gained from one more unit of an activity; **marginal cost** is the extra cost incurred from that one more unit. A rational decision-maker keeps expanding an activity as long as the marginal benefit of doing one more unit exceeds the marginal cost, and stops (reaches an optimum) at the point where $MB = MC$ – because beyond that point, the marginal cost of an extra unit would exceed the marginal benefit it brings, making the agent worse off.

This single principle explains a wide range of behaviour:

- A **consumer** decides how many hours to study by comparing the marginal benefit of an extra hour (higher expected exam grade) against its marginal cost (the opportunity cost of forgone leisure or part-time earnings).
- A **firm** decides how many workers to hire by comparing the marginal revenue product of an extra worker against the marginal wage cost of hiring them (developed fully in the microeconomics units on factor markets).
- A **government** decides how much to spend on a public health programme by comparing the marginal social benefit of an extra unit of spending (lives saved, illness prevented) against its marginal social cost (resources diverted from other uses, e.g. education).

Ví dụ mẫu · Worked example – Marginal benefit and marginal cost of studying

A student is deciding how many extra hours per week to spend revising Economics. Research on this particular student's past performance suggests the following pattern of expected marginal benefit (in "grade-improvement points") and marginal cost (in money-equivalent value of forgone leisure/part-time work) for each additional hour of study:

Additional hour	1st	2nd	3rd	4th	5th	6th
Marginal benefit (\$)	20	17	14	11	8	5
Marginal cost (\$)	4	6	8	10	12	14

Table 1.2 – Marginal benefit and marginal cost of successive hours of revision.

Compare MB and MC hour by hour: for hours 1–3, $MB > MC$ ($20 > 4$, $17 > 6$, $14 > 8$), so each of these hours is worth studying. At the 4th hour, $MB = 11 > MC = 10$, so it is still just worth doing. At the 5th hour, $MB = 8 < MC = 12$: the marginal cost now exceeds the marginal

benefit, so this hour (and the 6th) should *not* be undertaken. The rational (optimal) amount of studying is therefore **4 hours** – the point closest to where $MB \approx MC$ without MC exceeding MB .

GIẢI THÍCH TIẾNG VIỆT

VN

Phân tích cận biên (marginal analysis) là nguyên tắc ra quyết định: tiếp tục một hoạt động khi **lợi ích cận biên (MB)** lớn hơn **chi phí cận biên (MC)**, và dừng lại khi $MB = MC$. Đây là cách người tiêu dùng, doanh nghiệp và chính phủ đều dùng để ra quyết định tối ưu – không phải quyết định “làm hay không làm” toàn bộ, mà là quyết định “làm thêm một chút” hay không. Trong ví dụ, học sinh nên học 4 giờ vì đến giờ thứ 5, chi phí cận biên (12\$) đã vượt lợi ích cận biên (8\$).

(!) Lỗi thường gặp: A common error is to compare **total** benefit and **total** cost rather than **marginal** benefit and **marginal** cost. An activity can have total benefit exceeding total cost overall, yet the rational stopping point is still where $MB = MC$ at the margin, not where total benefit is at its absolute maximum possible level.

1.3 The production possibility curve (PPC)

1.3.1 Definition and construction

A **production possibility curve** (PPC), also called a production possibility frontier (PPF), shows the maximum possible combinations of two goods (or categories of goods) that an economy can produce in a given time period, with all its available resources fully and efficiently employed, given a fixed state of technology.

Three types of point can be shown relative to a PPC:

- Points **on** the curve: productively efficient – all resources are fully employed, and output of one good can only rise if output of the other falls.
- Points **inside** the curve: productively inefficient – resources are unemployed or underused (e.g., due to a recession), so more of both goods could be produced without any additional resources.
- Points **outside** the curve: currently unattainable with existing resources and technology.

1.3.2 Why the PPC is concave: increasing opportunity cost

The PPC is normally drawn **concave to the origin** (bowed outward) because factors of production are not equally suited to producing every good – some resources are relatively better suited to producing consumer goods, others to capital goods. As an economy reallocates resources increasingly toward one good, it must draw on resources progressively less suited to producing it, so each additional unit of that good costs more and more units of the other good given up. This is the law of **increasing opportunity cost**.

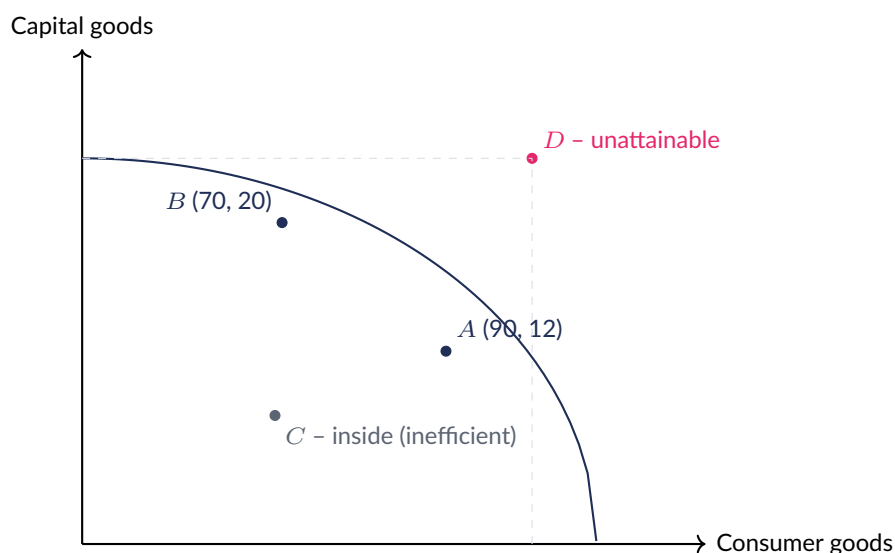


Figure 1.1 – Point *A* to *B*: moving along the PPC re-allocates resources toward capital goods, at an opportunity cost in consumer goods forgone (increasing, because the curve is concave). Point *C* lies inside the PPC (unemployed/underused resources); point *D* lies outside (currently unattainable).

Ví dụ mẫu · Worked example – Opportunity cost along a PPC

An economy moves along its PPC from point *A* (90 units of Consumer goods, 12 units of Capital goods) to point *B* (70, 20). Find the opportunity cost.

Capital goods gained: $20 - 12 = 8$ units. Consumer goods given up: $90 - 70 = 20$ units.

$$\text{Opportunity cost of 1 unit Capital goods} = \frac{20}{8} = 2.5 \text{ units of Consumer goods.}$$

Ví dụ mẫu · Worked example – Opportunity cost of the marginal move

Suppose the same PPC also passes through point *E* (40 units of Consumer goods, 26 units of Capital goods) – further along than *B* (70, 20) toward the capital-goods axis. Find the opportunity cost of expanding Capital goods output from *B* to *E*, and explain why it differs from the *A* → *B* result above.

Capital goods gained: $26 - 20 = 6$ units. Consumer goods given up: $70 - 40 = 30$ units.

$$\text{Opportunity cost of 1 unit Capital goods (from } B \text{ to } E) = \frac{30}{6} = 5 \text{ units of Consumer goods.}$$

This is higher than the 2.5 units found for the *A* → *B* move. This confirms the law of increasing opportunity cost: as the economy produces relatively more Capital goods, each extra unit costs progressively more Consumer goods forgone, because resources being switched are progressively less suited to Capital goods production – consistent with the concave (outward-bowed) shape of the PPC.

GIẢI THÍCH TIẾNG VIỆT

VN

Đường giới hạn khả năng sản xuất (PPC) thể hiện các tổ hợp sản lượng tối đa mà một nền kinh tế có thể sản xuất khi dùng hết và hiệu quả mọi nguồn lực, với công nghệ cho trước. Điểm **trên đường** = hiệu quả sản xuất; điểm **bên trong** = nguồn lực chưa được sử dụng hết (thất nghiệp); điểm **bên ngoài** = chưa thể đạt được. Đường PPC lõm về phía gốc tọa độ vì **quy luật chi phí**

cơ hội tăng dần: nguồn lực không hoàn toàn phù hợp để sản xuất mọi loại hàng hoá, nên càng chuyển nhiều nguồn lực sang một loại hàng, chi phí cơ hội của mỗi đơn vị tăng thêm càng lớn.

(!) Lỗi thường gặp: Do not describe a movement *along* the PPC (e.g. *A* to *B*) as "economic growth". A movement along the curve is simply a re-allocation of already fully-employed resources between two types of good – there is no change in total productive capacity. True economic growth requires either the whole curve to shift outward, or a movement from a point inside the curve towards the curve.

1.3.3 Three distinct cases: shifts of and movements relative to the PPC

It is essential to distinguish three separate scenarios that Cambridge questions frequently test:

Case 1 – Movement from inside the curve towards the curve (short-run/actual growth). If an economy starts at a point inside its PPC (e.g., during a recession, with idle factories and unemployed workers), it can increase output of both goods simply by bringing unused resources back into full employment – without any change in the economy's underlying productive capacity. This is sometimes called **actual growth** or a reduction in a negative output gap.

Case 2 – Outward shift of the whole PPC (potential/long-run growth). The entire curve shifts outward when the economy's productive capacity increases. Causes include: an increase in the quantity of factors of production (e.g., population growth, immigration, new land discovered, more capital investment); an improvement in the quality of factors of production (e.g., better education and training raising labour productivity, more efficient capital); and technological progress (allowing more output from the same resources). Crucially, an economy that today chooses a point on its PPC closer to the capital-goods axis (more investment, fewer consumer goods now) will tend to experience a larger outward shift of the PPC in the future, because a larger capital stock raises future productive capacity – this is the classic present-consumption-vs-future-growth trade-off.

Case 3 – Inward shift of the whole PPC (economic decline). The entire curve shifts inward when productive capacity falls. Causes include: destruction of factors of production (war, natural disasters such as earthquakes or floods); a negative supply shock (e.g., depletion of a natural resource, a sudden shortage of a key raw material); or sustained net emigration of the workforce.

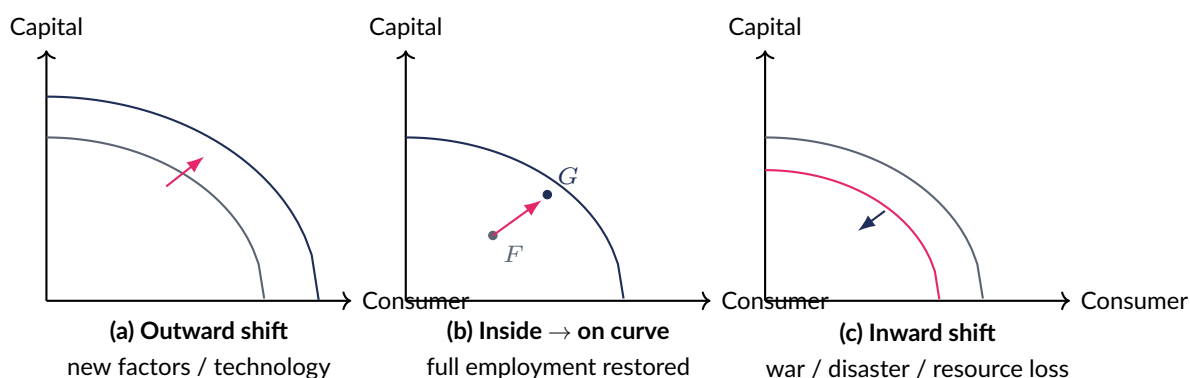


Figure 1.2 – The three PPC scenarios: (a) potential growth from an outward shift; (b) actual growth from re-employing idle resources (point *F* inside moving to *G* on the new-looking, but here unchanged, curve); (c) economic decline from an inward shift.

GIẢI THÍCH TIẾNG VIỆT

VN

Có ba trường hợp cần phân biệt rõ: **(a) Dịch chuyển toàn bộ đường PPC ra ngoài** = tăng trưởng tiềm năng, do tăng số lượng/chất lượng yếu tố sản xuất hoặc tiến bộ công nghệ. **(b) Di chuyển từ điểm bên trong ra đường** = tăng trưởng thực tế trong ngắn hạn, do đưa nguồn lực nhàn rỗi

vào sử dụng (ví dụ phục hồi sau suy thoái) – năng lực sản xuất không đổi. **(c) Dịch chuyển toàn bộ đường vào trong** = suy thoái/suy giảm năng lực sản xuất, do chiến tranh, thiên tai, hoặc cú sốc cung tiêu cực (mất nguồn tài nguyên). Một nền kinh tế chọn điểm gần trục hàng hoá vốn hơn (đầu tư nhiều hơn, tiêu dùng ít hơn hiện tại) sẽ có xu hướng dịch chuyển PPC ra ngoài nhiều hơn trong tương lai.

1.4 Positive and normative economics

1.4.1 Definitions

Positive economics deals with objective, testable statements about what *is*, *was*, or *will be* – statements that can, in principle, be verified or refuted by evidence and data. Positive statements do not necessarily have to be true, but they must be capable of being checked against facts.

Normative economics deals with subjective, value-based statements about what *ought to* or *should be* – statements that depend on value judgements, ethics, or opinion, and cannot be settled purely by evidence. Normative statements typically contain (or imply) words such as "should", "ought", "fair", "better", or "worse".

Positive statement (example)	Normative statement (example)
A rise in the minimum wage from \$10 to \$12 per hour reduced employment in the sector by 3%.	The minimum wage <i>should</i> be raised to \$15 per hour to help low-paid workers.
Cambodia's inflation rate was 4.2% in 2025.	The government <i>ought</i> to prioritise reducing inflation over reducing unemployment.
A \$1 per litre tax on petrol would raise government revenue by an estimated \$2 billion per year.	It is <i>unfair</i> that petrol taxes fall more heavily on low-income households.

Table 1.3 – Positive vs. normative statements.

1.4.2 Why the distinction matters for policy

Almost every real-world economic policy debate blends both types of statement. Economists can, in principle, use positive analysis to agree on the *likely effects* of a policy (e.g., "raising interest rates will reduce inflation but raise unemployment in the short run" is a testable positive prediction). However, whether that trade-off is *worth it* – whether it is "acceptable" to raise unemployment to lower inflation – is a normative judgement that depends on the values of the person or government making the decision. Confusing the two types of statement is a common source of unproductive debate: two people can agree entirely on the positive facts (data, forecasts) and still disagree sharply on policy, because their disagreement is really about values (normative), not about evidence. Recognising this distinction helps students identify exactly *where* a disagreement in an exam-style policy discussion actually lies, and write more precise evaluative conclusions.

GIẢI THÍCH TIẾNG VIỆT

VN

Kinh tế học **thực chứng** (positive) là các phát biểu khách quan, có thể kiểm chứng bằng dữ liệu (ví dụ: "tăng lương tối thiểu làm giảm việc làm 3%"). Kinh tế học **chuẩn tắc** (normative) là các phát biểu mang tính giá trị, quan điểm cá nhân, chứa từ như "nên", "công bằng", "tốt hơn" (ví dụ: "nên tăng lương tối thiểu"). Phân biệt hai loại này quan trọng vì trong tranh luận chính sách, hai người có thể đồng ý hoàn toàn về dữ liệu thực chứng nhưng vẫn bất đồng về chính sách vì khác biệt về giá trị quan điểm (chuẩn tắc).

Bài tập luyện tập

Classify each of the following statements as **positive** or **normative**:

- (i) "Cutting corporate tax rates from 25% to 20% increased business investment by 6% over two years."
- (ii) "The government should cut corporate tax rates further to boost investment."
- (iii) "It is wrong that the richest 1% of households hold 40% of national wealth."
- (iv) "Unemployment in the region rose from 5% to 7% following the factory closure."

Lời giải chi tiết

(i) **Positive** – this is a factual, testable claim about a measured outcome (it can be checked against investment data), even though the number could turn out to be wrong. (ii) **Normative** – contains "should" and expresses a value judgement about desirable policy. (iii) **Normative** – contains "wrong", a value judgement about fairness. (iv) **Positive** – a factual, measurable claim about unemployment statistics.

1.5 Resource allocation and economic systems**1.5.1 The price mechanism**

In a market economy, prices are the key signal that coordinates the decisions of millions of independent consumers and producers, without any central authority directing production. The **price mechanism** performs three interrelated functions:

1. **Signalling function**: prices convey information about relative scarcity and changing conditions of demand and supply. A rising price signals that a good has become relatively scarcer (or more desired); a falling price signals relative abundance (or falling demand).
2. **Incentive function**: prices create incentives for economic agents to change their behaviour. A higher price incentivises existing producers to supply more and encourages new firms to enter the market; it also incentivises consumers to economise on the now more expensive good and search for substitutes.
3. **Rationing function**: since resources and goods are scarce, price rises ration out a limited quantity of a good to those consumers most willing and able to pay for it, resolving excess demand without any need for queues, coupons, or central allocation.

GIẢI THÍCH TIẾNG VIỆT

VN

Cơ chế giá (price mechanism) có ba chức năng: **tín hiệu** (signalling – giá phản ánh mức độ khan hiếm), **khuyến khích** (incentive – giá tạo động lực thay đổi hành vi của người mua/bán), và **phân phối** (rationing – giá phân bổ số lượng hàng hoá khan hiếm cho người sẵn sàng và có khả năng trả giá cao nhất). Đây là cách nền kinh tế thị trường tự phối hợp hàng triệu quyết định cá nhân mà không cần cơ quan trung ương chỉ đạo.

1.5.2 Market, planned and mixed economies

Economic systems differ in *how* they answer the three fundamental questions (what/how/for whom to produce) and in *who* owns the factors of production.

Market economy: resources are allocated almost entirely through the price mechanism, with factors of production privately owned, and minimal government intervention. Firms and individuals pursue their own self-interest, and this is coordinated by prices (Adam Smith's "invisible hand").

Planned (command) economy: resources are allocated by a central planning authority, which decides what, how and for whom to produce, typically with factors of production under state/collective ownership. A key theoretical criticism is the **socialist calculation problem**: without market

prices generated by genuine supply and demand, central planners lack the information needed to know the relative scarcity of millions of different goods and resources, and cannot easily calculate the most efficient way to allocate them – planners must instead rely on estimates, quotas and administrative rules, which are prone to shortages, surpluses, and misallocation.

Mixed economy: resources are allocated partly through the price mechanism (private sector) and partly through government intervention and public ownership (public sector), combining elements of both systems. Virtually all real-world economies are mixed economies, differing mainly in *degree* – how large a role the state plays relative to the market.

System	Advantages	Disadvantages
Market economy	Efficient allocation via price signals; strong incentives for innovation and cost control; wide consumer choice; no large bureaucracy needed	Merit goods under-provided, demerit goods over-provided; public goods not provided at all; inequality of income/wealth can be severe; monopoly power may emerge
Planned economy	Can address inequality directly through planned distribution; can provide public goods and merit goods deliberately; can direct resources toward long-term national priorities	Socialist calculation problem (no price signals → information/allocation failures); weak incentives for innovation and effort; shortages/surpluses common; large administrative bureaucracy; consumer choice restricted
Mixed economy	Combines market efficiency with government correction of market failure (public goods, merit goods, regulation of monopoly, redistribution)	Risk of government failure alongside market failure; the "right" balance of state vs. market is a normative, contested judgement; can still exhibit inefficiencies of both systems if poorly designed

Table 1.4 – Comparing market, planned and mixed economies.

GIẢI THÍCH TIẾNG VIỆT

VN

Kinh tế thị trường (market economy): phân bổ nguồn lực chủ yếu qua cơ chế giá, sở hữu tư nhân, chính phủ can thiệp tối thiểu – ưu điểm là hiệu quả và có động lực đổi mới, nhược điểm là bất bình đẳng và không cung cấp đủ hàng hoá công/hàng hoá có ích. **Kinh tế kế hoạch hoá** (planned/command economy): nhà nước lập kế hoạch phân bổ, sở hữu công cộng – vấn đề lớn nhất là "bài toán tính toán xã hội chủ nghĩa" (socialist calculation problem): thiếu tín hiệu giá thị trường nên nhà hoạch định không biết chính xác mức độ khan hiếm để phân bổ hiệu quả. **Kinh tế hỗn hợp** (mixed economy): kết hợp cả hai, hầu hết các nền kinh tế thực tế đều là kinh tế hỗn hợp, chỉ khác nhau về mức độ can thiệp của nhà nước.

A2 Extension – Government intervention in a market economy

[A2 extension] Even a predominantly market-based economy typically requires government intervention to correct **market failure** – situations where the free market, left alone, fails to allocate resources efficiently from society's point of view. Common causes include externalities (costs or benefits falling on third parties), under-provision of public goods (non-excludable, non-rivalrous goods that the market would not supply at all, e.g. national defence), informa-

tion failure, and abuse of monopoly power. The full toolkit of government intervention – taxes, subsidies, regulation, provision of public goods, and their own government failures – is developed in a later unit on market failure and government intervention; this section simply previews *why* no real-world economy is a pure, unregulated market economy.

GIẢI THÍCH TIẾNG VIỆT

VN

[A2 extension] Ngay cả nền kinh tế thị trường cũng cần sự can thiệp của chính phủ để khắc phục **thất bại thị trường** (market failure) – khi thị trường tự do không phân bổ nguồn lực hiệu quả (ngoại ứng, hàng hoá công, thông tin bất cân xứng, độc quyền). Nội dung chi tiết về công cụ can thiệp của chính phủ (thuế, trợ cấp, quy định) sẽ được trình bày đầy đủ ở chương sau.

1.6 Problem bank

Bài tập luyện tập

Which of the following best defines "scarcity" in economics?

- | | |
|--|--|
| (A) A situation where poor households cannot afford basic goods | (C) A temporary shortage of a good caused by a supply disruption |
| (B) A situation where resources are finite relative to unlimited wants | (D) A situation where a good has no market price |

Lời giải chi tiết

Scarcity refers to the fundamental and permanent imbalance between finite resources and unlimited wants – it exists at all income levels and in all economies, not just for poor households (A is too narrow), and is not the same as a temporary shortage (C) or a good with zero price, i.e., a free good (D). **(B)**.

Bài tập luyện tập

Explain, using an example, the difference between a free good and an economic good.

Lời giải chi tiết

A **free good** is not scarce – no factors of production are needed to make it available, and consuming it involves no opportunity cost (e.g., sunlight for a beachgoer). An **economic good** is scarce relative to demand – factors of production must be used to produce it, so producing more of it means giving up the production of something else (e.g., a car, which requires land, labour, capital and enterprise to manufacture, and whose resources could otherwise have been used to make something else).

Bài tập luyện tập

An economy's PPC shows combinations of Food and Machinery. At point *M*, the economy produces 60 tonnes of Food and 15 units of Machinery. At point *N* on the same PPC, it produces 45 tonnes of Food and 21 units of Machinery. Calculate the opportunity cost of the extra Machinery gained in moving from *M* to *N*.

Lời giải chi tiết

Machinery gained: $21 - 15 = 6$ units. Food given up: $60 - 45 = 15$ tonnes.

$$\text{Opportunity cost per unit of Machinery} = \frac{15}{6} = 2.5 \text{ tonnes of Food.}$$

Bài tập luyện tập

A point lying inside an economy's PPC most likely indicates:

- (A) Technological progress has occurred efficiency
(B) Resources are unemployed or underused (D) The combination of output is currently
(C) The economy has achieved productive unattainable

Lời giải chi tiết

A point inside the PPC means the economy is not using its resources fully or efficiently – some factors are idle or underemployed, so more of both goods could be produced without any new resources. Productive efficiency (C) occurs only *on* the curve; "unattainable" (D) describes points *outside* the curve. (B).

Bài tập luyện tập

Distinguish, with reference to a PPC diagram, between (a) a movement along the curve, (b) a movement from a point inside the curve to a point on the curve, and (c) an outward shift of the whole curve.

Lời giải chi tiết

(a) A **movement along** the curve (e.g. *A* to *B*) reallocates already fully-employed resources between the two goods – output of one good rises only because output of the other falls; total productive capacity is unchanged. (b) A movement from **inside to on** the curve occurs when previously idle or underused resources (e.g., unemployed labour, unused factory capacity) are brought into full employment, raising output of both goods without any change in the economy's underlying productive capacity – this is short-run/actual growth. (c) An **outward shift** of the whole curve represents an increase in the economy's total productive capacity – caused by more/better factors of production or improved technology – allowing genuinely higher maximum output combinations than were previously possible. This is potential/long-run economic growth.

Bài tập luyện tập

Which of the following would most likely cause an *inward* shift of a country's PPC?

- (A) A rise in the number of unemployed workers during a recession (C) A government decision to produce more consumer goods and fewer capital goods this year
(B) A civil war that destroys factories and infrastructure (D) An increase in net immigration of skilled workers

Lời giải chi tiết

An inward shift means the whole PPC moves toward the origin – a fall in the economy's productive capacity. War destroying factories and infrastructure directly destroys capital and possibly labour, reducing capacity. A rise in unemployment (A) is a movement to a point *inside* the (unchanged) PPC, not a shift of the curve itself. Choice (C) is a movement *along* the curve. Choice (D) would cause an *outward* shift (more labour). **(B)**.

Bài tập luyện tập

"An economy that devotes more resources to capital goods production today, at the expense of consumer goods, is likely to enjoy a larger outward shift of its PPC in future years." Explain the economic reasoning behind this statement.

Lời giải chi tiết

Capital goods (machinery, factories, infrastructure) are themselves used to produce future output. Choosing a point on the current PPC closer to the capital-goods axis means more investment now, which raises the economy's stock of capital and, over time, its total productive capacity. In future periods, this larger and/or more productive capital stock allows the whole PPC to shift further outward than it would have if the economy had instead chosen a point favouring current consumer goods. The trade-off is that choosing more capital goods today means less consumption (a lower current living standard) in exchange for a larger future PPC (a higher potential future living standard).

Bài tập luyện tập

Classify each statement as positive or normative: (i) "Raising the school leaving age to 18 increased average years of schooling by 1.2 years." (ii) "It is unjust that university tuition fees prevent some low-income students from attending."

Lời giải chi tiết

(i) **Positive** – a testable, factual claim about a measured statistical outcome. (ii) **Normative** – contains the value judgement "unjust", reflecting an opinion about fairness rather than a testable fact.

Bài tập luyện tập

Which of the following is a normative statement?

- | | |
|---|---|
| (A) The unemployment rate fell from 6.5% to 5.8% last year | infrastructure because job creation matters more than reducing the budget deficit |
| (B) A \$500 million increase in infrastructure spending is forecast to create 12,000 jobs | (D) Government infrastructure spending rose by \$500 million last year |
| (C) The government should spend more on | |

Lời giải chi tiết

Options (A), (B) and (D) are all factual, testable/measurable claims (positive). Option (C) contains "should" and an implicit value judgement about which policy goal (job creation vs. deficit reduction) "matters more" – this cannot be settled by evidence alone. **(C)**.

Bài tập luyện tập

Which of the following best describes the "socialist calculation problem" associated with centrally planned economies?

- (A) Planners cannot use mathematics to add up national output sources efficiently
- (B) Without market prices generated by genuine demand and supply, planners lack the information needed to allocate re-
- (C) Planned economies always have lower literacy rates than market economies
- (D) Central planning requires more workers than a market economy

Lời giải chi tiết

The socialist calculation problem, associated with economists such as Hayek and Mises, is an information problem: market prices normally aggregate the dispersed knowledge of millions of buyers and sellers about relative scarcity; without such prices, central planners cannot know the true relative scarcity of resources and goods, and so cannot calculate the efficient allocation of resources, leading to shortages and surpluses. **(B)**.

Bài tập luyện tập

Complete the comparison: state one advantage and one disadvantage of a market economy relative to a planned economy.

Lời giải chi tiết

Advantage: the price mechanism efficiently signals relative scarcity and creates strong incentives for firms to innovate and cut costs, without needing large government bureaucracy to plan output. **Disadvantage:** a pure market economy tends to under-provide public goods and merit goods, over-provide demerit goods, and can generate significant inequality of income and wealth, since production follows profitability and ability to pay rather than social need.

Bài tập luyện tập

Define "occupational mobility of labour" and give one factor that restricts it.

Lời giải chi tiết

Occupational mobility of labour is the ease with which workers can move between different jobs or occupations. It is restricted by, for example, a lack of the skills or qualifications needed for the new occupation (retraining is often costly and time-consuming), or by professional/licensing barriers to entry into certain occupations.

Bài tập luyện tập

Which factor of production is, by definition, always completely geographically immobile?

- (A) Labour (C) Land
- (B) Capital (D) Enterprise

Lời giải chi tiết

Land – a plot of land cannot physically be relocated to a different geographical area (though it can sometimes be put to a different *use*, which is a question of occupational, not geographical, mobility). (C).

Bài tập luyện tập

Explain two disadvantages of an extensive division of labour for workers on a factory production line.

Lời giải chi tiết

(1) **Monotony**: highly repetitive, narrow tasks can be boring and reduce job satisfaction, potentially increasing absenteeism and lowering morale. (2) **Structural unemployment risk**: workers who have only ever performed one narrow task develop a very specific, non-transferable skill; if that task is automated or the industry declines, these workers may struggle to find new employment, especially given limited occupational mobility.

Bài tập luyện tập

A worker spends the first hour of a shift assembling 40 units, the second hour 55 units, the third hour 58 units, and the fourth hour 50 units (due to fatigue). At what point should the firm most plausibly stop scheduling additional hours for this worker on this task, applying marginal reasoning, if each hour costs the same wage but output per hour is what generates revenue?

Lời giải chi tiết

Marginal output (the marginal benefit, if each unit sold generates constant revenue) rises from hour 1 to hour 2 (40 → 55), rises again but by less from hour 2 to hour 3 (55 → 58, a much smaller increase), and then *falls* in hour 4 (58 → 50). Since the wage cost per hour is constant (constant marginal cost) but the marginal output (and hence marginal revenue) turns negative between hour 3 and hour 4, the firm should stop scheduling this worker on this task after **the third hour** – the fourth hour reduces output and is therefore not worth its cost.

Bài tập luyện tập

Which of the following is an example of the "rationing function" of the price mechanism?

- | | |
|--|---|
| (A) A rise in the price of a good encourages new firms to enter the industry | (C) A fall in the price of a good signals that it has become relatively more abundant |
| (B) A shortage of a good causes its price to rise, and only those most willing and able to pay continue to purchase it | (D) A tax on a good raises its price and reduces the quantity firms wish to supply |

Lời giải chi tiết

The rationing function refers to price allocating a scarce good among competing consumers – when a good is in short supply, its price rises until quantity demanded falls to match the reduced quantity available, so only those most willing and able to pay obtain it. Option (A) describes the incentive function; option (C) describes the signalling function. (B).

Bài tập luyện tập

Explain the difference between the "signalling" and "incentive" functions of the price mechanism, using the example of a sudden frost that destroys part of a coffee harvest.

Lời giải chi tiết

The **signalling function**: the frost reduces coffee supply, so the market price of coffee rises; this rising price signals to all market participants that coffee has become relatively scarcer. The **incentive function**: the higher price then creates incentives for behavioural change – existing coffee farmers are encouraged to increase output where possible (e.g., using more fertiliser, expanding growing area), new farmers/firms may be attracted into coffee growing by the prospect of higher profit, and consumers are incentivised to buy less coffee or switch to substitutes such as tea.

Bài tập luyện tập

A country transitions from a fully centrally planned economy toward greater use of market prices, while retaining state provision of healthcare and education. This economy is best described as a:

- | | |
|--------------------------|--------------------|
| (A) Pure market economy | (C) Mixed economy |
| (B) Pure planned economy | (D) Barter economy |

Lời giải chi tiết

An economy combining market-based allocation (for most goods) with continued state provision of certain services (healthcare, education) is a **mixed economy** – resources are allocated partly by the price mechanism and partly by government intervention/public provision. (C).

Bài tập luyện tập

Evaluate whether a market economy or a planned economy is more likely to achieve rapid innovation. Outline the key argument on each side.

Lời giải chi tiết

Case for the market economy: the profit motive and competition give firms a strong, continuous incentive to innovate, cut costs and develop new products, since successful innovators capture higher profits and unsuccessful firms exit the market; the price mechanism also directs resources efficiently toward the most profitable (often most valued) innovations without needing to be centrally directed. **Case for the planned economy**: a government can, in principle, direct very large, coordinated resources toward specific strategic innovation priorities (e.g., a national space programme) without being constrained by short-run profitability, and can avoid duplicated private R&D effort. **Evaluation**: in practice, most sustained, broad-based technological innovation historically has come from market-based (or mixed) economies, because centrally planned systems lack the price signals and competitive incentive structure needed to reward risk-taking broadly across the whole economy; however, planning can succeed in narrow, well-funded, strategically prioritised areas.

Bài tập luyện tập

Which of the following would be classified as a "free good" rather than an "economic good"?

- (A) Bottled mineral water sold in a supermarket movement and unlimited access
(B) Wind used to power a wind turbine in an area with no property rights over air (C) A university education
(D) Crude oil extracted from an oil field

Lời giải chi tiết

A free good is one that is not scarce and requires no factors of production to make available for use. Wind, where access is unlimited and no one owns or restricts it, fits this definition. Bottled water, university education, and crude oil all require significant factors of production (land, labour, capital) to make available, and are all scarce relative to demand – they are economic goods. (B).

Bài tập luyện tập

Distinguish between "geographical mobility" and "occupational mobility" of labour, and explain how low mobility of either type can contribute to unemployment.

Lời giải chi tiết

Geographical mobility is the ease with which workers can move between different locations to take up employment; **occupational mobility** is the ease with which workers can move between different jobs or industries. Low geographical mobility (e.g., due to family ties, high housing costs in areas with jobs, or lack of information) means workers in a declining region may remain unemployed rather than moving to where jobs exist. Low occupational mobility (e.g., lacking the skills required for a growing industry) means workers made redundant in a declining industry may be unable to take up jobs in expanding industries, even if those jobs are in the same region. Both forms of low mobility are root causes of persistent **structural unemployment**.

Bài tập luyện tập

An economy is currently operating at a point inside its PPC. Government spending then successfully raises aggregate demand, bringing previously unemployed resources back into use, and output of both goods produced in the economy increases. Which of the following best describes what has happened to the PPC itself?

- (A) The PPC has shifted outward economy has simply moved closer to the
(B) The PPC has shifted inward existing curve
(C) The PPC has remained unchanged; the (D) The PPC has become a straight line

Lời giải chi tiết

Bringing idle resources into use raises actual output without changing the economy's underlying productive capacity (the maximum combinations of output achievable when *fully* employing resources). The PPC itself is unchanged; only the economy's position relative to the (unchanged) curve has moved, from inside toward the curve. (C).

Bài tập luyện tập

"A natural disaster that destroys 20% of a country's factories will always cause the country's PPC to shift inward by exactly 20% for every good produced." Comment on this claim.

Lời giải chi tiết

The claim is not generally correct. Destroying 20% of factories reduces capital, which will shift the PPC inward, but the size of the shift for each specific good depends on how capital-intensive that good's production is and how factor markets adjust. Goods produced with a higher proportion of capital relative to labour and land are likely to see a larger fall in maximum output than goods that rely more heavily on labour or land, which were unaffected by the disaster. The inward shift is therefore likely to be **uneven** across the two axes of the PPC (the new curve need not be a simple inward parallel shift of the old one), rather than a uniform 20% contraction along both axes.

Bài tập luyện tập

State the four functions of money and briefly explain why division of labour would be very difficult without money.

Lời giải chi tiết

The four functions of money are: (1) medium of exchange, (2) unit of account, (3) store of value, (4) standard of deferred payment. Division of labour requires specialised workers to trade their output (or their labour, in exchange for wages) for the many other goods and services they need but no longer produce themselves. Without money, this would require **barter**, which needs a "double coincidence of wants" – each party must want exactly what the other offers, in the right quantity, at the right time. This is highly inefficient and would severely limit how far workers could specialise, since a specialised worker producing only one narrow good would struggle to find trading partners willing to swap exactly what they need. Money removes this constraint by acting as a universally accepted medium of exchange.

Bài tập luyện tập

A government must decide how many additional doctors to fund in the national health service, given a fixed budget also needed for schools. Explain, using the concept of opportunity cost, what is given up by this decision, and how marginal analysis could guide the number of doctors funded.

Lời giải chi tiết

The **opportunity cost** of funding additional doctors is the next best alternative use of that government spending forgone – here, spending on schools/education that could otherwise have been funded with the same budget (e.g., new classrooms, more teachers). Applying **marginal analysis**, the government should compare the marginal social benefit of funding one more doctor (e.g., additional lives saved, reduced waiting times, improved health outcomes) against the marginal social cost of doing so (the value of the school spending forgone). The government should continue funding additional doctors as long as the marginal benefit of doing so exceeds the marginal cost, and stop at the point where the two are equal – beyond that point, funding still more doctors would sacrifice more value in forgone education spending than it generates in additional health benefits.

Bài tập luyện tập

Which best illustrates the "for whom to produce" question faced by every economic system?

- | | |
|---|--|
| (A) A car manufacturer decides whether to use robots or manual assembly lines | (C) A society decides how income and output are distributed among its citizens |
| (B) A government decides how much of GDP to allocate to healthcare versus defence | (D) A firm decides whether to produce electric or petrol cars |

Lời giải chi tiết

"For whom to produce" concerns the distribution of output/income among members of society – who ultimately gets to consume what has been produced. Option (A) illustrates "how to produce" (choice of technique); options (B) and (D) illustrate "what to produce" (allocation between different goods/categories); option (C) directly addresses distribution among citizens. (C).

Bài tập luyện tập

Explain, with an example, how the reward to the factor of production "enterprise" differs from the rewards to the other three factors of production.

Lời giải chi tiết

Land, labour and capital each receive a contractually fixed reward (rent, wages, interest respectively) agreed in advance, regardless of whether the resulting output is eventually sold at a profit or a loss. **Enterprise** – the entrepreneur who organises the other three factors and bears the risk of the venture – instead receives **profit**, which is a residual and uncertain reward: it can be very high if the venture succeeds, zero, or even negative (a loss) if the venture fails and revenue does not cover the costs of land, labour and capital that must still be paid. For example, a café owner (enterprise) must pay rent, staff wages and loan interest regardless of how many customers visit, and only keeps whatever revenue is left over as profit (or bears the loss if revenue falls short).

Elasticity of Demand and Supply

Mục tiêu Unit: Độ co giãn của cầu theo giá (PED) và các yếu tố quyết định; mối quan hệ giữa PED và tổng doanh thu (TR) trên đường cầu tuyến tính; ứng dụng PED trong định giá của doanh nghiệp và trong thuế gián thu của chính phủ, bao gồm việc ai gánh chịu gánh nặng thuế; độ co giãn chéo của cầu theo giá (XED) và phân loại hàng hoá thay thế/bổ sung; độ co giãn của cầu theo thu nhập (YED) và phân loại hàng hoá thông thường/thứ cấp; độ co giãn của cung theo giá (PES) và các yếu tố quyết định, bao gồm phân biệt cung tức thời, ngắn hạn và dài hạn.

2.1 Price elasticity of demand (PED)

2.1.1 Definition and formula

Price elasticity of demand (PED) measures the responsiveness of quantity demanded to a change in the price of the good itself. It is calculated as the percentage change in quantity demanded divided by the percentage change in price.

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

Because demand curves slope downward, P and Q_d move in opposite directions, so PED is normally **negative**. Economists usually discuss the **magnitude** $|PED|$:

- $|PED| > 1$: demand is **price elastic** – quantity demanded is very responsive to price.
- $|PED| = 1$: demand is **unit elastic**.
- $|PED| < 1$: demand is **price inelastic** – quantity demanded is not very responsive to price.
- $|PED| = 0$: demand is **perfectly inelastic** (vertical demand curve).
- $|PED| = \infty$: demand is **perfectly elastic** (horizontal demand curve).

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VN PED đo mức độ nhạy cảm của lượng cầu khi giá của chính hàng hoá đó thay đổi. Vì đường cầu dốc xuống, P và Q_d luôn ngược chiều nên PED mang giá trị âm; ta thường quan tâm đến **độ lớn** $|PED|$: $|PED| > 1$ là co giãn (cầu phản ứng mạnh), $|PED| < 1$ là kém co giãn (cầu phản ứng yếu), $|PED| = 1$ là co giãn đơn vị.

2.1.2 The midpoint (arc) method

The simple percentage-change formula above gives a slightly different answer depending on whether the *original* price/quantity is used as the base for a price rise versus a price fall between the very same two points. To avoid this inconsistency, economists sometimes use the **arc (midpoint) method**, which uses the *average* of the two values as the base:

$$PED_{arc} = \frac{(Q_2 - Q_1) / [(Q_2 + Q_1)/2]}{(P_2 - P_1) / [(P_1 + P_2)/2]}$$

This gives the same value for PED whether price rises or falls between the two points. Cambridge exam questions usually only require the simple percentage-change method (using the original values as the base); the arc method is worth recognising but is not the default calculation expected unless a question specifically asks for it.

2.1.3 Determinants of PED

The value of PED for a good depends on several factors, summarised in Figure 2.1.

Determinant	Effect on PED	Example
Number and closeness of substitutes	More/closer substitutes $\Rightarrow$ more elastic; few/no substitutes $\Rightarrow$ more inelastic	A specific brand of cola has many close substitutes (other colas, other soft drinks) $\Rightarrow$ elastic; tap water has almost no substitute $\Rightarrow$ inelastic
Necessity vs luxury	Necessities $\Rightarrow$ more inelastic; luxuries $\Rightarrow$ more elastic	Basic prescription medicine (necessity) is inelastic; a Caribbean cruise (luxury) is elastic
Proportion of income spent	Larger share of a buyer's budget $\Rightarrow$ more elastic; tiny share $\Rightarrow$ more inelastic	A box of matches (negligible share of income) is inelastic; a new car (large share) is elastic
Time period	Longer time horizon $\Rightarrow$ more elastic (more time to find substitutes or change habits)	Demand for petrol is inelastic in the short run, but more elastic over several years as buyers switch to fuel-efficient or electric cars
Habit-forming / addictive goods	Addictive or habit-forming goods $\Rightarrow$ more inelastic, regardless of price	Cigarettes and other addictive substances remain inelastic even after large price increases
Width of market definition	Narrowly-defined market $\Rightarrow$ more elastic; broadly-defined market $\Rightarrow$ more inelastic	Demand for "a specific airline's economy ticket to Paris" is far more elastic than demand for "air travel" as a whole category

Figure 2.1 Determinants of price elasticity of demand, with an example good for each.

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Sáu yếu tố quyết định PED : (1) số lượng & mức độ gần gũi của hàng thay thế – càng nhiều/gần thì càng co giãn; (2) hàng thiết yếu (kém co giãn) hay hàng xa xỉ (co giãn); (3) tỷ trọng thu nhập chi cho hàng hoá – chi tiêu lớn thì co giãn hơn; (4) khung thời gian – càng dài thì càng co giãn (có thời gian tìm thay thế); (5) hàng gây nghiện/thói quen – luôn kém co giãn; (6) độ rộng của định nghĩa thị trường – định nghĩa càng hẹp (một nhãn hiệu cụ thể) thì càng co giãn so với định nghĩa rộng (cả ngành).

2.1.4 Worked examples

Ví dụ mẫu · Worked example – an elastic result

A restaurant chain raises the price of its set lunch menu from \$20 to \$24. Weekly quantity demanded falls from 800 to 560 meals. Calculate PED and classify the result.

$$\% \Delta P = \frac{24 - 20}{20} \times 100 = 20\% \quad \% \Delta Q_d = \frac{560 - 800}{800} \times 100 = -30\% \quad PED = \frac{-30\%}{20\%} = -1.5$$

Since $|PED| = 1.5 > 1$, demand is **price elastic**. This is consistent with restaurant dining being a good with many close substitutes (other restaurants, home cooking) and taking up a noticeable share of a household's discretionary budget.

GIẢI THÍCH TIẾNG VIỆT

VN

Giá bữa trưa tăng 20%, lượng cầu giảm 30% $\Rightarrow PED = -1.5$, $|PED| > 1$ nên cầu **co giãn**: ăn nhà hàng có nhiều lựa chọn thay thế (nhà hàng khác, tự nấu ăn) và chiếm tỷ trọng đáng kể trong ngân sách, nên người tiêu dùng phản ứng mạnh với thay đổi giá.

Ví dụ mẫu · Worked example – an inelastic result

The price of petrol rises from \$1.50 to \$1.65 per litre. Weekly quantity demanded falls from 10,000 to 9,500 litres. Calculate PED and classify the result.

$$\% \Delta P = \frac{1.65 - 1.50}{1.50} \times 100 = 10\% \quad \% \Delta Q_d = \frac{9,500 - 10,000}{10,000} \times 100 = -5\% \quad PED = \frac{-5\%}{10\%} = -0.5$$

Since $|PED| = 0.5 < 1$, demand is **price inelastic**. This reflects petrol having few close substitutes in the short run (drivers cannot instantly change vehicles) and being a necessity for most car owners' daily journeys.

GIẢI THÍCH TIẾNG VIỆT

VN

Giá xăng tăng 10%, lượng cầu chỉ giảm 5% $\Rightarrow PED = -0.5$, $|PED| < 1$ nên cầu **kém co giãn**: trong ngắn hạn tài xế không thể ngay lập tức đổi phương tiện, và xăng là hàng thiết yếu cho việc đi lại hàng ngày.

(!) Lỗi thường gặp: A very common error is judging whether demand is elastic or inelastic just by looking at how *steep* a demand curve looks on a diagram, or by comparing the raw slope (the numeric ratio $\Delta P / \Delta Q$) instead of *percentage* changes. Two demand curves can have the same slope but very different PED values at different price/quantity combinations, because PED depends on the *proportional* change in Q_d relative to the *proportional* change in P – not on the absolute size of the changes or the visual steepness of the line. Always compute $\% \Delta Q_d$ and $\% \Delta P$ (relative to the original values) before concluding elastic or inelastic.

2.2 PED and total revenue

2.2.1 Total revenue along a linear demand curve

A firm's **total revenue (TR)** is $TR = P \times Q$. Because a straight-line (linear) demand curve has a constant slope but a *changing* P/Q ratio as you move along it, PED itself changes continuously along a linear demand curve – from perfectly elastic where the line meets the price axis, to perfectly inelastic where it meets the quantity axis.

Consider a linear demand curve $P = 20 - 2Q$ (so the price-axis intercept is $P = 20$ at $Q = 0$, and the quantity-axis intercept is $Q = 10$ at $P = 0$). Total revenue is:

$$TR = P \times Q = (20 - 2Q)Q = 20Q - 2Q^2$$

TR is maximised where its slope is zero. Using calculus, $\frac{d(TR)}{dQ} = 20 - 4Q = 0 \Rightarrow Q^* = 5$, giving $P^* = 20 - 2(5) = 10$ and $TR^* = 10 \times 5 = 50$.

Notice that $Q^* = 5$ is exactly halfway between the two axis intercepts ($Q = 0$ and $Q = 10$) – the **midpoint** of the demand curve. Using the point-elasticity formula $PED = (dQ/dP) \times (P/Q)$: since $Q = (20 - P)/2$, $dQ/dP = -0.5$, so at the midpoint $PED = -0.5 \times (10/5) = -1$. **The revenue-maximising point on any straight-line demand curve is always the point where $PED = -1$ (unit elastic).**

On a straight-line demand curve:

- The **upper half** (from the price-axis intercept down to the midpoint) is **price elastic** ($|PED| > 1$).
- The **midpoint** itself is **unit elastic** ($PED = -1$) – this is where TR is at its **maximum**.
- The **lower half** (from the midpoint down to the quantity-axis intercept) is **price inelastic** ($|PED| < 1$).

Rule for the effect of a price change on TR :

- If demand is **elastic**: a price cut **increases** TR ; a price rise **decreases** TR .
- If demand is **inelastic**: a price cut **decreases** TR ; a price rise **increases** TR .
- If demand is **unit elastic**: a small price change leaves TR **unchanged** (at its maximum).

GIẢI THÍCH TIẾNG VIỆT

VN

Trên một đường cầu tuyến tính, nửa trên (gần trục giá) là co giãn, điểm giữa là co giãn đơn vị ($PED = -1$, nơi TR đạt cực đại), nửa dưới (gần trục lượng) là kém co giãn. Quy tắc ghi nhớ: nếu cầu co giãn, giảm giá sẽ tăng TR (vì lượng bán tăng mạnh hơn tỷ lệ giảm giá); nếu cầu kém co giãn, tăng giá sẽ tăng TR (vì lượng bán giảm ít hơn tỷ lệ tăng giá).

2.2.2 Diagrammatic summary

Figure 2.2 shows the linear demand curve $P = 20 - 2Q$ split into its elastic, unit-elastic and inelastic segments; Figure 2.3 shows the companion total revenue curve, which rises while demand is elastic, peaks at the unit-elastic quantity, and falls while demand is inelastic.

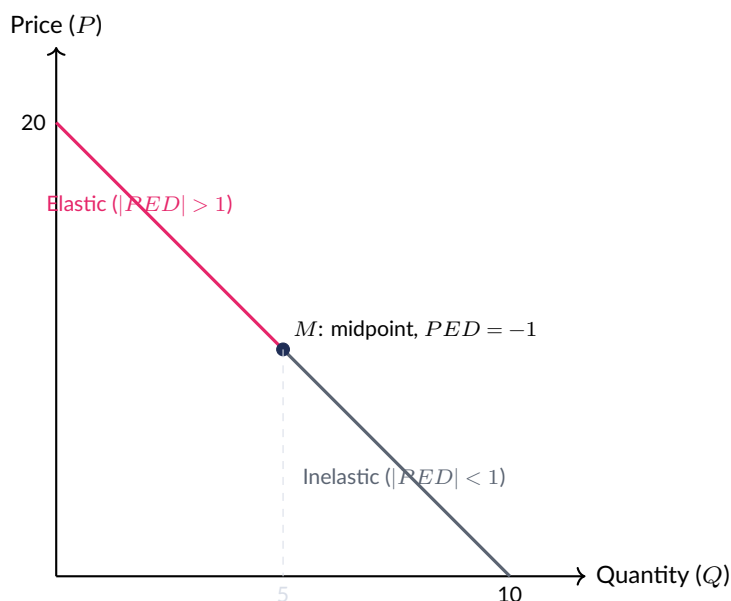


Figure 2.2 The straight-line demand curve $P = 20 - 2Q$. The upper half (pink) is price elastic, the lower half (grey) is price inelastic, and M (where $Q = 5$, $P = 10$) is the unit-elastic midpoint.

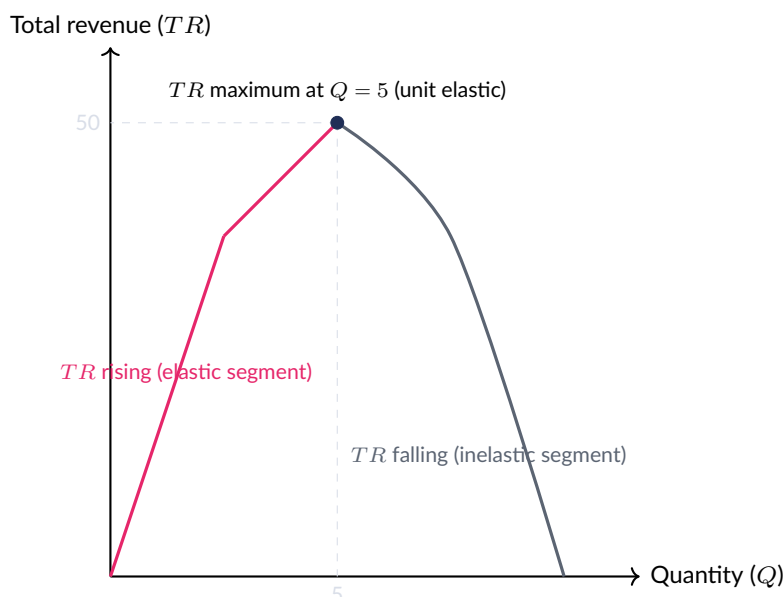


Figure 2.3 The companion total revenue curve for $P = 20 - 2Q$: $TR = 20Q - 2Q^2$ rises while demand is elastic, peaks at $Q = 5$ (directly below the midpoint M in Figure 2.2), then falls while demand is inelastic.

(!) Lỗi thường gặp: Students sometimes think the midpoint is where the demand curve changes *slope* – it does not; the slope of a straight line is constant along its whole length. What changes along the line is the *ratio* P/Q , which is what makes PED vary continuously from elastic (upper half) to inelastic (lower half). A second common error is to think TR is zero at the unit-elastic point – in fact TR is at its **maximum**, not zero, at the midpoint; TR is only zero at the two axis intercepts (where either $P = 0$ or $Q = 0$).

2.3 Applications of PED

2.3.1 Pricing strategy for firms

Firms use estimates of PED to guide pricing decisions. If demand for a product is **inelastic**, a firm can raise price to increase total revenue, since the percentage fall in quantity demanded will be smaller than the percentage price rise. If demand is **elastic**, a firm is more likely to compete on price, run discounts or sales, since a price cut will increase quantity demanded by proportionally more than the price fall, raising total revenue.

[A2 extension] Firms that can identify and separate consumers with different elasticities of demand for what is otherwise the same product may charge different prices to different groups – a strategy known as **price discrimination** (e.g. lower off-peak train fares for price-sensitive leisure travellers with more elastic demand, and higher peak fares for business travellers with less elastic demand). The conditions and welfare effects of price discrimination are covered in depth alongside monopoly market structure.

2.3.2 Indirect taxation and government revenue

Governments frequently use knowledge of PED to predict how much revenue an indirect tax (e.g. excise duty on cigarettes, alcohol or fuel) will raise, and to predict how effective a tax will be at reducing consumption of a demerit good.

- If demand is **inelastic** (e.g. cigarettes, fuel), a tax raises a large, predictable amount of revenue because quantity falls by proportionally less than the tax-induced price rise – but the tax is **less**

effective at reducing consumption, since inelastic demand means smokers/drivers change their behaviour only slightly.

- If demand is **elastic** (e.g. a specific brand with many substitutes), a tax causes a large fall in quantity, so it is more effective at changing behaviour, but raises **less** tax revenue per unit sold, and revenue is harder to predict.

This is why governments typically target excise taxes at goods with inelastic demand (tobacco, alcohol, fuel) if the primary goal is raising stable revenue, but this also means such taxes are a relatively **blunt tool** for reducing consumption of goods that are addictive or habit-forming.

GIẢI THÍCH TIẾNG VIỆT

VN

Chính phủ dùng *PED* để dự đoán doanh thu thuế gián thu: hàng hoá kém co giãn (thuốc lá, xăng dầu) khi bị đánh thuế sẽ mang lại doanh thu thuế lớn và ổn định vì lượng tiêu thụ giảm ít, nhưng lại kém hiệu quả trong việc giảm tiêu dùng vì người mua ít thay đổi hành vi. Ngược lại, hàng co giãn khi bị đánh thuế sẽ giảm tiêu dùng mạnh (hiệu quả hơn về mặt hành vi) nhưng doanh thu thuế thu được lại thấp hơn.

2.3.3 Tax incidence: who bears the burden?

When a specific (per-unit) tax is imposed, the **statutory** payer (usually the seller) does not necessarily bear the full economic burden. The tax burden is shared between consumers (via a higher market price) and producers (via a lower price net of tax that they actually keep), and the split depends on the *relative* elasticities of demand and supply: **the more inelastic side of the market bears the larger share of the tax**, because that side is less able to adjust the quantity it buys/sells in response to the price change.

Ví dụ mẫu · Worked example – splitting a tax burden using elasticities

A government imposes a specific tax of \$5 per unit on a good with $PED = -0.3$ (highly inelastic demand) and $PES = 1.2$ (relatively elastic supply). Estimate how the \$5 tax burden splits between consumers and producers, using the relative elasticities.

As a numerical approximation, the tax burden splits in proportion to $PES : |PED|$, i.e. the more elastic side of the market bears the *smaller* share:

$$\text{Consumer share} = \frac{PES}{PES + |PED|} = \frac{1.2}{1.2 + 0.3} = \frac{1.2}{1.5} = 0.80 = 80\% \quad \text{Producer share} = 1 - 0.80 = 20\%$$

Of the \$5 tax, consumers effectively pay \$4.00 (via a higher market price) and producers effectively absorb \$1.00 (via a lower price net of tax). This matches the general rule: because demand ($|PED| = 0.3$) is far more inelastic than supply ($PES = 1.2$) is elastic, consumers – the less responsive side – bear the larger share of the burden.

GIẢI THÍCH TIẾNG VIỆT

VN

Bên nào **kém co giãn hơn** sẽ gánh chịu phần lớn hơn của thuế, vì bên đó khó điều chỉnh lượng mua/bán để né thuế. Công thức gần đúng: tỷ lệ người tiêu dùng gánh chịu = $PES / (PES + |PED|)$. Ở ví dụ trên, cầu rất kém co giãn ($|PED| = 0.3$) so với cung tương đối co giãn ($PES = 1.2$) nên người tiêu dùng gánh tới 80% thuế.

2.4 Cross elasticity of demand (XED)

2.4.1 Definition, sign and magnitude

Cross elasticity of demand (XED) measures the responsiveness of quantity demanded of one good (A) to a change in the price of a *different* good (B).

$$XED_{A,B} = \frac{\% \Delta Q_{d,A}}{\% \Delta P_B}$$

Sign tells you the type of relationship; **magnitude** tells you the strength of the relationship.

Sign of XED	Relationship	Example
Positive ($XED > 0$)	Substitutes	Tea and coffee: a rise in the price of coffee increases demand for tea
Negative ($XED < 0$)	Complements	Printers and ink cartridges: a fall in the price of printers increases demand for cartridges
Close to zero	Weak or no relationship	Bread and washing machines are largely unrelated goods

Figure 2.4 Interpreting the sign of cross elasticity of demand. The larger $|XED|$ is, regardless of sign, the stronger the relationship between the two goods.

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Dấu của XED cho biết loại quan hệ: dương là hàng **thay thế** (giá A tăng làm cầu B tăng), âm là hàng **bổ sung** (giá A tăng làm cầu B giảm). Độ lớn $|XED|$ cho biết mối quan hệ mạnh hay yếu – $|XED|$ càng lớn thì hai hàng hoá càng liên quan chặt chẽ với nhau.

2.4.2 Worked examples

Ví dụ mẫu · Worked example – XED for substitutes

The price of butter rises from \$4.00 to \$4.40. Quantity demanded of margarine (a substitute) rises from 800 to 880 units. Calculate XED and interpret it.

$$\% \Delta P_{\text{butter}} = \frac{4.40 - 4.00}{4.00} \times 100 = 10\% \quad \% \Delta Q_{d,\text{margarine}} = \frac{880 - 800}{800} \times 100 = 10\%$$

$$XED = \frac{10\%}{10\%} = 1.0$$

$XED = +1.0$: positive, so butter and margarine are **substitutes**, and the relationship is reasonably strong (a 1% rise in the price of butter is associated with a 1% rise in demand for margarine).

GIẢI THÍCH TIẾNG VIỆT

VN

Giá bơ tăng 10%, cầu margarine tăng 10% $\Rightarrow XED = +1.0$: dương nên là hàng **thay thế**, độ lớn bằng 1 cho thấy mối quan hệ khá mạnh.

Ví dụ mẫu · Worked example – XED for complements

The price of smartphones falls from \$600 to \$540. Quantity demanded of phone cases (a complement) rises from 1,000 to 1,300 units. Calculate XED and interpret it.

$$\% \Delta P_{\text{smartphones}} = \frac{540 - 600}{600} \times 100 = -10\% \quad \% \Delta Q_{d,\text{cases}} = \frac{1,300 - 1,000}{1,000} \times 100 = 30\%$$

$$XED = \frac{30\%}{-10\%} = -3.0$$

$XED = -3.0$: negative, so smartphones and phone cases are **complements**, and the very large magnitude ($|XED| = 3.0$) indicates a **strong** complementary relationship – demand for cases is highly sensitive to the price (and hence sales volume) of smartphones.

GIẢI THÍCH TIẾNG VIỆT

VN

Giá điện thoại giảm 10%, cầu ốp lưng tăng 30% $\Rightarrow XED = -3.0$: âm nên là hàng **bổ sung**, độ lớn rất cao (3.0) cho thấy quan hệ bổ sung rất chặt chẽ.

2.5 Income elasticity of demand (YED)

2.5.1 Definition and classification of goods

Income elasticity of demand (YED) measures the responsiveness of quantity demanded to a change in consumers' income.

$$YED = \frac{\% \Delta Q_d}{\% \Delta \text{Income}}$$

- $YED < 0$: an **inferior good** – demand falls as income rises (e.g. instant noodles, second-hand clothing, intercity coach travel for some consumers).
- $0 < YED < 1$: a **normal necessity** – demand rises with income, but proportionally less (e.g. bread, basic utilities).
- $YED > 1$: a **normal luxury** – demand rises with income, proportionally more (e.g. foreign holidays, luxury cars, fine dining).

GIẢI THÍCH TIẾNG VIỆT

VN

YED đo mức độ nhạy cảm của cầu khi thu nhập thay đổi. $YED < 0$ là hàng **thứ cấp** (thu nhập tăng thì cầu giảm); $0 < YED < 1$ là hàng **thiết yếu thông thường** (cầu tăng chậm hơn thu nhập); $YED > 1$ là hàng **xa xỉ** (cầu tăng nhanh hơn thu nhập).

2.5.2 Engel curves

An **Engel curve** plots quantity demanded of a good against income, holding price constant. Figure 2.5 shows three characteristic shapes.

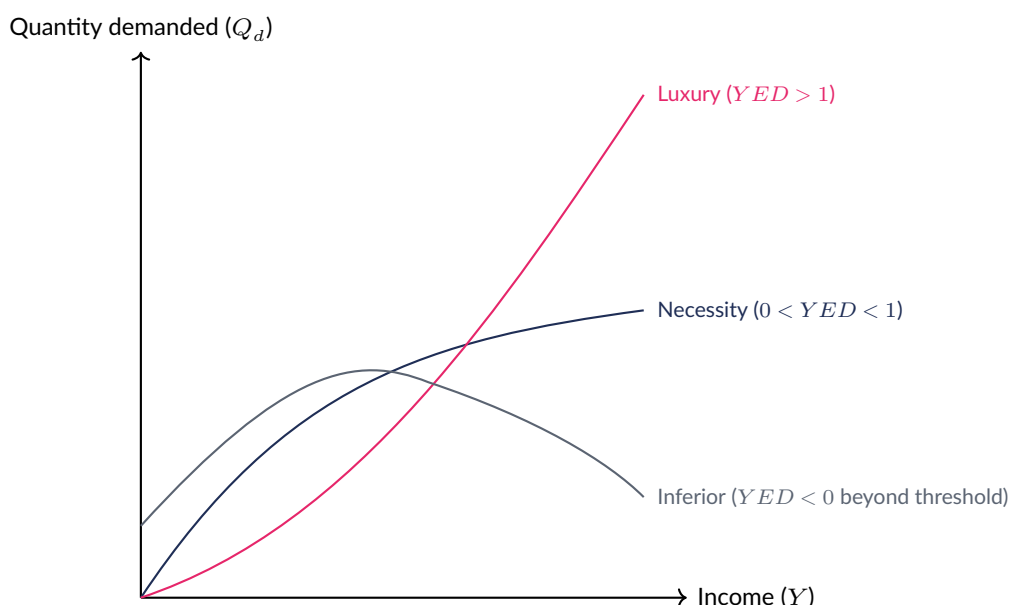


Figure 2.5 Engel curves for a normal necessity (flattens out as income rises), a normal luxury (steepens as income rises) and an inferior good (rises at low income, then bends downward once income passes a threshold).

GIẢI THÍCH TIẾNG VIỆT

VN

Đường Engel biểu diễn lượng cầu theo thu nhập (giá không đổi). Hàng thiết yếu tăng chậm dần rồi gần như đi ngang (độ dốc giảm dần); hàng xa xỉ tăng nhanh dần (độ dốc tăng dần); hàng thứ cấp tăng lúc đầu rồi **đi xuống** khi thu nhập vượt một ngưỡng nào đó, vì người tiêu dùng chuyển sang hàng thay thế cao cấp hơn.

2.5.3 Worked examples and applications

YED evidence lets firms and governments classify goods and predict the effect of economic growth or recession on different industries: firms selling goods with high positive *YED* (luxuries) benefit strongly from economic growth but are vulnerable in a recession, while firms selling goods with negative *YED* (inferior goods) may actually see sales rise during a recession.

Ví dụ mẫu · Worked example – classifying goods using *YED*

Average household income rises by 10%. Over the same period, demand for foreign holiday packages rises from 200 to 320 bookings per month, while demand for a bus operator's intercity coach seats falls from 5,000 to 4,800 per month. Calculate *YED* for each good and classify it.

Holidays: $\% \Delta Q_d = \frac{320 - 200}{200} \times 100 = 60\%$, so $YED = \frac{60\%}{10\%} = 6.0$. Since $YED > 1$, foreign holidays are a **normal luxury**, and a strongly income-sensitive one.

Coach travel: $\% \Delta Q_d = \frac{4,800 - 5,000}{5,000} \times 100 = -4\%$, so $YED = \frac{-4\%}{10\%} = -0.4$. Since $YED < 0$, intercity coach travel is an **inferior good**: as incomes rise, some travellers switch to cars, trains or flights.

Implication: the holiday company should expect strong sales growth as the economy grows, but should also expect a sharp fall in bookings if the economy enters a recession; the coach operator, by contrast, may see demand hold up – or even rise – during a downturn.

GIẢI THÍCH TIẾNG VIỆT

VN

Thu nhập tăng 10%: cầu du lịch nước ngoài tăng 60% $\Rightarrow YED = 6.0$ (hàng xa xỉ, rất nhạy với thu nhập); cầu đi xe khách liên tỉnh giảm 4% $\Rightarrow YED = -0.4$ (hàng thứ cấp). Công ty du lịch sẽ tăng trưởng mạnh khi kinh tế tăng trưởng nhưng cũng sẽ sụt giảm mạnh khi suy thoái; hãng xe khách có thể ít bị ảnh hưởng hơn, thậm chí hưởng lợi trong suy thoái.

2.6 Price elasticity of supply (PES)**2.6.1 Definition and formula**

Price elasticity of supply (PES) measures the responsiveness of quantity supplied to a change in the price of the good.

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

Because supply curves normally slope upward, *PES* is normally **positive**. $PES > 1$: supply is elastic; $PES < 1$: supply is inelastic; $PES = 1$: unit elastic; $PES = 0$: perfectly inelastic (vertical supply); $PES = \infty$: perfectly elastic (horizontal supply).

GIẢI THÍCH TIẾNG VIỆT

VN

PES đo mức độ nhạy cảm của lượng cung khi giá thay đổi. Vì đường cung dốc lên nên *PES* thường dương: $PES > 1$ là co giãn, $PES < 1$ là kém co giãn, $PES = 1$ là co giãn đơn vị.

2.6.2 Determinants of PES

Determinant	Effect on <i>PES</i>	Example
Spare capacity	Spare capacity $\Rightarrow$ more elastic; near full capacity $\Rightarrow$ more inelastic	A factory running at 60% capacity can quickly raise output; one already at 100% capacity cannot
Ease and cost of storing stock	Stock can be released quickly $\Rightarrow$ more elastic; goods that cannot be stored $\Rightarrow$ more inelastic	Canned goods can be stockpiled and released when price rises; fresh fish cannot be stored and must be sold quickly
Time to increase variable factors	More time to hire labour/buy materials $\Rightarrow$ more elastic in the long run	A bakery can hire extra staff and buy more flour within weeks; a semiconductor plant needs years to expand
Mobility of factors between uses	Factors easily switched between uses $\Rightarrow$ more elastic	Farmland that can switch between wheat and barley each season is more elastic than land locked into orchards
Length of the production period	Long production/gestation period $\Rightarrow$ more inelastic, especially in the short run	Wine and mature trees take years to produce; a t-shirt printer can respond within days

Figure 2.6 Determinants of price elasticity of supply.

GIẢI THÍCH TIẾNG VIỆT

VN

Năm yếu tố quyết định *PES*: (1) công suất dư thừa – càng nhiều công suất dư thì càng co giãn; (2) khả năng & chi phí lưu kho – hàng lưu trữ được thì cung co giãn hơn; (3) thời gian để tăng các yếu tố sản xuất biến đổi (lao động, nguyên liệu); (4) khả năng di chuyển của các yếu tố sản xuất giữa các mục đích sử dụng; (5) độ dài của chu kỳ sản xuất – chu kỳ càng dài thì

cung càng kém co giãn, nhất là trong ngắn hạn.

2.6.3 Time and supply: momentary, short-run and long-run

Time is one of the most important determinants of PES , and is often examined using an agricultural example.

- **Momentary period:** immediately after harvest, the quantity of wheat available is completely fixed – no more can be grown until the next harvest. Supply is **perfectly inelastic** ($PES = 0$): a rise in price cannot bring forth any extra quantity right now.
- **Short run:** farmers can use existing land and equipment more intensively – applying more fertiliser, hiring extra seasonal labour, or releasing grain from storage – but cannot bring new land into wheat production before the next planting season. Supply is somewhat responsive, but still relatively inelastic.
- **Long run:** farmers can switch land from other crops into wheat, invest in irrigation, or buy new machinery ahead of future planting seasons. Supply becomes considerably more elastic, since all factors of production can eventually be adjusted.

This progression – supply becoming more elastic the longer the time period allowed for producers to respond – applies generally, not just to agriculture.

GIẢI THÍCH TIẾNG VIỆT

VN

Ví dụ nông nghiệp minh họa rõ vai trò của thời gian: ngay sau thu hoạch, cung **hoàn toàn kém co giãn** ($PES = 0$) vì không thể có thêm lúa mì ngay lập tức; trong ngắn hạn, nông dân có thể tăng cường sử dụng đất/lao động hiện có nhưng chưa thể mở rộng diện tích trồng; trong dài hạn, họ có thể chuyển đổi đất đai, đầu tư thêm nên cung trở nên co giãn hơn nhiều.

2.6.4 Diagram: PES and the slope-intercept rule

For a straight-line supply curve, whether it is elastic or inelastic can be read directly from *where the line would meet an axis if extended* – not from how steep it looks.

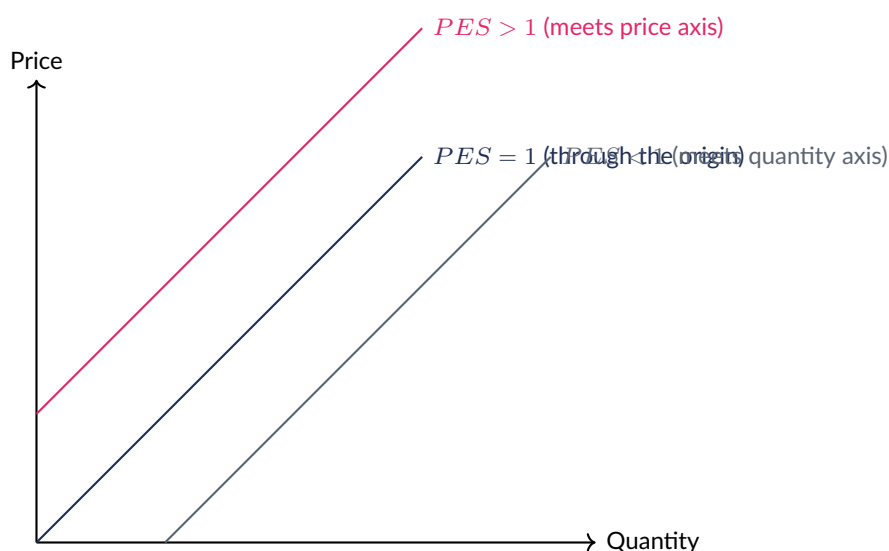


Figure 2.7 A straight-line supply curve is unit elastic if it passes through the origin, elastic if (extended) it meets the price axis, and inelastic if (extended) it meets the quantity axis – regardless of how steep each line looks.

Ví dụ mẫu · Worked example – PES calculation

The price of a good rises from \$5 to \$6. Quantity supplied rises from 1,000 to 1,300 units. Calculate PES and classify the result.

$$\% \Delta P = \frac{6 - 5}{5} \times 100 = 20\% \quad \% \Delta Q_s = \frac{1,300 - 1,000}{1,000} \times 100 = 30\% \quad PES = \frac{30\%}{20\%} = 1.5$$

Since $PES = 1.5 > 1$, supply is **price elastic**: producers were able to expand output by proportionally more than the price rise, consistent with there being spare capacity or stock available to release.

GIẢI THÍCH TIẾNG VIỆT

VN

Giá tăng 20%, lượng cung tăng 30% $\Rightarrow PES = 1.5 > 1$: cung **co giãn**, phù hợp với trường hợp doanh nghiệp còn công suất dư thừa hoặc tồn kho có thể tung ra thị trường.

(!) Lỗi thường gặp: Do not judge PES from how steep a supply line *looks* on a diagram – two lines can look equally steep but have very different elasticities depending on whether their *extension* meets the price axis or the quantity axis (Figure 2.7). A line through the origin is always unit elastic ($PES = 1$) at every point along it, no matter its slope. A line meeting the price axis (a positive P -intercept) is elastic at every point; a line meeting the quantity axis (a positive Q -intercept) is inelastic at every point. Always check the axis intercept, not the visual slope.

2.7 Practice question bank**Bài tập luyện tập**

The price of a chocolate bar rises from \$1.00 to \$1.20. Quantity demanded falls from 300 to 270 units per day. Calculate PED and classify demand.

(A) $PED = -0.5$, inelastic

(C) $PED = -0.5$, elastic

(B) $PED = -2.0$, elastic

(D) $PED = 2.0$, inelastic

Lời giải chi tiết

$\% \Delta P = \frac{1.20 - 1.00}{1.00} \times 100 = 20\%$. $\% \Delta Q_d = \frac{270 - 300}{300} \times 100 = -10\%$. $PED = \frac{-10\%}{20\%} = -0.5$. Since $|PED| < 1$, demand is inelastic. Correct answer: (A).

Bài tập luyện tập

A good has $PED = -0.5$ (inelastic). If the firm raises its price by 10%, what happens to total revenue?

(A) TR rises

(C) TR is unchanged

(B) TR falls

(D) Cannot be determined

Lời giải chi tiết

When demand is inelastic, a price rise causes a smaller proportional fall in quantity demanded, so $TR = P \times Q$ increases. Correct answer: **(A) TR rises**.

Bài tập luyện tập

A bus company raises fares from \$2.50 to \$2.75. Passenger numbers fall from 12,000 to 11,400 per week. Calculate PED , classify it, and calculate the effect on total revenue.

Lời giải chi tiết

$\% \Delta P = \frac{2.75 - 2.50}{2.50} \times 100 = 10\%$. $\% \Delta Q_d = \frac{11,400 - 12,000}{12,000} \times 100 = -5\%$. $PED = \frac{-5\%}{10\%} = -0.5$: inelastic. $TR_{\text{before}} = 2.50 \times 12,000 = \$30,000$. $TR_{\text{after}} = 2.75 \times 11,400 = \$31,350$. TR rises by \$1,350, confirming that a price rise increases revenue when demand is inelastic.

Bài tập luyện tập

Which of the following goods is likely to have the **most** elastic demand?

- | | |
|---|--|
| (A) Table salt | close substitutes |
| (B) Insulin for a diabetic patient | (D) Petrol for a population with no public transport alternative |
| (C) A particular soft-drink brand with many | |

Lời giải chi tiết

Elastic demand is associated with having many close substitutes. A specific soft-drink brand competes with many other brands and drinks, so consumers can easily switch if its price rises. Salt, insulin and petrol (with no alternative) all have few substitutes and are necessities, so their demand is inelastic. Correct answer: **(C)**.

Bài tập luyện tập

A specific breakfast-cereal brand raises its price from \$3.00 to \$3.30. Weekly sales fall from 5,000 to 4,250 boxes. Calculate PED , classify demand, and give two reasons (based on the determinants of PED) why demand for this specific brand might be this responsive.

Lời giải chi tiết

$\% \Delta P = \frac{3.30 - 3.00}{3.00} \times 100 = 10\%$. $\% \Delta Q_d = \frac{4,250 - 5,000}{5,000} \times 100 = -15\%$. $PED = \frac{-15\%}{10\%} = -1.5$: elastic. Reasons: (1) a single cereal *brand* is a narrowly-defined market with many close substitute brands, making demand more elastic than for "cereal" as a broad category; (2) consumers can easily switch to a rival brand at the supermarket shelf with no real cost or inconvenience, unlike switching away from a true necessity.

Bài tập luyện tập

Demand for "a specific airline's economy ticket on the London-Paris route" is compared with demand for "air travel" as a whole. Which statement is correct?

- (A) Both have identical PED
(B) The specific ticket has more elastic demand because the market is more narrowly defined
(C) Air travel as a whole has more elastic demand because it includes more consumers
(D) Neither has a defined PED

Lời giải chi tiết

A narrowly-defined market (one airline's ticket on one route) has far more substitutes available (other airlines, other routes, other modes of transport) than a broadly-defined market ('air travel' overall, which itself has few substitutes for reaching a destination by air). Correct answer: (B).

Bài tập luyện tập

Data-response. The table below shows the percentage change in price and percentage change in quantity demanded for four goods.

Good	% ΔP	% ΔQ_d
W	+10%	-5%
X	+10%	-20%
Y	-10%	+25%
Z	-10%	+8%

For each good, calculate PED and classify it as elastic or inelastic. Then state which pricing actions shown in the table a revenue-maximising firm should welcome, and which it should avoid.

Lời giải chi tiết

$$PED_W = \frac{-5\%}{10\%} = -0.5 \text{ (inelastic); price rose and } TR \text{ rises — welcome action.}$$

$$PED_X = \frac{-20\%}{10\%} = -2.0 \text{ (elastic); price rose and } TR \text{ falls — avoid this action.}$$

$$PED_Y = \frac{25\%}{-10\%} = -2.5 \text{ (elastic); price fell and } TR \text{ rises — welcome action.}$$

$$PED_Z = \frac{8\%}{-10\%} = -0.8 \text{ (inelastic); price fell and } TR \text{ falls — avoid this action.}$$

Rule confirmed: raising price raises TR only when demand is inelastic (W); cutting price raises TR only when demand is elastic (Y). Raising price when elastic (X) or cutting price when inelastic (Z) both reduce TR .

Bài tập luyện tập

The price of Coca-Cola rises and, as a result, the quantity demanded of Pepsi rises. What does this imply about the sign of XED and the relationship between the two goods?

- (A) Negative XED ; complements
(B) Positive XED ; substitutes
(C) Zero XED ; unrelated
(D) Negative XED ; substitutes

Lời giải chi tiết

A rise in the price of one good causing a rise in demand for another means the two move in the *same* direction, giving a **positive** XED – this is the signature of **substitute** goods. Correct answer: **(B)**.

Bài tập luyện tập

The price of butter rises from \$4.00 to \$4.40. Quantity demanded of margarine rises from 800 to 880 units. Calculate $XED_{\text{margarine, butter}}$ and classify the relationship.

Lời giải chi tiết

$\% \Delta P_{\text{butter}} = \frac{4.40 - 4.00}{4.00} \times 100 = 10\%$. $\% \Delta Q_{d, \text{margarine}} = \frac{880 - 800}{800} \times 100 = 10\%$. $XED = \frac{10\%}{10\%} = 1.0$: positive, so butter and margarine are **substitutes**, with a fairly strong relationship ($|XED| = 1$).

Bài tập luyện tập

The price of smartphones falls from \$600 to \$540. Quantity demanded of phone cases rises from 1,000 to 1,300 units. Calculate XED and classify the relationship.

Lời giải chi tiết

$\% \Delta P_{\text{smartphones}} = \frac{540 - 600}{600} \times 100 = -10\%$. $\% \Delta Q_{d, \text{cases}} = \frac{1,300 - 1,000}{1,000} \times 100 = 30\%$. $XED = \frac{30\%}{-10\%} = -3.0$: negative, so the goods are **complements**, and the very large magnitude shows a strong complementary relationship.

Bài tập luyện tập

Data-response. The table shows three pairs of related goods.

Pair	$\% \Delta P$ of first good	$\% \Delta Q_d$ of second good
Butter → Margarine	+12%	+9%
Petrol → Public-transport tickets	+15%	+9%
Cinema tickets → Popcorn	−8%	+20%

Calculate XED for each pair, classify the relationship, and state which pair has the **strongest** relationship.

Lời giải chi tiết

Butter/margarine: $XED = \frac{9}{12} = 0.75$: positive, substitutes, moderate strength.

Petrol/public transport: $XED = \frac{9}{15} = 0.6$: positive, substitutes, moderate strength.

Cinema/popcorn: $XED = \frac{20}{-8} = -2.5$: negative, complements, very strong relationship.

The cinema tickets–popcorn pair has by far the strongest relationship, since $|-2.5| = 2.5$ is much larger than 0.75 or 0.6.

Bài tập luyện tập

A good has $YED = -0.8$. This good is best classified as:

- (A) a normal necessity
(B) a normal luxury
(C) an inferior good
(D) a substitute good

Lời giải chi tiết

A negative YED means quantity demanded falls as income rises, which is the definition of an **inferior good**. Correct answer: (C).

Bài tập luyện tập

Average household income rises from \$3,000 to \$3,300 per month (a 10% rise). Demand for a particular brand of rice falls from 25kg to 24kg per month. Calculate YED , classify the good, and explain the implication for the rice producer as the economy grows.

Lời giải chi tiết

$\% \Delta Q_d = \frac{24 - 25}{25} \times 100 = -4\%$. $YED = \frac{-4\%}{10\%} = -0.4$: negative, so this rice brand is a (mildly) **inferior good**. Implication: as the economy grows and incomes rise further, demand for this producer's rice is likely to keep falling gradually as consumers trade up to preferred alternatives or greater variety; the firm may need to diversify its product range or target lower-income market segments to sustain sales.

Bài tập luyện tập

Average income rises by 15%. Bookings for overseas holiday packages rise from 200 to 320 per month. Calculate YED , classify the good, and discuss the implication for the tour operator if the economy later enters a recession.

Lời giải chi tiết

$\% \Delta Q_d = \frac{320 - 200}{200} \times 100 = 60\%$. $YED = \frac{60\%}{15\%} = 4.0$: since $YED > 1$, overseas holidays are a **normal luxury** with a strongly income-sensitive demand. Implication: bookings grew much faster than income during the upturn, but the same high YED means that if the economy enters a recession and incomes fall, bookings are likely to fall by proportionally even more than the fall in income – this industry is highly exposed to the economic cycle.

Bài tập luyện tập

Data-response. National income grows by 8%. The table shows the resulting percentage change in demand for three goods.

Good	$\% \Delta Q_d$
Bread	+2%
Foreign holidays	+24%
Instant noodles	-4%

Calculate YED for each good and classify it. If the economy grows by a further 8% next year,

which producer should expand capacity most aggressively, and which should be cautious?

Lời giải chi tiết

Bread: $YED = \frac{2}{8} = 0.25$: normal necessity ($0 < YED < 1$).

Foreign holidays: $YED = \frac{24}{8} = 3.0$: normal luxury ($YED > 1$).

Instant noodles: $YED = \frac{-4}{8} = -0.5$: inferior good ($YED < 0$).

The foreign-holiday operator ($YED = 3.0$) should expand capacity most aggressively, since demand is highly responsive to further income growth. The instant-noodle producer should be cautious, since further income growth is expected to *reduce* demand for its product.

Bài tập luyện tập

The price of a good rises from \$4.00 to \$4.40. Quantity supplied rises from 2,000 to 2,400 units. Calculate PES and classify supply.

(A) $PES = 2.0$, elastic

(C) $PES = 2.0$, inelastic

(B) $PES = 0.5$, inelastic

(D) $PES = -2.0$, elastic

Lời giải chi tiết

$\% \Delta P = \frac{4.40 - 4.00}{4.00} \times 100 = 10\%$. $\% \Delta Q_s = \frac{2,400 - 2,000}{2,000} \times 100 = 20\%$. $PES = \frac{20\%}{10\%} = 2.0$: elastic. Correct answer: (A).

Bài tập luyện tập

A furniture manufacturer holds spare factory capacity and stocks of finished furniture. Price rises by 15% and quantity supplied rises by 30%. Calculate PES and explain, using two determinants, why supply responds so readily.

Lời giải chi tiết

$PES = \frac{30\%}{15\%} = 2.0$: elastic. Reasons: (1) spare capacity allows the firm to expand output quickly without needing new investment in machinery or premises; (2) existing stocks of finished furniture can be released onto the market almost immediately, so the supply response is not tied to how long it takes to manufacture new items from scratch.

Bài tập luyện tập

A wheat farmer's price rises by 20% immediately after harvest, but there is no more wheat available to sell until the next harvest, 10 months later. What is PES in this "momentary period," and how would PES be expected to change in the short run and the long run?

Lời giải chi tiết

In the momentary period, quantity supplied is fixed at the amount already harvested, so $PES = 0$ (perfectly inelastic) – a 20% price rise brings forth no extra quantity right now.

In the **short run**, the farmer can respond a little by releasing stored grain or working existing land more intensively, so *PES* rises above zero but remains fairly low. In the **long run**, farmers can switch land into wheat production, invest in irrigation and machinery, and plan ahead for future planting seasons, so *PES* becomes considerably larger (more elastic).

Bài tập luyện tập

Which of the following would make *PES* **lower** (more inelastic)?

- (A) Large stocks of unsold inventory
- (B) High mobility of factors of production between uses
- (C) A good with a very long production or gestation period (e.g. wine, mature timber)
- (D) Substantial spare capacity in the industry

Lời giải chi tiết

A long production or gestation period means producers cannot quickly bring extra output to market even if price rises sharply – the good simply takes a fixed minimum time to produce (e.g. wine must age, trees must mature). The other three options (large stocks, high factor mobility, spare capacity) all make it *easier*, not harder, to raise output quickly, and so are associated with a **higher** *PES*. Correct answer: (C).

Bài tập luyện tập

A market for fresh fish (which cannot be stored) and a market for canned fish (which can be stored) both experience a 10% price rise. Quantity supplied of fresh fish rises by 3%; quantity supplied of canned fish rises by 18%. Calculate *PES* for each and explain the difference using one determinant of *PES*.

Lời giải chi tiết

Fresh fish: $PES = \frac{3\%}{10\%} = 0.3$ (inelastic). Canned fish: $PES = \frac{18\%}{10\%} = 1.8$ (elastic). The difference is explained by the **ease and cost of storing stock**: fresh fish cannot be stockpiled, so supply is tied directly to the current catch and cannot respond quickly to a price rise; canned fish can be stored in warehouses, so firms can release extra stock onto the market almost immediately when price rises, making supply far more responsive.

Bài tập luyện tập

As the time period allowed for producers to respond gets longer (momentary → short run → long run), what generally happens to *PES*?

- (A) *PES* falls steadily
- (B) *PES* rises, since more factors of production can eventually be varied
- (C) *PES* stays constant
- (D) *PES* becomes negative

Lời giải chi tiết

The longer the time period, the more factors of production a firm can adjust (more labour and materials in the short run; capital, land use and even new investment in the long run), so supply

becomes progressively more responsive to price changes. Correct answer: **(B)**.

Bài tập luyện tập

A firm is already operating at full capacity utilisation with no unsold inventory when demand for its product rises unexpectedly. In the short run, its price elasticity of supply is most likely to be:

- (A) High (elastic) (C) Infinite (perfectly elastic)
(B) Low (inelastic) (D) Undefined

Lời giải chi tiết

With no spare capacity and no stock to draw on, the firm cannot quickly raise quantity supplied even if price rises substantially, so PES will be low (inelastic) until it can invest in more capacity. Correct answer: **(B)**.

Bài tập luyện tập

A government imposes a specific tax of \$2 per unit on a good with $PED = -0.25$ and $PES = 0.75$. Using the elasticity-ratio approximation, calculate how much of the \$2 tax is borne by consumers and how much by producers.

Lời giải chi tiết

Consumer share = $\frac{PES}{PES + |PED|} = \frac{0.75}{0.75 + 0.25} = \frac{0.75}{1.00} = 0.75 = 75\%$. Producer share = $1 - 0.75 = 25\%$. Of the \$2 tax, consumers bear $0.75 \times \$2 = \1.50 and producers bear $0.25 \times \$2 = \0.50 . This makes sense because demand ($|PED| = 0.25$) is much more inelastic than supply ($PES = 0.75$) is elastic, so consumers – the less responsive side of the market – absorb the larger share of the tax.

Bài tập luyện tập

Essay outline. "Discuss whether an indirect tax is an effective way to reduce consumption of a good with low price elasticity of demand." Produce a structured outline of the key points a full answer should cover.

Lời giải chi tiết

For (tax can still be justified): even a small percentage fall in quantity is a real reduction in consumption of a demerit good; the tax also raises stable government revenue that could fund treatment of externalities (e.g. healthcare costs of smoking); over a longer time period PED tends to rise as consumers find substitutes or break habits, so effectiveness may improve with time.

Against (tax is a blunt tool here): low $|PED|$ (e.g. addictive goods) means quantity demanded barely falls even after a large tax-induced price rise, so the policy goal of reducing consumption is largely defeated; the tax is regressive if the inelastic good is disproportionately consumed by lower-income households, since (from the tax-incidence analysis) consumers bear most of the burden; the tax may encourage illegal/black-market supply if the price rise is large enough.

Conclusion: an indirect tax on a good with low PED is effective mainly as a **revenue-raising**

tool, but only weakly effective at **reducing consumption**; addressing demerit-good consumption may require complementary policies (e.g. advertising bans, information campaigns, minimum pricing) alongside taxation.

Bài tập luyện tập

Essay outline. "Discuss the extent to which knowledge of price, cross and income elasticities of demand can help a firm to increase its total revenue." Produce a structured outline of the key points a full answer should cover.

Lời giải chi tiết

PED: tells the firm whether to raise price (if demand is inelastic, TR rises) or cut price / run promotions (if demand is elastic, TR rises); crucial for setting the profit-maximising or revenue-maximising price.

XED: warns the firm how rivals' pricing decisions will affect its own sales (a positive XED with a competitor's good means the firm must watch competitor price cuts closely); also identifies complementary goods that could be bundled or cross-promoted to raise combined revenue (e.g. pricing printers low and cartridges higher, since $XED < 0$ between them).

YED: helps the firm anticipate the impact of the economic cycle — a firm selling a luxury ($YED > 1$) should expect strong revenue growth in a boom but should prepare for a sharp fall in a recession, while a firm selling an inferior good ($YED < 0$) might expect the opposite pattern.

Limitations: elasticity estimates are based on past data and may change over time (as tastes, incomes or the number of substitutes change); real-world firms rarely know their exact elasticities and must estimate them from market research, which introduces uncertainty; other factors (advertising, quality, rivals' reactions) also affect revenue and are not captured by elasticity alone.

Conclusion: elasticity knowledge is a valuable, but not sufficient, input into pricing and product strategy — it must be combined with broader market analysis.

Bài tập luyện tập

Synthesis data-response. A bakery collects the following information about its croissants:

- (a) Price rises from \$2.00 to \$2.20; quantity demanded falls from 500 to 450 per day.
- (b) With the croissant price unchanged, the price of muffins (a substitute) rises by 20%; croissant quantity demanded rises from 500 to 540 per day.
- (c) Local average income rises by 5%; with price unchanged, croissant quantity demanded rises from 500 to 525 per day.
- (d) The bakery's flour supplier: the price of flour rises by 8%; quantity of flour supplied rises from 1,000kg to 1,120kg.

Calculate (a) PED , (b) XED , (c) YED and (d) PES , and interpret each result in one sentence.

Lời giải chi tiết

(a) $\% \Delta P = \frac{2.20 - 2.00}{2.00} \times 100 = 10\%$; $\% \Delta Q_d = \frac{450 - 500}{500} \times 100 = -10\%$; $PED = \frac{-10\%}{10\%} = -1.0$ — demand for croissants is exactly **unit elastic**, so a small price change around this point leaves TR roughly unchanged.

(b) $\% \Delta Q_d = \frac{540 - 500}{500} \times 100 = 8\%$; $XED = \frac{8\%}{20\%} = 0.4$ — positive, so muffins and croissants

are **substitutes**, though only moderately/weakly related.

(c) $\% \Delta Q_d = \frac{525 - 500}{500} \times 100 = 5\%$; $YED = \frac{5\%}{5\%} = 1.0$ – croissants sit right at the boundary between a normal necessity and a normal luxury (unit income elastic).

(d) $\% \Delta Q_s = \frac{1,120 - 1,000}{1,000} \times 100 = 12\%$; $PES = \frac{12\%}{8\%} = 1.5$ – the flour supplier's supply is **elastic**, so it can expand deliveries readily in response to a price rise.

Demand, Supply, Market Equilibrium and Surplus

Mục tiêu Unit: Quy luật cầu và cơ sở của nó (hiệu ứng thu nhập, hiệu ứng thay thế); các yếu tố phi giá quyết định cầu (thu nhập, thị hiếu, giá hàng thay thế/bổ sung, dân số, quảng cáo, kỳ vọng giá); phân biệt **sự thay đổi lượng cầu** (di chuyển dọc đường cầu) với **sự thay đổi cầu** (dịch chuyển đường cầu); quy luật cung và cơ sở của nó; các yếu tố phi giá quyết định cung (chi phí sản xuất, công nghệ, số doanh nghiệp, thuế/trợ cấp, giá hàng hoá thay thế trong sản xuất, kỳ vọng, yếu tố tự nhiên); cân bằng thị trường và cơ chế điều chỉnh dư cung/dư cầu; phân tích **dịch chuyển đồng thời** của cầu và cung (khi nào chắc chắn, khi nào không chắc chắn); **thặng dư tiêu dùng** và **thặng dư sản xuất**; cơ chế giá như công cụ phân bổ nguồn lực qua các tình huống thực tế; và mở rộng về cầu phái sinh, cầu kết hợp, cung liên kết.

3.1 The Theory of Demand

3.1.1 The law of demand

Demand is the quantity of a good or service that consumers are willing and able to buy at a given price over a given period of time. The **law of demand** states that, *ceteris paribus* (holding every other influence on demand constant), the higher the price of a good, the lower the quantity demanded; the lower the price, the higher the quantity demanded. Plotted with price on the vertical axis and quantity on the horizontal axis, this relationship produces the familiar downward-sloping **demand curve**.

GIẢI THÍCH TIẾNG VIỆT

VN

Cầu (demand) là lượng hàng hoá/dịch vụ mà người tiêu dùng sẵn lòng và có khả năng mua tại một mức giá nhất định, trong một khoảng thời gian nhất định. **Quy luật cầu:** trong điều kiện các yếu tố khác không đổi (*ceteris paribus*), giá càng cao thì lượng cầu càng thấp, và ngược lại – thể hiện qua **đường cầu dốc xuống**.

3.1.2 Why does the demand curve slope downward?

Two separate effects, working together, explain why consumers buy more of a good as its price falls.

The income effect and the substitution effect

- **Income effect:** a fall in the price of a good raises a consumer's *real income* – the same amount of money now buys more goods and services than before, even though the consumer's money income has not changed. This rise in real purchasing power allows (and for a normal good, encourages) the consumer to buy more of the good, and often more of other goods too.
- **Substitution effect:** a fall in the price of a good makes it relatively cheaper compared with substitute goods whose prices have not changed. Rational consumers respond by substituting towards the now relatively cheaper good and away from its relatively more expensive substitutes.

For a normal good, the income effect and the substitution effect both work in the same direction, reinforcing each other and producing a clear inverse relationship between price and quantity demanded.

Ví dụ mẫu · Worked example – Identifying the income and substitution effects

The price of chicken falls sharply while the price of beef is unchanged. Explain, using the income effect and the substitution effect, why the quantity of chicken demanded is likely to rise.

Substitution effect: chicken is now relatively cheaper than beef (a substitute), so some consumers who previously bought beef switch towards chicken, raising the quantity of chicken demanded even if their income and overall spending on meat do not change. **Income effect:** consumers who continue to buy the same physical quantity of chicken as before now spend less money to do so, freeing up real purchasing power; some of this extra real income is likely to be spent on buying *more* chicken (as well as, perhaps, more of other goods). Because both effects push in the same direction, the fall in price is expected to raise the quantity of chicken demanded quite noticeably.

GIẢI THÍCH TIẾNG VIỆT

VN

Hiệu ứng thu nhập (income effect): giá giảm khiến thu nhập thực tế tăng (cùng số tiền mua được nhiều hàng hơn), khuyến khích mua nhiều hơn. **Hiệu ứng thay thế (substitution effect):** giá giảm khiến hàng hoá đó rẻ hơn tương đối so với hàng thay thế, khiến người tiêu dùng chuyển sang mua hàng đó nhiều hơn. Với hàng hoá thông thường, cả hai hiệu ứng cùng chiều, giải thích vì sao đường cầu dốc xuống.

3.1.3 Non-price determinants of demand

The law of demand isolates the effect of the good's *own price* on quantity demanded. But at any given price, the whole *position* of the demand curve depends on several other, non-price factors.

- **Income, and whether the good is normal or inferior:** for a **normal good**, a rise in consumer income increases demand (curve shifts right) – for example, a pay rise increases demand for restaurant meals. For an **inferior good**, a rise in income *reduces* demand (curve shifts left), because consumers switch to more expensive alternatives once they can afford them – for example, rising incomes tend to reduce demand for cheap instant noodles as households switch to fresh ingredients or dining out.
- **Tastes and fashion:** a good becoming more fashionable or desirable shifts its demand curve right; falling out of fashion shifts it left. For example, a sudden social-media trend can sharply increase demand for a particular brand of trainers.
- **Price of substitute goods:** a rise in the price of a substitute shifts demand for this good *right*, since consumers switch towards the now relatively cheaper alternative. For example, a rise in the price of Pepsi increases demand for Coca-Cola at every price.
- **Price of complementary goods:** a fall in the price of a complement (a good typically consumed together with this one) shifts demand for this good *right*. For example, a fall in the price of games consoles increases demand for the games played on them.
- **Population and demographics:** a larger population, or a shift in the age/demographic structure of the population towards groups more inclined to buy the good, shifts demand right. For example, an ageing population in many countries has increased demand for healthcare and retirement services.

- **Advertising:** successful advertising and marketing persuade more consumers to buy the good at every price, shifting demand right. For example, a widely shared advertising campaign can noticeably increase demand for a soft-drink brand.
- **Expectations of future price changes:** if consumers expect the price of a good to rise in future, current demand shifts *right* as buyers try to purchase before the price increase; if consumers expect a future price fall, current demand shifts *left* as buyers delay their purchase. For example, expectations that house prices will keep rising can encourage buyers to purchase now rather than wait.

Determinant	Effect on the demand curve	Example
Income (normal/inferior)	Normal good: income $\uparrow$ shifts D right. Inferior good: income $\uparrow$ shifts D left	Pay rise increases demand for restaurant meals (normal); reduces demand for instant noodles (inferior)
Tastes and fashion	More fashionable shifts D right; less fashionable shifts D left	A viral trend boosts demand for a sneaker brand
Price of substitutes	Substitute's price $\uparrow$ shifts D right	Pepsi price $\uparrow$ raises demand for Coca-Cola
Price of complements	Complement's price $\downarrow$ shifts D right	Console price $\downarrow$ raises demand for games
Population/demographics	Larger/more-suited population shifts D right	Ageing population raises demand for healthcare
Advertising	Successful advertising shifts D right	Viral ad campaign raises demand for a soft drink
Expectations of future prices	Expect price $\uparrow$ shifts D right (buy now); expect price $\downarrow$ shifts D left (wait)	Expecting house prices to rise encourages buying now

Table 3.1. The seven non-price determinants of demand, their effect on the demand curve, and an example of each.

GIẢI THÍCH TIẾNG VIỆT

VN

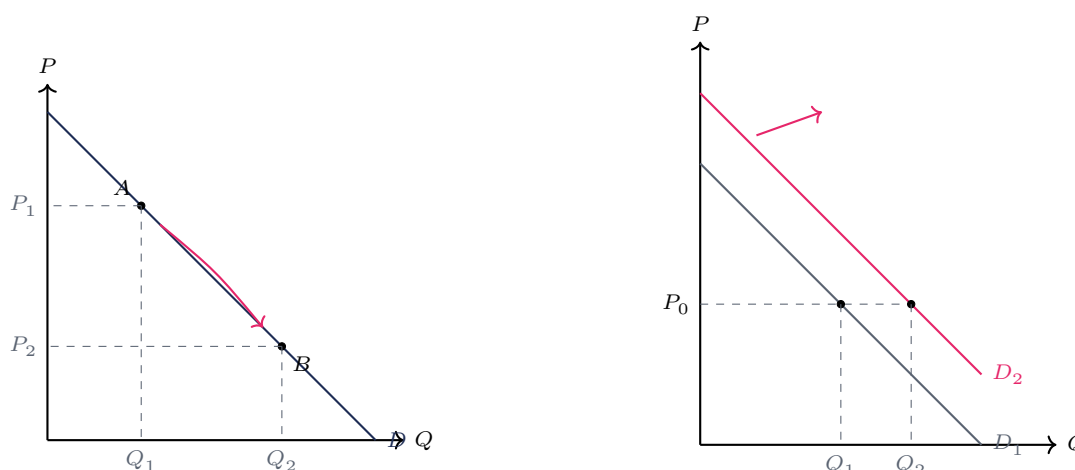
Bảy yếu tố phi giá quyết định cầu: **thu nhập** (hàng thông thường vs. hàng thứ cấp), **thị hiếu/xu hướng**, **giá hàng thay thế**, **giá hàng bổ sung**, **dân số/nhân khẩu học**, **quảng cáo**, và **kỳ vọng về giá tương lai**. Mỗi yếu tố này làm dịch chuyển toàn bộ đường cầu, khác với việc giá của chính hàng hoá đó thay đổi chỉ gây di chuyển dọc theo đường cầu.

3.1.4 Movement along the demand curve vs. a shift of the demand curve

This distinction is one of the most heavily tested ideas in introductory microeconomics, precisely because it is so easy to blur in an exam answer.

Movement vs. shift – demand

- A **change in quantity demanded** is a **movement along** a fixed demand curve, caused *only* by a change in the good's own price. Nothing about the curve itself changes; only the point on it changes.
- A **change in demand** is a **shift of the whole curve**, to a new position, caused by a change in *any* of the non-price determinants listed above (income, tastes, prices of related goods, population, advertising, expectations). At every possible price, a larger or smaller quantity is now demanded than before.



Panel A: price falls $P_1 \rightarrow P_2$, quantity demanded rises $Q_1 \rightarrow Q_2$ – a **movement along** the same curve D , from A to B .

Panel B: at the **same** price P_0 , a non-price determinant (e.g. a rise in income) shifts the entire curve right, from D_1 to D_2 , raising quantity demanded $Q_1 \rightarrow Q_2$ at every price.

Figure 3.1. Change in quantity demanded (movement along a fixed curve, Panel A) vs. change in demand (shift of the whole curve, Panel B).

GIẢI THÍCH TIẾNG VIỆT

VN

Sự thay đổi lượng cầu (change in quantity demanded) chỉ xảy ra khi **giá của chính hàng hoá đó thay đổi** – biểu diễn bằng việc **di chuyển dọc theo** một đường cầu cố định (Panel A). **Sự thay đổi cầu (change in demand)** xảy ra khi bất kỳ yếu tố phi giá nào thay đổi – biểu diễn bằng việc **toàn bộ đường cầu dịch chuyển** sang vị trí mới (Panel B). Đây là một trong những điểm học sinh dễ nhầm lẫn nhất khi làm bài thi.

(!) Lỗi thường gặp: Never write "demand increases" when a candidate really means "quantity demanded increases because price fell," and never draw a curve shifting when the only thing that changed is the good's own price. The safest habit: before writing anything, ask "did the price of *this* good change, or did something else change?" If it was the good's own price, describe a **movement along** the curve (from one point to another on the *same* curve). If it was anything else (income, tastes, price of a related good, etc.), describe a **shift of the whole curve** to a new position.

3.2 The Theory of Supply

3.2.1 The law of supply

Supply is the quantity of a good or service that firms are willing and able to produce and sell at a given price over a given period of time. The **law of supply** states that, *ceteris paribus*, the higher the price of a good, the higher the quantity supplied; the lower the price, the lower the quantity supplied. This gives the standard upward-sloping **supply curve**.

Why does the supply curve slope upward?

A higher price raises the profitability of producing and selling each extra unit, assuming costs do not rise proportionately. This gives firms an incentive to expand output – for example, by paying workers overtime, running machinery for extra shifts, or bringing in additional raw materials – and, if the higher price persists, it can also attract new firms into the market, since production has become more profitable relative to firms' other opportunities. A lower price has the opposite effect: producing becomes less profitable at the margin, so existing firms cut

back output and some firms may eventually leave the market altogether.

GIẢI THÍCH TIẾNG VIỆT

VN

Cung (supply) là lượng hàng hoá mà doanh nghiệp sẵn lòng và có khả năng sản xuất, bán ra tại một mức giá nhất định. **Quy luật cung:** giá càng cao, lượng cung càng lớn – vì giá cao hơn làm tăng lợi nhuận của việc sản xuất thêm, khuyến khích doanh nghiệp hiện tại mở rộng sản xuất và thu hút doanh nghiệp mới gia nhập thị trường.

3.2.2 Non-price determinants of supply

- **Costs of production / input prices:** a rise in the price of inputs (raw materials, wages, rent, energy) raises the cost of producing each unit, shifting supply *left* (decrease); a fall in input prices shifts supply *right*. For example, a rise in the price of steel raises production costs and shifts the supply curve of cars left.
- **Technology:** an improvement in production technology lowers the cost of producing each unit, shifting supply *right*. For example, automated assembly lines lower unit costs and shift the supply curve of cars right.
- **Number of firms in the market:** as new firms enter an industry, total market supply shifts right; as firms exit, market supply shifts left. For example, new firms entering the ride-hailing market increase total market supply of rides.
- **Taxes and subsidies:** an indirect (per-unit) tax on producers raises the effective cost of supplying each unit, shifting supply *left*; a government subsidy lowers the effective cost of supplying each unit, shifting supply *right*. For example, a specific tax on cigarettes shifts the supply curve of cigarettes left, while a subsidy paid to solar-panel manufacturers shifts their supply curve right.
- **Price of alternative goods a firm could produce instead:** if the price of an alternative product rises, firms have an incentive to divert resources away from this good towards the now more profitable alternative, shifting supply of the original good *left*. For example, a rise in the price of corn can draw farmland away from wheat, shifting the supply curve of wheat left.
- **Expectations of future prices:** if producers expect the price to rise in future, they may withhold some current output (e.g. store it) to sell later at the higher price, shifting current supply *left*; if they expect prices to fall, they have an incentive to sell as much as possible now, shifting current supply *right*. For example, oil producers who expect prices to rise next quarter may curb current output, shifting current supply left.
- **Weather and other natural factors (especially in agriculture):** favourable weather (good rainfall, no frost) raises harvest yields and shifts supply *right*; adverse weather (drought, flood, frost) reduces yields and shifts supply *left*. For example, a severe drought reduces the wheat harvest, shifting the supply curve of wheat left.

Determinant	Effect on the supply curve	Example
Costs of production/inputs	Input price $\uparrow$ shifts S left; input price $\downarrow$ shifts S right	Steel price $\uparrow$ shifts the supply curve of cars left
Technology	Improved technology shifts S right	Automated assembly lines shift car supply right
Number of firms	More firms shifts market S right; fewer firms shifts S left	New entrants raise total supply of ride-hailing trips
Taxes and subsidies	Tax shifts S left; subsidy shifts S right	A cigarette tax shifts S left; a solar subsidy shifts S right
Price of alternative goods	Alternative's price $\uparrow$ diverts resources away, shifting S of this good left	Corn price $\uparrow$ shifts wheat supply left (land switched to corn)
Expectations of future prices	Expect price $\uparrow$ shifts S left (withhold now); expect price $\downarrow$ shifts S right (sell now)	Oil producers expecting higher future prices cut current output
Weather/natural factors	Favourable weather shifts S right; adverse weather shifts S left	A drought shifts the supply curve of wheat left

Table 3.2. The seven non-price determinants of supply, their effect on the supply curve, and an example of each.

GIẢI THÍCH TIẾNG VIỆT

VN

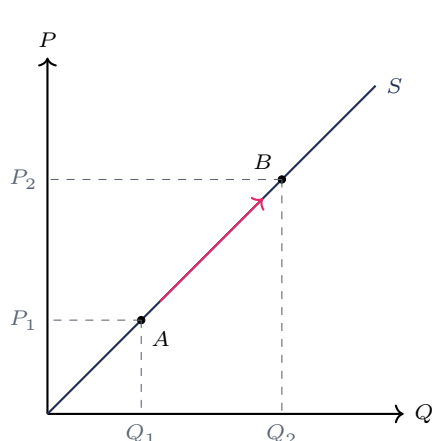
Bảy yếu tố phi giá quyết định cung: chi phí sản xuất/giá đầu vào, công nghệ, số lượng doanh nghiệp trong ngành, thuế và trợ cấp, giá của hàng hoá thay thế mà doanh nghiệp có thể sản xuất, kỳ vọng về giá tương lai, và yếu tố tự nhiên/thời tiết (đặc biệt quan trọng với nông nghiệp). Mỗi yếu tố này làm dịch chuyển toàn bộ đường cung.

3.2.3 Movement along the supply curve vs. a shift of the supply curve

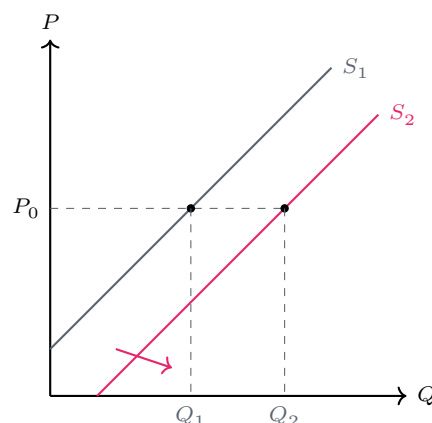
Exactly the same logic used for demand applies to supply.

Movement vs. shift – supply

- A **change in quantity supplied** is a **movement along** a fixed supply curve, caused *only* by a change in the good's own price.
- A **change in supply** is a **shift of the whole curve**, caused by a change in any non-price determinant of supply (costs, technology, number of firms, taxes/subsidies, price of alternatives, expectations, weather).



Panel A: price rises $P_1 \rightarrow P_2$, quantity supplied rises $Q_1 \rightarrow Q_2$
— a **movement along** the same curve S , from A to B .



Panel B: at the **same** price P_0 , a fall in costs shifts the entire curve right, from S_1 to S_2 , raising quantity supplied $Q_1 \rightarrow Q_2$ at every price.

Figure 3.2. Change in quantity supplied (movement along a fixed curve, Panel A) vs. change in supply (shift of the whole curve, Panel B).

GIẢI THÍCH TIẾNG VIỆT

VN

Giống với thị trường cầu: **sự thay đổi lượng cung** là di chuyển dọc theo một đường cung cố định, chỉ do giá của chính hàng hoá đó thay đổi (Panel A). **Sự thay đổi cung** là toàn bộ đường cung dịch chuyển sang vị trí mới, do bất kỳ yếu tố phi giá nào thay đổi (Panel B) — ví dụ chi phí sản xuất giảm khiến đường cung dịch chuyển sang phải, cung tăng ở mọi mức giá.

3.3 Market Equilibrium

3.3.1 Defining equilibrium

Market equilibrium occurs at the price where the quantity of a good that consumers wish to buy exactly equals the quantity that firms wish to sell — the point where the demand curve and the supply curve intersect. This price is called the **equilibrium price** (P_e), and the corresponding quantity is the **equilibrium quantity** (Q_e). At any other price, the market is not in equilibrium, and powerful forces push the price back towards P_e .

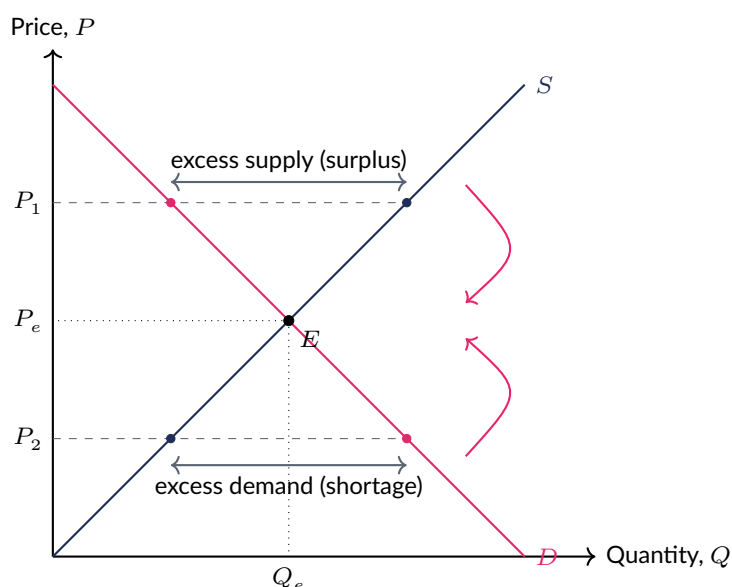


Figure 3.3. Market equilibrium at $E (P_e, Q_e)$. At $P_1 > P_e$, quantity supplied exceeds quantity demanded (surplus), pushing price down towards P_e . At $P_2 < P_e$, quantity demanded exceeds quantity supplied (shortage), pushing price up towards P_e .

3.3.2 The step-by-step adjustment process

Left alone, a competitive market is self-correcting. The process works as follows.

1. Suppose the price is temporarily above equilibrium, at P_1 (Figure 3.3). At this high price, firms are willing to supply a large quantity, but consumers are only willing to buy a smaller quantity – quantity supplied exceeds quantity demanded, creating **excess supply**, or a **surplus**.
2. Firms find themselves with unsold stock piling up. To clear it, individual firms have a strong incentive to cut their price.
3. As price falls, two things happen simultaneously: quantity demanded *expands* (a movement along D , as the good becomes more attractive to buyers) and quantity supplied *contracts* (a movement along S , as producing becomes less profitable at the margin).
4. This process – falling price, rising quantity demanded, falling quantity supplied – continues until the surplus is eliminated, which happens exactly at P_e , where quantity demanded once again equals quantity supplied.
5. The mirror-image process operates if price is temporarily below equilibrium, at P_2 . Here, quantity demanded exceeds quantity supplied, creating **excess demand**, or a **shortage**. Frustrated buyers unable to obtain the good compete with one another (e.g. by offering to pay more), bidding the price up. As price rises, quantity demanded contracts and quantity supplied expands, until the shortage is eliminated at P_e .

This automatic tendency of price to move towards the level that clears the market is often called the **price mechanism**.

GIẢI THÍCH TIẾNG VIỆT

VN

Cân bằng thị trường là mức giá mà lượng cầu đúng bằng lượng cung (E , tại P_e, Q_e). Nếu giá đang cao hơn P_e (ví dụ P_1), lượng cung vượt lượng cầu → **dư cung (surplus)** → doanh nghiệp tồn kho, buộc phải giảm giá → giá giảm dần về P_e . Nếu giá đang thấp hơn P_e (ví dụ P_2), lượng cầu vượt lượng cung → **dư cầu/thiếu hụt (shortage)** → người mua cạnh tranh nhau đẩy giá lên → giá tăng dần về P_e . Quá trình tự điều chỉnh này gọi là **cơ chế giá (price mechanism)**.

3.4 Simultaneous Shifts of Demand and Supply

3.4.1 Why simultaneous shifts matter

In the real world, demand and supply rarely stay still one at a time – a single event (or several events at once) can shift *both* curves simultaneously. When this happens, some conclusions about the new equilibrium can be stated with total confidence, while others cannot be determined without knowing the relative size of each shift.

Scenario	Change in D	Change in S	Effect on Q_e	Effect on P_e
(i)	Increase	Increase	Rises (certain)	Ambiguous – depends on relative size of the two shifts
(ii)	Increase	Decrease	Ambiguous – depends on relative size of the two shifts	Rises (certain)
(iii)	Decrease	Increase	Ambiguous – depends on relative size of the two shifts	Falls (certain)
(iv)	Decrease	Decrease	Falls (certain)	Ambiguous – depends on relative size of the two shifts

Table 3.3. Effects of simultaneous shifts of demand and supply on equilibrium price and quantity.

The underlying logic is simple: whenever D and S shift in the **same** direction, the quantity effect reinforces (both shifts push Q_e the same way), so quantity moves with certainty, but the two shifts pull price in **opposite** directions, so the price outcome depends on which shift is larger. Whenever D and S shift in **opposite** directions, the reverse holds: price moves with certainty, but the quantity outcome depends on which shift is larger.

Rule of thumb: if D and S shift the **same** way, Q_e 's direction is certain but P_e 's direction is ambiguous. If D and S shift in **opposite** ways, P_e 's direction is certain but Q_e 's direction is ambiguous. In every case, the exact new P_e and Q_e can only be pinned down precisely if the size (and slope) of each shift is known, e.g. from linear demand and supply equations.

Ví dụ mẫu · Worked example – Simultaneous shifts with linear equations

Initially, demand and supply for a good are given by $P = 100 - 2Q$ and $P = 10 + 3Q$. Rising incomes then increase demand to $P = 120 - 2Q$ (a normal good). At the same time, an increase in input costs decreases supply. Compare two possible supply responses: (A) a moderate cost rise, giving new supply $P = 25 + 3Q$; (B) a severe cost shock, giving new supply $P = 60 + 3Q$. Find the equilibrium in each case and comment on which parts of the outcome are certain.

Original equilibrium: $100 - 2Q = 10 + 3Q \Rightarrow 90 = 5Q \Rightarrow Q = 18$, $P = 100 - 2(18) = 100 - 36 = 64$ (check: $10 + 3(18) = 10 + 54 = 64$). So $Q_e = 18$, $P_e = 64$.

Scenario A (moderate cost rise): $120 - 2Q = 25 + 3Q \Rightarrow 95 = 5Q \Rightarrow Q = 19$, $P = 120 - 38 = 82$ (check: $25 + 3(19) = 25 + 57 = 82$). Compared with the original equilibrium, Q **rises** $18 \rightarrow 19$ and P **rises** $64 \rightarrow 82$.

Scenario B (severe cost shock): $120 - 2Q = 60 + 3Q \Rightarrow 60 = 5Q \Rightarrow Q = 12$, $P = 120 - 24 = 96$ (check: $60 + 3(12) = 60 + 36 = 96$). Compared with the original equilibrium, Q **falls** $18 \rightarrow 12$, while P still **rises** $64 \rightarrow 96$.

This is exactly the pattern predicted by scenario (ii) in Table 3.3 (demand up, supply down): in *both* scenarios A and B, price rises with total certainty, because both the demand increase and the supply decrease push price upward. But quantity is genuinely ambiguous: in Scenario A the demand increase dominates and Q rises slightly; in Scenario B the supply shock is severe enough that Q actually falls, despite the simultaneous rise in demand.

GIẢI THÍCH TIẾNG VIỆT

VN

Khi cầu và cung dịch chuyển **đồng thời**, một số kết luận chắc chắn, một số thì không. Nếu cầu

và cung dịch chuyển **cùng chiều** (cả hai tăng, hoặc cả hai giảm): **lượng cân bằng** thay đổi chắc chắn (theo chiều dịch chuyển chung), nhưng **giá cân bằng** thì không chắc chắn – phụ thuộc mức dịch chuyển nào lớn hơn. Nếu cầu và cung dịch chuyển **ngược chiều**: **giá cân bằng** thay đổi chắc chắn, còn **lượng cân bằng** thì không chắc chắn. Ví dụ trên cho thấy: cầu tăng + cung giảm luôn làm giá tăng chắc chắn, nhưng lượng có thể tăng nhẹ (cú sốc cung nhỏ) hoặc giảm (cú sốc cung lớn), tùy mức độ dịch chuyển tương đối.

3.5 Consumer and Producer Surplus

3.5.1 Definitions

Consumer surplus and producer surplus

Consumer surplus (CS) is the difference between the maximum price consumers are willing to pay for each unit of a good and the price they actually pay (the equilibrium price). Graphically, it is the area below the demand curve and above the equilibrium price line, from zero up to the equilibrium quantity. **Producer surplus (PS)** is the difference between the price producers actually receive and the minimum price at which they would have been willing to supply each unit. Graphically, it is the area above the supply curve and below the equilibrium price line, from zero up to the equilibrium quantity.

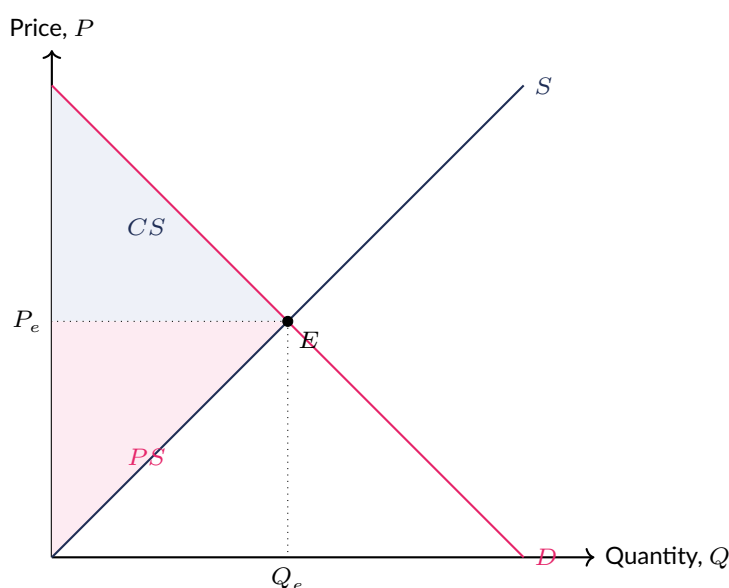


Figure 3.4. Consumer surplus (*CS*, shaded navy) and producer surplus (*PS*, shaded pink) at equilibrium. Together, $CS + PS$ is the total welfare (surplus) generated by the market.

Ví dụ mẫu · Worked example – Calculating consumer and producer surplus

Demand: $P = 40 - 2Q$. Supply: $P = 4 + 2Q$. Find the equilibrium and the consumer and producer surplus.

Equilibrium: $40 - 2Q = 4 + 2Q \Rightarrow 36 = 4Q \Rightarrow Q = 9, P = 40 - 18 = 22$.

$$CS = \frac{1}{2} \times Q \times (P_{\max} - P_e) = \frac{1}{2} \times 9 \times (40 - 22) = 81 \quad PS = \frac{1}{2} \times 9 \times (22 - 4) = 81$$

Ví dụ mẫu · Worked example – A second CS/PS calculation

Demand: $P = 50 - Q$. Supply: $P = 5 + 2Q$. Find the equilibrium, and the consumer and producer surplus.

Equilibrium: $50 - Q = 5 + 2Q \Rightarrow 45 = 3Q \Rightarrow Q = 15$, $P = 50 - 15 = 35$ (check: $5 + 2(15) = 5 + 30 = 35$).

$$CS = \frac{1}{2} \times 15 \times (50 - 35) = \frac{1}{2} \times 15 \times 15 = 112.5 \quad PS = \frac{1}{2} \times 15 \times (35 - 5) = \frac{1}{2} \times 15 \times 30 = 225$$

Notice that, because supply is steeper here than demand (the coefficient on Q is larger for supply), producer surplus (225) is substantially larger than consumer surplus (112.5) – the split between CS and PS depends on the relative slopes (steepness) of the two curves, not just on the equilibrium price and quantity.

GIẢI THÍCH TIẾNG VIỆT

VN

Thặng dư tiêu dùng (CS) là phần chênh lệch giữa mức giá tối đa người tiêu dùng sẵn lòng trả và mức giá họ thực sự phải trả – diện tích dưới đường cầu, trên đường giá cân bằng. **Thặng dư sản xuất (PS)** là phần chênh lệch giữa mức giá doanh nghiệp thực nhận và mức giá tối thiểu họ sẵn lòng bán – diện tích trên đường cung, dưới đường giá cân bằng. Công thức tam giác: $CS = \frac{1}{2} \times Q_e \times (P_{\max} - P_e)$; $PS = \frac{1}{2} \times Q_e \times (P_e - P_{\min})$.

(!) Lỗi thường gặp: Do not confuse **consumer surplus** with **total revenue (or total consumer expenditure)**. Total revenue/expenditure is $TR = P_e \times Q_e$ – the *rectangle* formed by the equilibrium price and quantity, representing money that actually changes hands. Consumer surplus is the separate *triangle* above the price line and below the demand curve, representing the extra benefit consumers receive beyond what they actually had to pay. A rise in $P_e \times Q_e$ (total revenue) does not automatically mean consumer surplus has risen – indeed, in the worked example above, if supply shifted so that P_e rose while Q_e fell only slightly, total revenue could rise even as consumer surplus falls.

3.5.2 Recalculating surplus after a shift: a fall in production costs

Shifts in demand or supply move the equilibrium, and both consumer and producer surplus must be recalculated at the new equilibrium – they are not fixed amounts.

Ví dụ mẫu · Worked example – Surplus after a supply increase caused by a cost fall

Return to the market in the first worked example: demand $P = 40 - 2Q$, initial supply $P = 4 + 2Q$ (equilibrium $Q = 9$, $P = 22$, $CS = 81$, $PS = 81$). A new production technology now eliminates most of the minimum cost of supplying the good, so the supply curve becomes $P = 2Q$ (i.e. the vertical intercept falls from 4 to 0). Find the new equilibrium and the new CS and PS , and comment on the change.

New equilibrium: $40 - 2Q = 2Q \Rightarrow 40 = 4Q \Rightarrow Q = 10$, $P = 20$ (check: $2(10) = 20$).

$$CS' = \frac{1}{2} \times 10 \times (40 - 20) = 100 \quad PS' = \frac{1}{2} \times 10 \times (20 - 0) = 100$$

Comment: quantity rises $9 \rightarrow 10$ and price *falls* $22 \rightarrow 20$ – exactly as expected for a rightward shift of supply along an unchanged demand curve. Consumer surplus **rises** $81 \rightarrow 100$, which makes sense since consumers now buy more at a lower price. More strikingly, producer surplus **also rises** $81 \rightarrow 100$, even though the price producers receive has fallen: the cost fall means producers now earn a bigger margin over their (lower) minimum acceptable price on a

larger quantity sold, more than compensating for the lower price. This shows that a genuine efficiency gain (lower production costs) can raise total welfare ($CS + PS$ rises from 162 to 200) and benefit *both* sides of the market simultaneously, unlike a pure shift in demand which typically benefits one side more than the other.

GIẢI THÍCH TIẾNG VIỆT

VN

Khi đường cung hoặc đường cầu dịch chuyển, điểm cân bằng thay đổi, và cả **CS** lẫn **PS** đều phải được **tính lại** tại điểm cân bằng mới – chúng không phải là con số cố định. Ví dụ trên cho thấy: khi chi phí sản xuất giảm (cung dịch phải), giá cân bằng giảm nhưng lượng cân bằng tăng, và điều thú vị là **cả CS lẫn PS đều tăng** – vì lượng bán tăng nhiều và chi phí tối thiểu giảm mạnh hơn mức giá giảm, nên tổng phúc lợi xã hội ($CS + PS$) tăng lên.

3.6 The Price Mechanism as a Resource-Allocation Tool

3.6.1 Applying the model: a poor rice harvest

Consider the market for rice in a country where rice is a staple food. Suppose unusually poor weather (e.g. insufficient rainfall during the growing season) sharply reduces the rice harvest. Because weather is one of the non-price determinants of agricultural supply, this event shifts the whole supply curve of rice *left*: at every possible price, farmers now have less rice available to sell than before. At the original market price, the quantity of rice now supplied falls short of the quantity demanded, creating a shortage.

Following exactly the adjustment process set out in Section 3.3, this shortage cannot persist: with insufficient rice to go around at the old price, buyers who cannot obtain rice are willing to pay more rather than go without, bidding the price of rice upward. As price rises, two things happen at once: the quantity of rice demanded contracts (a movement along the unchanged demand curve, as some buyers economise on rice or switch towards substitutes such as noodles or other grains) and the quantity of rice supplied expands somewhat relative to the reduced harvest level (a movement along the new, leftward-shifted supply curve, as farmers who do have rice available are drawn out by the higher price). The market eventually settles at a new equilibrium with a **higher price** and a **lower quantity** of rice traded than before the poor harvest. This is the price mechanism performing its central function: rationing a suddenly scarcer good among competing buyers, without the need for any government administrator to decide who receives rice and who does not – the higher price itself allocates the smaller available quantity to those buyers most willing (and able) to pay for it.

Now contrast this with a market where both demand and supply shift favourably at once – for example, the market for smartphones, where a fall in the cost of key components (e.g. memory chips, camera sensors) shifts the supply curve right at the same time as rising household incomes shift the demand curve right (smartphones being a normal good for most consumers). This is exactly scenario (i) from Table 3.3: because both curves shift the same way, the equilibrium **quantity** of smartphones bought and sold rises with total certainty, but the equilibrium **price** is genuinely ambiguous – it could rise, fall, or stay much the same, depending on whether the cost fall (pushing price down) or the income rise (pushing price up) has the larger effect. In practice, technology markets have often seen prices for a given specification of device fall over time even as sales volumes rise, suggesting that in many real product categories the cost-reducing (supply) effect has tended to dominate the income-driven (demand) effect – though this is an empirical question that must be checked market by market, not something the theory alone can determine.

GIẢI THÍCH TIẾNG VIỆT

VN

Cơ chế giá phân bổ nguồn lực khan hiếm mà không cần chính phủ can thiệp. Ví dụ mất mùa lúa: cung dịch trái → dư cầu tại giá cũ → giá tăng → lượng cầu co lại, lượng cung giãn ra dọc

đường cung mới → cân bằng mới với **giá cao hơn, lượng thấp hơn**. Ví dụ điện thoại thông minh: cả cầu và cung đều tăng (chi phí linh kiện giảm + thu nhập tăng) → **lượng chắc chắn tăng, còn giá thì không chắc chắn** – tùy hiệu ứng nào (giảm chi phí hay tăng thu nhập) mạnh hơn.

3.6.2 [A2 extension] Interconnected markets: derived demand, composite demand, and joint supply

Markets are rarely fully isolated from one another; the theory above extends naturally to cases where one market's equilibrium depends directly on another's.

- **Derived demand:** the demand for an input used to produce a final good is *derived from*, and moves together with, the demand for that final good. For example, a rise in demand for cars raises demand for the tyres, steel, and glass used to build them; if demand for cars later falls, demand for tyres falls with it, even though nothing in the tyre market itself has changed.
- **Composite demand:** a good is subject to composite demand when it is demanded for two or more different uses, so that an increase in the quantity used for one purpose reduces the quantity available for other purposes at any given price. For example, land can be demanded both for housing and for farming; more land allocated to new housing developments leaves less available for agriculture at the same price.
- **Joint supply:** two or more goods are in joint supply when producing one automatically produces the other as a by-product of the same production process, so that an increase in demand for one tends to increase the supply of the other. For example, cattle farmed for beef also yield hides used to produce leather; a rise in demand for beef leads to more cattle being reared and slaughtered, which increases the supply of leather as a by-product, even though nothing in the leather market itself changed directly.

GIẢI THÍCH TIẾNG VIỆT

VN

[Mở rộng A2] **Cầu phái sinh (derived demand):** cầu đối với một yếu tố đầu vào bắt nguồn từ cầu đối với sản phẩm cuối cùng (VD: cầu ô tô tăng → cầu lốp xe tăng theo). **Cầu kết hợp (composite demand):** một hàng hoá được dùng cho nhiều mục đích khác nhau, dùng nhiều cho mục đích này thì còn lại ít hơn cho mục đích khác (VD: đất đai dùng cho nhà ở và nông nghiệp). **Cung liên kết (joint supply):** hai hàng hoá được sản xuất cùng nhau từ một quy trình, nên cầu hàng này tăng kéo theo cung hàng kia tăng (VD: bò nuôi lấy thịt cũng tạo ra da làm nguyên liệu da thuộc).

3.7 Practice Questions

Bài tập luyện tập

A fall in the price of butter (a complement to bread) is most likely to cause which of the following in the market for bread?

- | | |
|--|--|
| (A) A movement down along the bread demand curve | (C) A leftward shift of the bread demand curve |
| (B) A rightward shift of the bread demand curve | (D) A movement up along the bread supply curve |

Lời giải chi tiết

(B). Butter is a complement to bread, so a fall in butter's price is a non-price determinant of demand for bread. It shifts the whole demand curve for bread *right* (demand increases at every price), rather than causing any movement along the bread demand curve, since the price of bread itself has not changed.

Bài tập luyện tập

Which of the following would cause a movement along (rather than a shift of) the supply curve for wheat?

- | | |
|--|--|
| (A) A drought reducing crop yields | (C) A new subsidy for wheat farmers |
| (B) A rise in the market price of wheat itself | (D) A rise in the price of corn, an alternative crop |

Lời giải chi tiết

(B). Only a change in the good's own price (here, wheat) causes a movement along a fixed supply curve. Options (A), (C), and (D) are all non-price determinants of supply (weather, subsidy, price of an alternative crop) and would instead shift the whole supply curve.

Bài tập luyện tập

Classify each event below as: (a) a movement along the demand curve, (b) a shift of the demand curve, (c) a movement along the supply curve, or (d) a shift of the supply curve, for the market for cigarettes.

- (i) The government imposes a new tax on cigarette producers.
- (ii) A rise in the price of cigarettes reduces the quantity of cigarettes bought.
- (iii) A successful anti-smoking advertising campaign reduces demand for cigarettes at every price.
- (iv) A rise in the price of tobacco leaf increases the cost of producing cigarettes.
- (v) A fall in the price of cigarettes increases the quantity supplied by producers.
- (vi) A rise in consumer income increases demand for premium cigars (a normal good) at every price.

Lời giải chi tiết

- (i) Shift of supply (left) – a tax raises producers' costs, a non-price determinant of supply.
- (ii) Movement along demand – caused only by the good's own price changing.
- (iii) Shift of demand (left) – advertising/tastes is a non-price determinant of demand.
- (iv) Shift of supply (left) – a rise in an input price raises costs of production, a non-price determinant of supply.
- (v) Movement along supply – caused only by the good's own price changing.
- (vi) Shift of demand (right) – income is a non-price determinant of demand.

Bài tập luyện tập

A technological breakthrough lowers the cost of manufacturing solar panels. Holding demand constant, this is most likely to cause:

- (A) Supply shifts right; equilibrium price falls; equilibrium quantity rises (C) Demand shifts right; equilibrium price and quantity both rise
(B) Supply shifts left; equilibrium price rises; equilibrium quantity falls (D) A movement along the supply curve only, with no change in equilibrium

Lời giải chi tiết

(A). Technology is a non-price determinant of supply. Lower production costs shift the whole supply curve right (more supplied at every price). With demand unchanged, the new intersection of D and the new S occurs at a lower equilibrium price and a higher equilibrium quantity.

Bài tập luyện tập

Using the concepts of the income effect and the substitution effect, explain why a fall in the price of chicken is likely to increase the quantity of chicken demanded.

Lời giải chi tiết

Substitution effect: chicken becomes relatively cheaper than substitutes such as beef, so some consumers switch away from beef towards chicken, directly raising the quantity of chicken demanded. **Income effect:** consumers who keep buying the same amount of chicken as before now spend less money doing so, which raises their real purchasing power; some of this extra real income is likely to be spent on buying more chicken (and/or more of other goods). Because both effects act in the same direction for a normal good like chicken, the fall in price raises the quantity of chicken demanded, consistent with the law of demand.

Bài tập luyện tập

The demand and supply for a good are given by $P = 80 - 4Q$ and $P = 20 + 2Q$. Calculate the equilibrium price and quantity.

Lời giải chi tiết

Set demand equal to supply: $80 - 4Q = 20 + 2Q \Rightarrow 60 = 6Q \Rightarrow Q = 10$. Substituting back: $P = 80 - 4(10) = 80 - 40 = 40$ (check: $20 + 2(10) = 20 + 20 = 40$). Equilibrium: $Q_e = 10$, $P_e = 40$.

Bài tập luyện tập

The demand and supply for a good are given by $P = 60 - 3Q$ and $P = 12 + 3Q$. (a) Find the initial equilibrium. (b) A fall in production costs reduces the vertical intercept of supply to $P = 6 + 3Q$. Find the new equilibrium and describe the change in price and quantity.

Lời giải chi tiết

(a) $60 - 3Q = 12 + 3Q \Rightarrow 48 = 6Q \Rightarrow Q = 8$, $P = 60 - 24 = 36$ (check: $12 + 3(8) = 12 + 24 = 36$). Initial equilibrium: $Q_e = 8$, $P_e = 36$.

(b) New equilibrium: $60 - 3Q = 6 + 3Q \Rightarrow 54 = 6Q \Rightarrow Q = 9$, $P = 60 - 27 = 33$ (check: $6 + 3(9) = 6 + 27 = 33$). Quantity **ris**es from 8 to 9 and price **falls** from 36 to 33 – exactly as expected for a rightward shift of supply (lower costs) along an unchanged demand curve.

Bài tập luyện tập

Demand and supply in a market are given in quantity form: $Q_d = 200 - 5P$ and $Q_s = 50 + 5P$. Find the equilibrium price and quantity.

Lời giải chi tiết

Set $Q_d = Q_s$: $200 - 5P = 50 + 5P \Rightarrow 150 = 10P \Rightarrow P = 15$. Substituting back: $Q = 200 - 5(15) = 200 - 75 = 125$ (check: $Q_s = 50 + 5(15) = 50 + 75 = 125$). Equilibrium: $P_e = 15$, $Q_e = 125$.

Bài tập luyện tập

Demand: $P = 90 - 3Q$. Supply: $P = 10 + 2Q$. Find the equilibrium price and quantity, and calculate consumer surplus and producer surplus.

Lời giải chi tiết

Equilibrium: $90 - 3Q = 10 + 2Q \Rightarrow 80 = 5Q \Rightarrow Q = 16$, $P = 90 - 48 = 42$ (check: $10 + 2(16) = 10 + 32 = 42$).

$$CS = \frac{1}{2} \times 16 \times (90 - 42) = \frac{1}{2} \times 16 \times 48 = 384 \quad PS = \frac{1}{2} \times 16 \times (42 - 10) = \frac{1}{2} \times 16 \times 32 = 256$$

Bài tập luyện tập

Using the same demand and supply as the previous question ($P = 90 - 3Q$ and $P = 10 + 2Q$), suppose a rise in income increases demand to $P = 110 - 3Q$, with supply unchanged. Find the new equilibrium, the new consumer and producer surplus, and comment on how each has changed.

Lời giải chi tiết

New equilibrium: $110 - 3Q = 10 + 2Q \Rightarrow 100 = 5Q \Rightarrow Q = 20$, $P = 110 - 60 = 50$ (check: $10 + 2(20) = 10 + 40 = 50$).

$$CS' = \frac{1}{2} \times 20 \times (110 - 50) = \frac{1}{2} \times 20 \times 60 = 600 \quad PS' = \frac{1}{2} \times 20 \times (50 - 10) = \frac{1}{2} \times 20 \times 40 = 400$$

Compared with the original equilibrium ($Q = 16$, $P = 42$, $CS = 384$, $PS = 256$), both price and quantity have risen, and **both** consumer surplus ($384 \rightarrow 600$) and producer surplus ($256 \rightarrow 400$) have risen. This is the typical outcome of a pure demand increase (supply unchanged): both buyers and sellers can end up better off, because a much larger quantity is now traded even though buyers pay a higher price per unit.

Bài tập luyện tập

Consumer surplus differs from total revenue (total consumer expenditure) because:

- (A) CS is the area below the demand curve and above the price line, representing benefit beyond the price paid, while $TR = P \times Q$ is total spending
- (B) They are always numerically equal at equilibrium
- (C) TR is always larger than CS in every possible market
- (D) CS includes the producer's costs of production

Lời giải chi tiết

(A). Consumer surplus is the triangular area representing the extra benefit consumers receive over and above what they actually pay; total revenue/expenditure ($P_e \times Q_e$) is the rectangular area representing the amount of money that actually changes hands. The two measure different things and are not generally equal, nor is either always larger than the other.

Bài tập luyện tập

Both demand and supply for tablet computers increase (shift right) at the same time, following a rise in household incomes and a fall in the cost of memory chips. What can be said with certainty about the equilibrium quantity and the equilibrium price of tablets?

Lời giải chi tiết

This matches scenario (i) in Table 3.3: both curves shift the same way (right). The equilibrium **quantity certainly rises**, since both the demand increase and the supply increase independently push quantity up. The equilibrium **price is ambiguous** – it could rise, fall, or stay roughly the same – because the demand increase pushes price up while the supply increase pushes price down, and which effect dominates depends on the relative size of the two shifts (and the slopes of the two curves), which we are not told.

Bài tập luyện tập

Demand for beef falls due to rising health concerns, while at the same time supply of beef increases due to improved farming technology. What can be said with certainty about the equilibrium price and quantity of beef?

Lời giải chi tiết

This matches scenario (iii) in Table 3.3: demand decreases while supply increases (opposite directions). The equilibrium **price certainly falls**, since both the demand decrease and the supply increase independently push price down. The equilibrium **quantity is ambiguous** – the demand decrease pushes quantity down while the supply increase pushes quantity up, so the net effect on quantity depends on which shift is larger, which cannot be determined from the information given.

Bài tập luyện tập

Data response. A severe frost destroys a large share of Brazil's coffee crop; Brazil is the world's largest coffee producer. (a) Identify which curve in the world coffee market shifts, and in which direction. (b) Explain, step by step, the effect on the equilibrium price and quantity of coffee. (c) Comment on whether consumer expenditure on coffee is certain to rise or fall.

Lời giải chi tiết

(a) The supply curve for coffee shifts **left** (decreases). The frost is a natural/weather-related determinant of supply (it reduces the harvest), not a change in the price of coffee itself, so this is a shift of the whole curve, not a movement along it. Demand is unaffected in the short run.

(b) At the original equilibrium price, the reduced harvest means quantity supplied now falls short of quantity demanded, creating a shortage (excess demand). Buyers unable to obtain as much coffee as they want bid the price upward. As price rises, quantity demanded contracts (a movement along the unchanged demand curve, e.g. some drinkers switch to tea) while quantity supplied expands somewhat relative to the frost-reduced harvest (a movement along the new, leftward-shifted supply curve, as the higher price draws out whatever coffee remains available). The market settles at a new equilibrium with a **higher price** and a **lower quantity** traded than before the frost.

(c) Consumer expenditure is $TR = P_e \times Q_e$. Since P_e rises and Q_e falls, the direction of total expenditure is **not certain from demand and supply analysis alone** – it depends on the proportionate size of the price rise relative to the proportionate fall in quantity (in more advanced terms, on the price elasticity of demand for coffee), which this simple model does not by itself determine.

Bài tập luyện tập

Essay outline. "Discuss the likely effects on the market for electric vehicles of (i) rising household incomes and (ii) a simultaneous fall in the cost of vehicle batteries." Outline the key points a full answer should cover.

Lời giải chi tiết

A complete answer should: (1) identify electric vehicles as a normal good, so rising incomes shift the **demand** curve right; (2) identify falling battery costs as a fall in a major input cost, shifting the **supply** curve right; (3) note that this is scenario (i) from Table 3.3 – both curves shift the same way – so the equilibrium **quantity of electric vehicles sold rises with certainty**; (4) explain that the equilibrium **price is ambiguous**, since the income effect pushes price up while the falling battery cost pushes price down, and the outcome depends on the relative size of the two shifts; (5) ideally illustrate both possibilities with a simple diagram or numerical example (as in Section 3.4's worked example) showing price rising in one case and falling in another, while quantity rises in both; (6) conclude that only the direction of the quantity change can be stated with confidence without further information (e.g. relative shift sizes or elasticities).

Bài tập luyện tập

An increase in the number of firms producing electric scooters would shift the supply curve for electric scooters:

- | | |
|-----------|---|
| (A) Left | (C) It causes a movement along the supply curve only, not a shift |
| (B) Right | (D) There is no effect on the supply curve |

Lời giải chi tiết

(B). The number of firms in a market is a non-price determinant of supply. More firms producing and selling electric scooters means a greater total quantity is offered for sale at every price,

shifting the whole market supply curve **right**.

Bài tập luyện tập

Explain, using the concept of joint supply, why a rise in the demand for beef is likely to increase the supply of leather.

Lời giải chi tiết

Beef and leather (from cattle hides) are produced in **joint supply**: both come from the same underlying production process (rearing and slaughtering cattle). A rise in demand for beef raises the price of beef and encourages farmers to raise and slaughter more cattle. Because each slaughtered animal simultaneously yields a hide as a by-product, the greater number of cattle processed for beef automatically increases the quantity of hides – and hence the supply of leather – available at every price, shifting the leather supply curve right, even though nothing changed directly in the market for leather itself.

Bài tập luyện tập

Distinguish between composite demand and joint supply, giving one example of each (other than the examples used in Section 3.6).

Lời giải chi tiết

Composite demand occurs when a single good is demanded for two or more different, competing purposes, so that using more of it for one purpose leaves less available for other purposes at a given price – for example, milk is demanded both for direct drinking and as an input for making cheese; a rise in demand for cheese-making can reduce the quantity of milk available for direct consumption at the same price. **Joint supply** occurs when producing one good automatically produces another as a by-product of the same process – for example, refining crude oil simultaneously produces both petrol and diesel; an increase in demand for petrol leads refineries to process more crude oil, automatically increasing the supply of diesel as well.

Bài tập luyện tập

Demand: $P = 48 - 2Q$. Supply: $P = 6 + Q$. (a) Find the initial equilibrium. (b) A specific (per-unit) tax of 3 raises the supply curve to $P = 9 + Q$. Find the new equilibrium and describe the change in price and quantity.

Lời giải chi tiết

(a) $48 - 2Q = 6 + Q \Rightarrow 42 = 3Q \Rightarrow Q = 14$, $P = 48 - 28 = 20$ (check: $6 + 14 = 20$). Initial equilibrium: $Q_e = 14$, $P_e = 20$.

(b) New equilibrium: $48 - 2Q = 9 + Q \Rightarrow 39 = 3Q \Rightarrow Q = 13$, $P = 48 - 26 = 22$ (check: $9 + 13 = 22$). Quantity **falls** from 14 to 13 and price **rises** from 20 to 22 – consistent with a leftward shift of supply caused by the tax (a non-price determinant of supply that raises firms' effective costs).

Bài tập luyện tập

A parallel leftward shift of the demand curve, with the supply curve unchanged, will cause:

- (A) Equilibrium price and quantity both fall (C) Equilibrium price falls, quantity rises
(B) Equilibrium price rises, quantity falls (D) No change in equilibrium price or quantity

Lời giải chi tiết

(A). A leftward shift of demand means less is demanded at every price. With supply unchanged, the new intersection of D and S occurs at both a lower equilibrium price and a lower equilibrium quantity than before.

Bài tập luyện tập

For each scenario in the market for shoes, state whether it is a demand-side or a supply-side determinant, and the likely direction of the shift.

- (i) A rise in the wage paid to factory workers who make shoes.
(ii) A worldwide surge in the popularity of a shoe brand following a celebrity endorsement.
(iii) A new, faster manufacturing technique for making shoes.
(iv) A rise in national income, given shoes are a normal good.

Lời giải chi tiết

- (i) Supply-side (input/cost determinant) – higher wages raise production costs, shifting supply **left**.
(ii) Demand-side (tastes/fashion determinant) – greater popularity shifts demand **right**.
(iii) Supply-side (technology determinant) – a faster technique lowers costs, shifting supply **right**.
(iv) Demand-side (income determinant) – for a normal good, higher income shifts demand **right**.

Bài tập luyện tập

Demand: $P = 70 - 2Q$. Supply: $P = 10 + 3Q$. Find the equilibrium price and quantity, and calculate consumer surplus and producer surplus.

Lời giải chi tiết

Equilibrium: $70 - 2Q = 10 + 3Q \Rightarrow 60 = 5Q \Rightarrow Q = 12$, $P = 70 - 24 = 46$ (check: $10 + 3(12) = 10 + 36 = 46$).

$$CS = \frac{1}{2} \times 12 \times (70 - 46) = \frac{1}{2} \times 12 \times 24 = 144 \quad PS = \frac{1}{2} \times 12 \times (46 - 10) = \frac{1}{2} \times 12 \times 36 = 216$$

Bài tập luyện tập

Demand and supply are initially $P = 90 - Q$ and $P = 10 + Q$. A recession then reduces demand to $P = 70 - Q$, while a new tax simultaneously reduces supply (in the sense of raising the price needed to supply any given quantity) to $P = 30 + Q$. Find the initial and new equilibria, and comment on which parts of the outcome were certain in advance and which were not.

Lời giải chi tiết

Initial equilibrium: $90 - Q = 10 + Q \Rightarrow 80 = 2Q \Rightarrow Q = 40$, $P = 90 - 40 = 50$ (check: $10 + 40 = 50$).

New equilibrium: $70 - Q = 30 + Q \Rightarrow 40 = 2Q \Rightarrow Q = 20$, $P = 70 - 20 = 50$ (check: $30 + 20 = 50$).

This is scenario (iv) in Table 3.3: both demand and supply decrease (shift left). Quantity **falls with certainty** (from 40 to 20), consistent with both shifts pushing quantity down. Price, however, was **not certain in advance** – here it happens to stay exactly unchanged at 50, because the demand decrease (which alone would push price down) and the supply decrease (which alone would push price up) exactly offset each other in this particular numerical case. A different relative size of shift could instead have produced a rise or a fall in price; only the fall in quantity could have been predicted with confidence beforehand.

Bài tập luyện tập

Data response / essay. Discuss the likely economic effects of a severe drought on the market for rice, using demand and supply analysis. Your answer should refer to the equilibrium price, the equilibrium quantity, and the concepts of consumer and producer surplus.

Lời giải chi tiết

A strong answer should cover: (1) identify the drought as a natural/weather-related, non-price determinant of **supply**, shifting the whole rice supply curve **left** (less rice available at every price), with demand unaffected in the short run; (2) explain the adjustment process – at the old price, quantity supplied now falls short of quantity demanded, creating a shortage, which bids the price up until a new equilibrium is reached with a **higher price** and a **lower quantity** traded; (3) discuss consumer surplus – with a smaller quantity traded at a higher price, consumer surplus falls (both a smaller triangle base and a smaller gap between the demand curve and the new, higher price contribute to this); (4) discuss producer surplus – this is genuinely ambiguous: farmers who still have rice to sell benefit from the much higher price on each unit, but the total quantity they have available to sell has fallen due to the drought itself, so overall producer surplus could rise or fall depending on how much of the harvest was lost relative to how much the price rises; (5) note the human/welfare implication that a staple food becoming scarcer and more expensive falls hardest on low-income households, even though the price mechanism is functioning “correctly” in a narrow economic-efficiency sense by rationing the reduced harvest among buyers.

Bài tập luyện tập

If both the demand curve and the supply curve for a good shift left by an identical horizontal amount, and both curves have exactly the same slope, what happens to the equilibrium quantity and the equilibrium price?

- | | |
|--|--|
| (A) Quantity falls with certainty; price is unaffected | (C) Quantity is unaffected; price falls with certainty |
| (B) Quantity falls with certainty; price rises | (D) Both quantity and price are unaffected |

Lời giải chi tiết

(A). This is a special case of scenario (iv) in Table 3.3 (both D and S decrease). Quantity falls with certainty, since both shifts push quantity down. Because the two shifts are of identical horizontal size and the two curves have matching slopes, the downward pull on price from the demand decrease and the upward pull on price from the supply decrease exactly cancel out, leaving the equilibrium price unchanged – exactly as illustrated numerically in an earlier question in this section, where price stayed at 50 both before and after the simultaneous decrease in demand and supply.

Costs, Revenue and the Theory of the Firm

Mục tiêu Unit: Sản xuất trong ngắn hạn và quy luật hiệu suất cận biên giảm dần (TP, AP, MP); chi phí ngắn hạn (TFC, TVC, TC, AFC, AVC, ATC, MC) và hình dạng chữ U; quyết định đóng cửa sản xuất trong ngắn hạn (điểm đóng cửa và điểm hoà vốn); chi phí dài hạn, lợi thế và bất lợi kinh tế theo quy mô (nội bộ và bên ngoài), đường LRAC và quy mô sản xuất tối thiểu hiệu quả (MES); doanh thu (TR, AR, MR) trong thị trường cạnh tranh hoàn hảo và thị trường có đường cầu dốc xuống; mục tiêu tối đa hoá lợi nhuận ($MR=MC$) và các mục tiêu thay thế (tối đa hoá doanh thu, tăng trưởng, thoả mãn, vấn đề uỷ quyền-tác nghiệp); tăng trưởng doanh nghiệp qua sáp nhập/mua lại (theo chiều ngang, chiều dọc, đa ngành).

[A2 extension] This unit moves from the AS-level treatment of demand and supply into the theory of the firm proper, examined at **A2**. It builds a rigorous, calculus-consistent account of how costs behave in the short run and the long run, how revenue behaves under different market structures, and how firms actually decide how much to produce – including cases where firms deviate from the textbook assumption of strict profit maximisation. Every diagram in this unit (the cost curves, the revenue curves, the long-run envelope) recurs constantly in the market structure units that follow, so mastering the underlying logic here – not just memorising the shapes – pays off repeatedly later.

4.1 Short-run production and the law of diminishing marginal returns

4.1.1 Total, average and marginal product

The **short run** is defined as the period of time in which at least one factor of production is fixed (conventionally capital – the size of the factory, the number of machines) while at least one factor is variable (conventionally labour). Because capital is fixed, a firm can only change output in the short run by changing the quantity of the variable factor employed.

Three related concepts describe the output generated by the variable factor:

- **Total product (TP):** the total output produced by a given quantity of the variable factor, combined with the fixed quantity of the other factor(s).
- **Average product (AP):** output per unit of the variable factor, $AP = \frac{TP}{L}$ (where L is the quantity of the variable factor, typically labour).
- **Marginal product (MP):** the extra output produced by employing one additional unit of the variable factor, $MP = \frac{\Delta TP}{\Delta L}$.

Law of diminishing marginal returns: as successive units of a variable factor are added to a fixed factor, marginal product initially rises (increasing marginal returns, due to greater specialisation and division of labour), but beyond some point marginal product falls (diminishing marginal returns, because each additional worker has less and less of the fixed factor to work with). If enough of the variable factor is added, marginal product can eventually turn negative (workers get in each other's way and total product actually falls).

GIẢI THÍCH TIẾNG VIỆT

VN

Ngắn hạn (short run) là khoảng thời gian mà ít nhất một yếu tố sản xuất bị cố định (thường là vốn/tư bản), trong khi ít nhất một yếu tố có thể thay đổi (thường là lao động). **Tổng sản phẩm (TP)** là tổng sản lượng; **sản phẩm bình quân (AP)** = TP chia cho số đơn vị yếu tố biến đổi; **sản phẩm cận biên (MP)** là sản lượng tăng thêm khi dùng thêm một đơn vị yếu tố biến đổi. **Quy luật hiệu suất cận biên giảm dần**: khi thêm ngày càng nhiều lao động vào một lượng vốn cố định, MP sẽ tăng lúc đầu (do chuyên môn hoá), rồi giảm dần, và có thể trở thành âm nếu thêm quá nhiều lao động.

4.1.2 A numerical illustration

Consider a small workshop with a **fixed** quantity of capital (say, 4 identical machines) and a **variable** number of workers (L). Table 4.1 shows a plausible pattern of total, average and marginal product as workers are added one at a time.

Workers (L)	0	1	2	3	4	5	6	7	8
Total product (TP)	0	8	20	35	52	65	74	80	80
Marginal product (MP)	-	8	12	15	17	13	9	6	0
Average product (AP)	-	8.00	10.00	11.67	13.00	13.00	12.33	11.43	10.00

Workers ($L = 9$)

$TP = 76$, $MP = 76 - 80 = -4$, $AP = 76/9 = 8.44$ (9th worker actually reduces total product)

table 4.1 - Total, marginal and average product as workers are added to a fixed quantity of capital.

Reading the table row by row: from $L = 1$ to $L = 4$, MP **rises** (8, 12, 15, 17) – this is the phase of **increasing marginal returns**, as workers begin to specialise and cooperate more effectively. From $L = 5$ onward, MP **falls** (13, 9, 6, 0) while remaining positive – **diminishing marginal returns** have set in, because each additional worker now has a shrinking share of the fixed 4 machines to work with. At $L = 8$, $MP = 0$ exactly: the 8th worker adds nothing, and TP is at its maximum (80). A 9th worker would actually cause MP to turn **negative** (TP falls to 76) – workers now get in each other's way (overcrowding, queuing for machines), a phase sometimes called negative marginal returns.

Notice also that AP rises as long as $MP > AP$ (each new worker pulls the average up), reaches its maximum exactly where $MP = AP$ (at $L = 5$, both equal 13), and then falls once $MP < AP$ (each new worker pulls the average down). This is a general mathematical relationship between any marginal and average magnitude, not a coincidence of this particular table.

GIẢI THÍCH TIẾNG VIỆT

VN

Bảng 4.1 minh họa: từ lao động thứ 1 đến thứ 4, MP tăng dần (hiệu suất cận biên tăng dần) nhờ chuyên môn hoá. Từ lao động thứ 5 trở đi, MP giảm dần nhưng vẫn dương (hiệu suất cận biên giảm dần) vì mỗi công nhân có ngày càng ít máy móc (vốn cố định) để sử dụng. Tại lao động thứ 8, MP=0 và TP đạt mức tối đa; nếu thuê thêm lao động thứ 9, MP sẽ âm (TP giảm) vì công nhân vướng chân nhau. AP tăng khi MP>AP, đạt tối đa đúng lúc MP=AP, rồi giảm khi MP<AP – đây luôn luôn đúng về mặt toán học giữa bất kỳ đại lượng cận biên và bình quân nào.

4.1.3 Diagram: the TP, AP and MP curves

Figure 4.1 plots continuous (smoothed) versions of TP , AP and MP against the quantity of the variable factor, illustrating three classic relationships that Cambridge questions test directly:

1. MP reaches its own maximum at the point where TP has a point of inflection (the point where TP switches from increasing at an increasing rate to increasing at a decreasing rate).

2. MP crosses AP exactly where AP is at its maximum – shown formally in the keyfact box below.
3. TP reaches its maximum exactly where $MP = 0$; beyond this point MP is negative and TP falls.

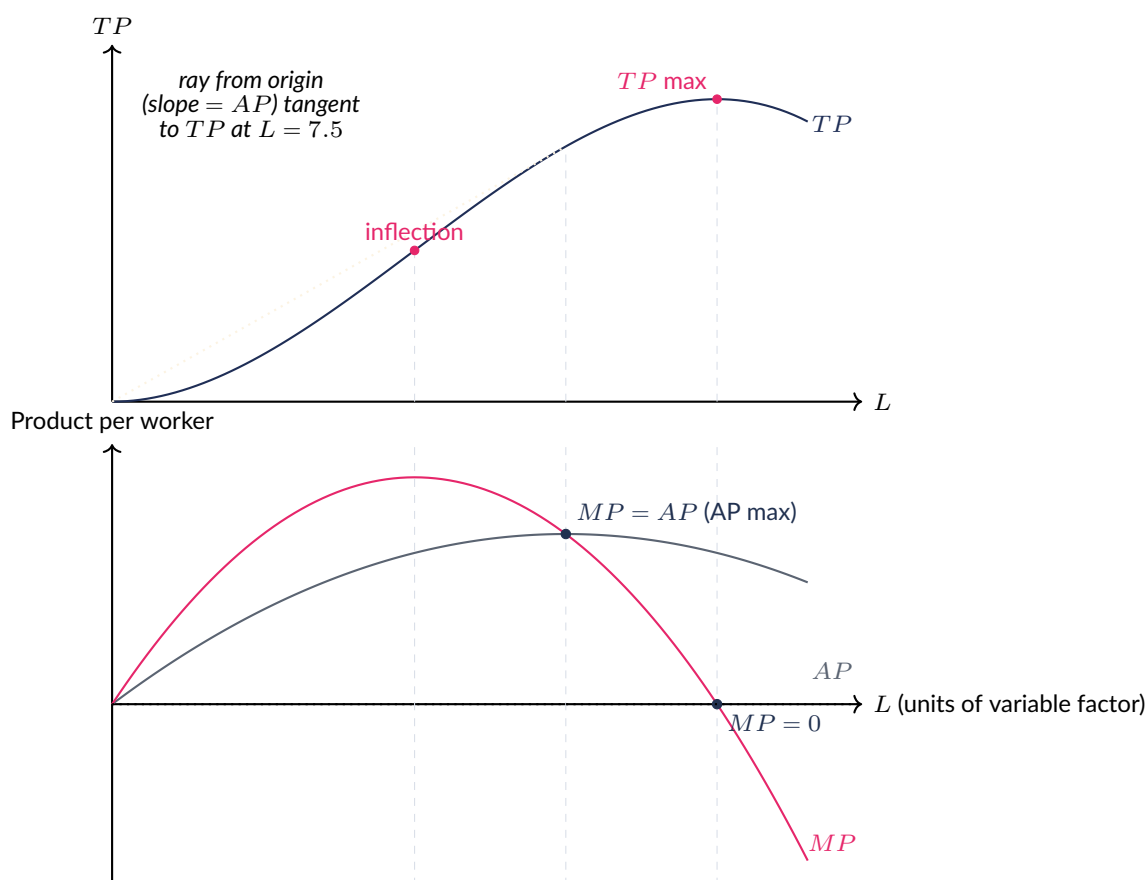


Figure 4.1 – Total, average and marginal product. MP peaks at $L = 5$, exactly where TP inflects; MP crosses AP at $L = 7.5$, exactly where AP is maximised (equivalently, where a ray from the origin is tangent to TP); TP is maximised at $L = 10$, exactly where $MP = 0$.

Why $MP = AP$ at AP 's maximum: since $AP = TP/L$, calculus gives $\frac{d(AP)}{dL} = \frac{MP \cdot L - TP}{L^2}$. Setting this to zero (the condition for a maximum) requires $MP \cdot L = TP$, i.e. $MP = TP/L = AP$. So MP must equal AP exactly at the output where AP is greatest – this is a general result, true for any TP function, not just the specific numbers in Table 4.1 or Figure 4.1.

GIẢI THÍCH TIẾNG VIỆT

VN

Hình 4.1 minh họa ba mối quan hệ kinh điển: (1) MP đạt cực đại đúng tại điểm uốn của TP ; (2) MP cắt AP đúng tại điểm AP đạt cực đại (vì về mặt toán học, đạo hàm của AP theo L bằng 0 khi và chỉ khi $MP=AP$); (3) TP đạt cực đại đúng khi $MP=0$. Đây là quy luật tổng quát, áp dụng cho mọi hàm sản xuất, không chỉ riêng ví dụ số trong Bảng 4.1.

4.1.4 Why this underlies the shape of short-run cost curves

The law of diminishing marginal returns is the fundamental reason why short-run marginal cost (MC) and average variable cost (AVC) are U-shaped. If the variable factor (labour) is hired at a constant wage rate w , then the marginal cost of producing one more unit of output is $MC = \frac{w}{MP}$: as MP rises (increasing marginal returns), MC falls; as MP falls (diminishing marginal returns), MC rises.

Because MP first rises then falls, MC must first fall then rise – the U-shape. The same logic, applied to average product, explains why $AVC = \frac{w}{AP}$ is also U-shaped, falling while AP rises and rising once AP falls. Section 4.2 develops this cost-curve relationship in full.

GIẢI THÍCH TIẾNG VIỆT

VN

Quy luật hiệu suất cận biên giảm dần là lý do gốc rễ khiến chi phí cận biên (MC) và chi phí biến đổi bình quân (AVC) có hình chữ U trong ngắn hạn. Nếu tiền lương w không đổi, thì $MC = w/MP$ và $AVC = w/AP$: khi MP tăng thì MC giảm, khi MP giảm thì MC tăng – do đó MC có hình chữ U giống hệt hình dạng nghịch đảo của MP . Tương tự với AVC và AP .

4.2 Short-run costs of production

4.2.1 Fixed and variable costs

In the short run, a firm's total cost (TC) splits into two components:

- **Total fixed costs (TFC):** costs that do not vary with the level of output, and must be paid even if output is zero (e.g. rent, insurance, loan interest, depreciation of machinery already installed).
- **Total variable costs (TVC):** costs that vary directly with the level of output (e.g. raw materials, piece-rate wages, energy used in production). $TVC = 0$ when output is zero.

Short run: at least one factor (usually capital) is fixed. $TC = TFC + TVC$. $AFC = \frac{TFC}{Q}$, $AVC = \frac{TVC}{Q}$, $ATC = AFC + AVC = \frac{TC}{Q}$. $MC = \frac{\Delta TC}{\Delta Q} = \frac{\Delta TVC}{\Delta Q}$ (since TFC does not change with Q , the change in TC from one extra unit of output equals the change in TVC). The **law of diminishing marginal returns**: as more of a variable factor is added to a fixed factor, marginal product eventually falls, causing MC to rise and AVC/ATC to be U-shaped.

4.2.2 The classic average and marginal cost diagram

Figure 4.2 shows the standard short-run cost diagram: AVC , ATC (also written AC) and MC , all measured in cost per unit against output Q .

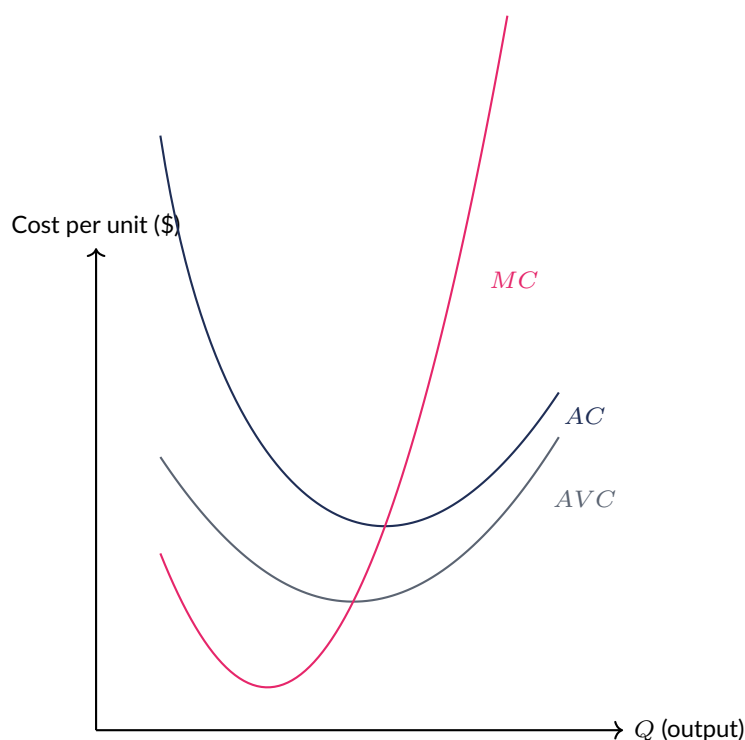


Figure 4.2 – MC cuts AVC and AC exactly at each curve's minimum point. Both AVC and AC fall while MC is below them, and rise once MC is above them.

(!) Lỗi thường gặp: It is tempting to think MC must always be rising. In fact MC typically falls at low output levels (increasing marginal returns) before rising (diminishing marginal returns) – the whole point of Figure 4.2 is that MC is U-shaped, not monotonically increasing. Also, students often forget that MC crosses AVC and AC exactly at their **minimum** points, never above or below – this is a mathematical necessity (a marginal value pulls an average down whenever it is below the average, and up whenever it is above it), and Cambridge mark schemes reward diagrams that show this precisely.

GIẢI THÍCH TIẾNG VIỆT

VN

Trong ngắn hạn: $TC = TFC + TVC$; $AFC = TFC/Q$, $AVC = TVC/Q$, $ATC = TC/Q = AFC + AVC$; $MC = \Delta TC / \Delta Q$. Đường MC cắt AVC và AC đúng tại điểm cực tiểu của mỗi đường – đây là quy luật toán học bắt buộc (giá trị cận biên luôn kéo giá trị bình quân về phía nó). AVC và AC có hình chữ U vì quy luật hiệu suất cận biên giảm dần.

4.2.3 Worked example: building a short-run cost schedule

Ví dụ mẫu · Worked example – Short-run cost schedule

A firm has total fixed costs $TFC = \$100$ regardless of output. Its total variable costs at each level of output are given in Table 4.2. Complete TC , AFC , AVC , ATC and MC .

Q	TFC	TVC	TC	AFC	AVC	ATC	MC
0	100	0	100	–	–	–	–
1	100	60	160	100.00	60.00	160.00	60
2	100	110	210	50.00	55.00	105.00	50
3	100	150	250	33.33	50.00	83.33	40
4	100	180	280	25.00	45.00	70.00	30
5	100	220	320	20.00	44.00	64.00	40
6	100	270	370	16.67	45.00	61.67	50
7	100	340	440	14.29	48.57	62.86	70
8	100	430	530	12.50	53.75	66.25	90

Table 4.2 – A completed short-run cost schedule ($TFC = \$100$).

Method: $TC = TFC + TVC$ in every row (e.g. at $Q = 4$: $TC = 100 + 180 = 280$). $AFC = TFC/Q$ (e.g. at $Q = 4$: $AFC = 100/4 = 25$). $AVC = TVC/Q$ (e.g. at $Q = 4$: $AVC = 180/4 = 45$). $ATC = TC/Q = AFC + AVC$ (e.g. at $Q = 4$: $ATC = 280/4 = 70 = 25 + 45$). MC is the change in TC (equivalently TVC) per extra unit: from $Q = 3$ to $Q = 4$, $MC = 280 - 250 = 30$. Reading the table: MC falls from 60 down to a minimum of 30 at $Q = 4$ (increasing marginal returns), then rises steadily (diminishing marginal returns). AVC falls to a minimum of \$44 at $Q = 5$, then rises – this is the **shutdown point**, developed in Section 4.3. ATC falls to a minimum of \$61.67 at $Q = 6$, then rises – this is the **break-even point**.

GIẢI THÍCH TIẾNG VIỆT

VN

Ví dụ số ở Bảng 4.2 minh họa cách xây dựng bảng chi phí ngắn hạn hoàn chỉnh từ TFC và TVC : $TC = TFC + TVC$; $AFC = TFC/Q$; $AVC = TVC/Q$; $ATC = TC/Q$; MC = mức tăng của TC khi sản xuất thêm 1 đơn vị. AVC đạt cực tiểu (\$44) tại $Q=5$ – đây là điểm đóng cửa sản xuất; ATC đạt cực

tiểu (\$61.67) tại $Q=6$ – đây là điểm hoà vốn. Hai khái niệm này được phát triển ở Mục 4.3.

4.3 The shutdown decision in the short run

4.3.1 The shutdown point and the break-even point

In the short run, a firm cannot escape its fixed costs – they must be paid whether the firm produces or not. This has a crucial implication for the firm's production decision. Assuming for simplicity that the firm is a **price taker** (so $\text{price} = AR = MR$), the firm compares the market price to its cost curves at each possible output:

- If price is **above** ATC at the profit-maximising output, the firm earns **supernormal profit**.
- If price is **below** ATC but **above** AVC , the firm makes a **loss**, but should still **continue producing** in the short run: by producing, the firm at least covers all of its variable costs and makes some contribution towards its fixed costs, so its loss is **smaller** than if it shut down and lost the entirety of TFC .
- If price falls **below** AVC , the firm should **shut down immediately**: even the revenue from selling output does not fully cover the variable costs of producing it, so every unit sold adds to the loss on top of the (unavoidable) fixed costs. The firm minimises its loss (to exactly TFC) by producing nothing at all.

Shutdown point: $P = \min AVC$. If price falls below this, the firm shuts down in the short run.

Break-even point: $P = \min ATC$. Below this (but above the shutdown point) the firm makes a loss but continues producing; above this, the firm makes supernormal profit.

The firm's short-run supply curve is the section of the MC curve **above** the shutdown point (above $\min AVC$) – output combinations on MC below the shutdown point are never actually supplied, because the firm would rather shut down.

A2 Extension – Deriving the short-run supply curve

[A2 extension] Because a price-taking firm always produces where $MR(= P) = MC$, and because it only produces at all when $P \geq \min AVC$, its short-run supply curve is precisely the segment of its MC curve lying *on or above* the shutdown point. This is a rigorous, testable link between the cost theory of this unit and the market supply curves studied at AS level: aggregate short-run industry supply is simply the horizontal sum of every individual firm's MC curve above its own shutdown point.

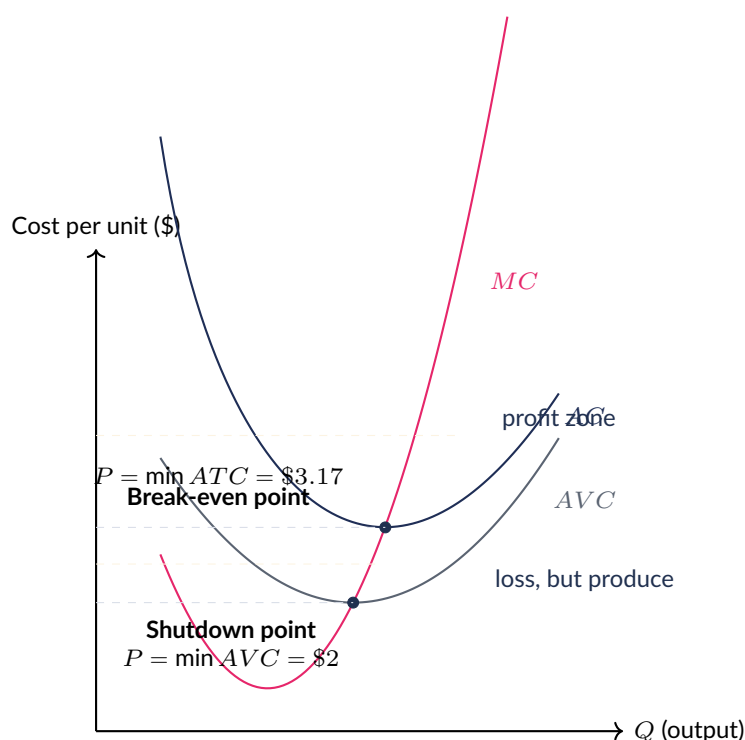


Figure 4.3 – Shutdown point ($P = \min AVC$) and break-even point ($P = \min ATC$). Between the two, price covers AVC but not all of ATC : the firm makes a loss yet keeps producing. Below the shutdown point, price fails even to cover AVC , and the firm shuts down.

(!) Lỗi thường gặp: Do not confuse the **shutdown point** with the **break-even point**. The break-even point ($P = \min ATC$) is where profit is exactly zero (normal profit only) – below this price the firm makes a loss, but a loss is not, by itself, a reason to stop producing. The **shutdown point** ($P = \min AVC$) is a much lower price, and is the true trigger for ceasing production altogether. A firm can rationally operate at a loss for a considerable time – exactly between these two points – as long as price still covers average variable cost.

GIẢI THÍCH TIẾNG VIỆT

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Điểm đóng cửa sản xuất (shutdown point) là mức giá bằng AVC cực tiểu – nếu giá thấp hơn mức này, doanh nghiệp nên ngừng sản xuất ngay vì doanh thu không đủ bù đắp cả chi phí biến đổi. **Điểm hoà vốn** (break-even point) là mức giá bằng ATC cực tiểu – dưới mức này doanh nghiệp bị lỗ nhưng **vẫn nên tiếp tục sản xuất** nếu giá vẫn cao hơn AVC, vì sản xuất giúp bù đắp một phần chi phí cố định, làm khoản lỗ nhỏ hơn so với việc đóng cửa hoàn toàn (khi đó lỗ đúng bằng TFC). Nhiều học sinh nhầm hai điểm này – lỗ không đồng nghĩa với phải đóng cửa ngay.

4.3.2 Worked example: three pricing scenarios

Ví dụ mẫu · Worked example – Should the firm produce?

Using the cost schedule of Table 4.2 ($TFC = \$100$; shutdown point $AVC_{\min} = \$44$ at $Q = 5$; break-even point $ATC_{\min} = \$61.67$ at $Q = 6$), evaluate three possible market prices.

(a) Price = \$70. The firm produces where $MC = P = 70$, i.e. $Q = 7$ (from Table 4.2). $TR = 70 \times 7 = \$490$. $TC = \$440$. Profit = $490 - 440 = +\$50$ – price exceeds $\min ATC$, so the firm earns **supernormal profit** and definitely continues producing.

(b) **Price** = \$50. $MC = 50$ at both $Q = 2$ and $Q = 6$ in the table, but only the point on the *rising* part of MC (beyond the shutdown point) is relevant, so the firm produces $Q = 6$. $TR = 50 \times 6 = \$300$. $TC = \$370$. $\text{Loss} = 300 - 370 = -\70 . Since price (\$50) is above $AVC_{\min}$ (\$44) but below $ATC_{\min}$ (\$61.67), the firm makes a loss but **continues producing** – shutting down would mean losing the full $TFC = \$100$, which is a bigger loss than \$70.

(c) **Price** = \$40. This is below $AVC_{\min} = \$44$. If the firm produced at $Q = 5$ anyway, $TR = 40 \times 5 = \$200$ while $TC = \$320$, a loss of $-\$120$ – worse than simply shutting down and losing only $TFC = \$100$. The firm should **shut down**: at every output level, price fails to cover average variable cost.

GIẢI THÍCH TIẾNG VIỆT

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Ví dụ minh họa ba mức giá: (a) Giá \$70 > ATC cực tiểu → lợi nhuận siêu ngạch +\$50, tiếp tục sản xuất. (b) Giá \$50 nằm giữa AVC cực tiểu (\$44) và ATC cực tiểu (\$61.67) → lỗ \$70 nhưng vẫn tiếp tục sản xuất (vì lỗ này nhỏ hơn lỗ \$100 nếu đóng cửa hoàn toàn). (c) Giá \$40 < AVC cực tiểu → nếu vẫn sản xuất sẽ lỗ \$120 (tệ hơn), nên doanh nghiệp phải đóng cửa ngay, chỉ chịu lỗ đúng bằng $TFC = \$100$.

4.4 Long-run costs: economies and diseconomies of scale

4.4.1 The long run and returns to scale

The **long run** is the period of time long enough that *all* factors of production, including capital, can be varied – there is no fixed factor. A firm can build a new factory, install more machinery, or change its entire scale of operation. Long-run average cost ($LRAC$) traces out the *lowest possible* average cost of producing each level of output, once the firm has chosen its optimal plant size (scale) for that output level.

As a firm expands its scale of production, average costs typically fall at first (**economies of scale**), reach a minimum, and then may rise (**diseconomies of scale**). This gives the $LRAC$ curve its characteristic (though not universal) U-shape, or in some industries an L-shape (costs fall, then flatten out without rising much).

4.4.2 Internal economies of scale

Internal economies of scale are cost advantages that accrue to an individual firm as *its own* scale of output grows, independent of what happens to the rest of the industry.

- **Technical economies:** larger firms can use more specialised, more efficient capital equipment and production techniques that would not be viable at a small scale – e.g. a car manufacturer using a large automated assembly line rather than hand-building each car; a large oil tanker has a lower cost per barrel-mile carried than a small one because a ship's carrying capacity increases with the cube of its dimensions while the surface area (and hence steel/cost) increases only with the square (the "container principle").
- **Purchasing (bulk-buying) economies:** large firms buy raw materials and components in bulk and can negotiate discounts from suppliers – e.g. a national supermarket chain negotiates lower per-unit prices from food suppliers than an independent corner shop can.
- **Financial economies:** large firms with valuable assets and an established track record can borrow money more cheaply and on better terms than small firms, and can raise capital directly through issuing shares or corporate bonds on a stock exchange, an option unavailable to most small firms.
- **Managerial economies:** large firms can afford to employ specialist managers/departments (a dedicated finance director, marketing department, HR department, legal team) rather than relying on one generalist owner-manager to do everything, raising efficiency in each function.

- **Risk-bearing (and marketing) economies:** large firms can diversify across many products, markets or geographical regions, spreading risk so that a downturn in one area is offset by strength elsewhere; large firms can also spread the fixed cost of a national advertising campaign over a much larger output, lowering the advertising cost per unit sold.

4.4.3 Internal diseconomies of scale

Beyond some point, further expansion can actually **raise** average costs – **internal diseconomies of scale**, usually related to the difficulty of managing an increasingly large and complex organisation.

- **Communication and coordination problems:** as a firm grows, information must pass through more layers of management and across more departments, increasing the risk of delay, distortion, and poor coordination between different parts of the business.
- **Worker alienation:** in a very large organisation, individual workers may feel like an anonymous, replaceable "small cog in a big machine", reducing motivation, morale and productivity – echoing the disadvantages of extreme division of labour.
- **Principal-agent problems:** as ownership (shareholders, the "principals") becomes separated from day-to-day control (professional managers, the "agents") in a large firm, managers may pursue their own objectives (job security, larger budgets, personal prestige) rather than strictly minimising costs on behalf of owners – developed further in Section 4.6.

4.4.4 External economies and diseconomies of scale

External economies and diseconomies of scale arise from the growth of the *whole industry* (or the geographic clustering of firms within it), not from the growth of any single firm – they shift the *LRAC* curve of *every firm* in the industry, not just one firm's.

External economies of scale typically arise when firms in the same industry cluster together in one location:

- a pool of **skilled labour** trained in the industry's specific skills becomes available locally (e.g. software engineers clustering around Bangalore or Ho Chi Minh City's tech hubs);
- specialist **local suppliers** of components and services set up nearby, reducing transport costs and delivery times for every firm in the cluster (e.g. component suppliers clustering around a car-manufacturing hub);
- shared **infrastructure** (specialised transport links, ports, research institutions, industry-specific training colleges) is more likely to be built when there is a large concentrated industry to justify the investment;
- **knowledge spillovers:** ideas, innovations and best practice spread faster between geographically clustered firms in the same industry.

External diseconomies of scale can also occur once an industry becomes too concentrated in one area: local congestion, competition for scarce local labour (bidding up local wages for everyone), rising local land/rent prices, and strain on local infrastructure can raise costs for every firm in the cluster simultaneously.

GIẢI THÍCH TIẾNG VIỆT

VN

Lợi thế kinh tế theo quy mô nội bộ (internal economies of scale) là lợi ích chi phí khi một doanh nghiệp tự mở rộng quy mô: kỹ thuật (thiết bị chuyên dụng hiệu quả hơn), mua hàng số lượng lớn (chiết khấu), tài chính (vay rẻ hơn, phát hành cổ phiếu), quản lý (thuê chuyên gia từng bộ phận), và chia sẻ rủi ro/marketing (đa dạng hoá, chia đều chi phí quảng cáo). **Bất lợi kinh tế theo quy mô nội bộ:** vấn đề giao tiếp/phối hợp khi doanh nghiệp quá lớn, công nhân bị "xa lánh" (alienation), và vấn đề uỷ quyền-tác nghiệp (principal-agent) khi người quản lý theo đuổi mục tiêu riêng thay vì lợi ích chủ sở hữu. **Lợi thế/bất lợi kinh tế theo quy mô bên ngoài** phát sinh từ sự phát triển của cả ngành (ví dụ cụm ngành công nghiệp tập trung một khu vực mang

lại nguồn lao động lành nghề, nhà cung cấp gần, hạ tầng chuyên biệt – nhưng nếu quá tập trung có thể gây tắc nghẽn, giá thuê đất và lương tăng cao).

4.4.5 The LRAC curve, the envelope and minimum efficient scale

At any given moment, a firm operates on one particular short-run average cost (*SRAC*) curve, determined by its current (fixed) scale of plant. If it wants to produce more in the short run, it must move along that one *SRAC* curve. In the long run, however, the firm can switch to a completely different, larger-scale plant, i.e. jump onto a different *SRAC* curve. The *LRAC* curve is the **envelope** of all the possible *SRAC* curves available to the firm – the lower boundary formed by picking, at each output level, whichever plant size gives the lowest average cost.

Minimum efficient scale (MES) is the lowest level of output at which a firm exhausts all available economies of scale and reaches the minimum point of the *LRAC* curve. Producing at any output below MES means the firm has not yet reached its lowest possible unit costs.

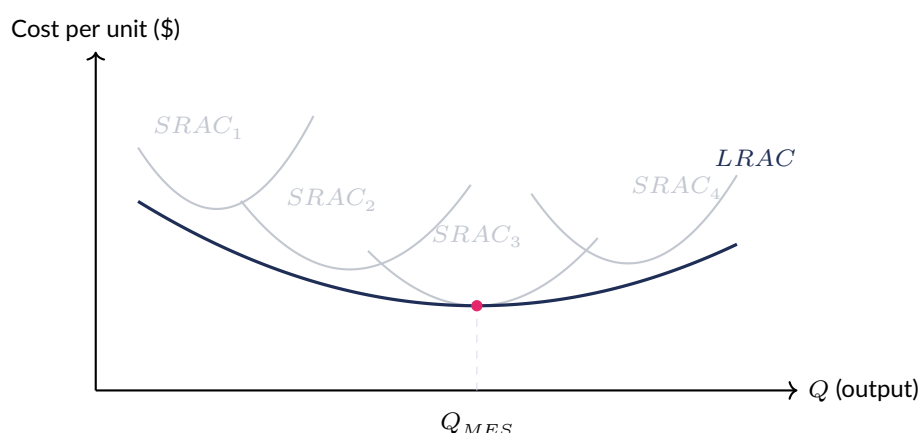


Figure 4.4 – The *LRAC* curve as the envelope of a family of short-run average cost curves. Economies of scale pull *LRAC* down as the firm moves from *SRAC*₁ to *SRAC*₃; Q_{MES} is the minimum efficient scale, where *LRAC* reaches its lowest point; beyond this, diseconomies of scale (illustrated by *SRAC*₄) can push *LRAC* back up.

GIẢI THÍCH TIẾNG VIỆT

VN

Đường LRAC (chi phí bình quân dài hạn) là đường bao (envelope) của nhiều đường SRAC (chi phí bình quân ngắn hạn) ứng với các quy mô nhà máy khác nhau. Doanh nghiệp di chuyển dọc một đường SRAC trong ngắn hạn, nhưng có thể chuyển sang đường SRAC khác (quy mô khác) trong dài hạn. **Quy mô sản xuất tối thiểu hiệu quả (MES)** là mức sản lượng thấp nhất mà tại đó LRAC đạt cực tiểu – doanh nghiệp đã khai thác hết lợi thế kinh tế theo quy mô. Sản xuất dưới mức MES nghĩa là chi phí bình quân chưa ở mức thấp nhất có thể.

4.5 Revenue

4.5.1 Definitions

Total revenue (TR) is the total money a firm receives from selling its output: $TR = P \times Q$. **Average revenue (AR)** is revenue per unit sold, $AR = TR/Q$, which algebraically always equals price ($AR = P \times Q/Q = P$) – so the *AR* curve is always identical to the firm's demand curve. **Marginal revenue (MR)** is the extra revenue earned from selling one more unit, $MR = \Delta TR / \Delta Q$.

$$TR = P \times Q. \quad AR = \frac{TR}{Q} = P \text{ (the } AR \text{ curve is always the firm's demand curve).} \quad MR = \frac{\Delta TR}{\Delta Q}.$$

Where *TR* is at its maximum, $MR = 0$.

4.5.2 Revenue under price-taking versus price-making

If a firm is a **price taker** operating in a perfectly competitive market, it can sell any quantity it wishes at the ruling market price without affecting that price – its demand curve is perfectly elastic (horizontal). In this case, every extra unit sold adds exactly the same amount (P) to total revenue, so $AR = MR = P$, a single horizontal line.

If instead a firm is a **price maker** facing a normal downward-sloping market demand curve (the case for most real firms with some market power), it can only sell more output by lowering its price – and crucially, that lower price applies to *all* units sold, not just the extra one. This means each additional unit adds less to total revenue than the price it is sold at, so MR lies below AR and falls twice as steeply. MR can even become **negative**: beyond the point where TR is maximised, selling one more unit requires such a large price cut (applied to all units) that total revenue actually falls.

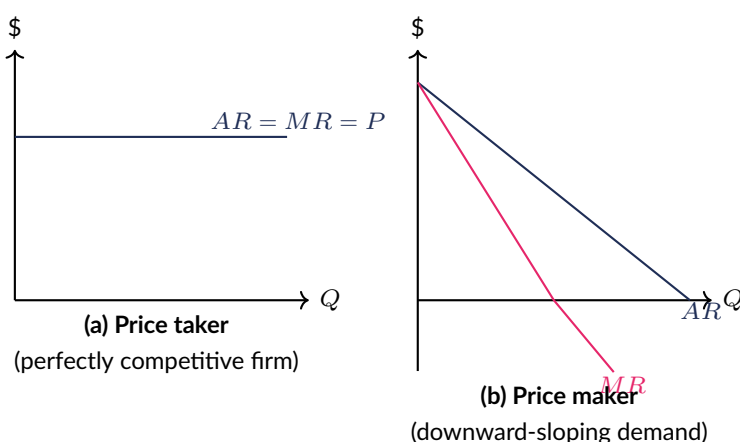


Figure 4.5 – (a) A price-taking firm's $AR = MR = P$ is a single horizontal line. (b) A price-making firm's MR lies below AR , falls twice as steeply, and turns negative once Q passes the output at which TR is maximised.

(!) Lỗi thường gặp: A very common error is to assume $AR = MR$ for every firm. This is only true for a perfectly competitive, price-taking firm. Any firm facing a downward-sloping demand curve (which includes monopoly, monopolistic competition and oligopoly, covered in later units) has $MR < AR$ at every positive output level (except the very first unit), because cutting price to sell more applies to all units sold, not just the marginal one.

GIẢI THÍCH TIẾNG VIỆT

VN

Doanh thu tổng (TR) = $P \times Q$; doanh thu bình quân (AR) = $TR/Q = P$ (luôn trùng với đường cầu của doanh nghiệp); doanh thu cận biên (MR) = mức tăng TR khi bán thêm 1 đơn vị. Với doanh nghiệp **chấp nhận giá** (price taker, cạnh tranh hoàn hảo): $AR=MR=P$ là một đường nằm ngang. Với doanh nghiệp **có sức mạnh định giá** (đường cầu dốc xuống): MR nằm dưới AR , dốc hơn AR gấp đôi, và có thể âm khi vượt quá sản lượng làm TR đạt cực đại. Lỗi thường gặp: nhầm lẫn cho rằng AR luôn bằng MR ở mọi doanh nghiệp.

4.5.3 Worked example: deriving MR from a linear demand curve

Ví dụ mẫu · Worked example – MR from $AR = a - bQ$

A firm's demand curve is $AR = P = 100 - 2Q$. Since $TR = P \times Q$: $TR = (100 - 2Q)Q = 100Q - 2Q^2$.

A general algebraic result: if $AR = a - bQ$, then $MR = a - 2bQ$ (twice the slope of AR , same vertical intercept). Here $a = 100$, $b = 2$, so $MR = 100 - 4Q$.

Checking with actual numbers:

Q	$AR = P$	$TR = P \times Q$	$MR = 100 - 4Q$	TR using MR increments
10	80	800	60	–
20	60	1200	20	$800 + (\text{sum of } MR \text{ from 11 to 20}) = 1200$
25	50	1250	0	TR is at its maximum here (since $MR = 0$)
30	40	1200	–20	TR has fallen below its $Q = 25$ level, as $MR < 0$ confirms

Table – TR rises while $MR > 0$, peaks exactly where $MR = 0$ ($Q = 25$), then falls as $MR < 0$.

This confirms the general rule: TR is maximised exactly where $MR = 0$, and MR falls twice as fast as AR (the slope of MR is $-2b = -4$, twice the slope of AR , which is $-b = -2$).

GIẢI THÍCH TIẾNG VIỆT

VN Với đường cầu tuyến tính $AR = a - bQ$, ta luôn có $MR = a - 2bQ$ (cùng tung độ gốc với AR nhưng độ dốc gấp đôi). Ví dụ: $AR = 100 - 2Q \Rightarrow MR = 100 - 4Q$. Khi $MR = 0$ (tại $Q=25$), TR đạt cực đại (\$1250). Khi $Q > 25$, $MR < 0$ và TR bắt đầu giảm – xác nhận đúng bằng số liệu thực tế trong bảng.

4.6 Objectives of firms

4.6.1 Profit maximisation: the $MR=MC$ rule

The standard assumption in economic theory is that firms aim to **maximise profit** ($\pi = TR - TC$). Profit is maximised at the output where **marginal revenue equals marginal cost** ($MR = MC$): if $MR > MC$, producing one more unit adds more to revenue than to cost, so profit rises, and the firm should expand; if $MR < MC$, the last unit produced added more to cost than to revenue, so profit falls, and the firm should cut back. Only where $MR = MC$ is neither expansion nor contraction profitable – this is the profit-maximising output.

Profit maximisation rule: produce where $MR = MC$. Profit = $TR - TC = (AR - ATC) \times Q$ at that output. If $AR > ATC$ at that output, the firm earns supernormal (abnormal) profit; if $AR = ATC$, only normal profit; if $AR < ATC$ (but $AR \geq AVC$), the firm makes a loss but continues to produce in the short run (Section 4.3).

Ví dụ mẫu · Worked example – Profit maximisation with a downward-sloping demand curve

A firm faces demand $AR = P = 100 - 2Q$ (so $MR = 100 - 4Q$, as derived above) and has total cost $TC = 20Q + 0.5Q^2 + 200$ (fixed costs = \$200), giving marginal cost $MC = 20 + Q$.

Step 1 – find the profit-maximising output. Set $MR = MC$: $100 - 4Q = 20 + Q \Rightarrow 80 = 5Q \Rightarrow Q = 16$.

Step 2 – find price and revenue. $P = AR = 100 - 2(16) = 100 - 32 = \68 . $TR = 68 \times 16 = \$1088$.

Step 3 – find total cost and profit. $TC = 20(16) + 0.5(16)^2 + 200 = 320 + 128 + 200 = \648 .

$$\pi = TR - TC = 1088 - 648 = \boxed{\$440 \text{ (supernormal profit)}}$$

Check: at $Q = 16$, $MR = 100 - 4(16) = 36$ and $MC = 20 + 16 = 36$ – confirmed equal, as required.

GIẢI THÍCH TIẾNG VIỆT

VN

Quy tắc tối đa hoá lợi nhuận: sản xuất tại mức sản lượng mà $MR = MC$. Nếu $MR > MC$, sản xuất thêm sẽ làm tăng lợi nhuận; nếu $MR < MC$, nên giảm sản lượng. Trong ví dụ: với $AR = 100 - 2Q$ và $TC = 20Q + 0.5Q^2 + 200$, sản lượng tối ưu là $Q=16$, giá bán \$68, tổng doanh thu \$1088, tổng chi phí \$648, lợi nhuận siêu ngạch = \$440.

4.6.2 Alternative objectives of the firm

A2 Extension – Behavioural theories of the firm

[A2 extension] Everything up to this point has assumed firms are simple profit maximisers. A2 theory goes further, recognising that real firms – especially large public companies – are complex organisations in which the people making decisions (managers) are not the same people who own the firm and bear the financial risk (shareholders). This “divorce of ownership from control” is the root of every alternative objective explored below.

The strict profit-maximisation assumption is a simplification. In reality – especially in large firms where ownership is separated from control (Section 4.4) – managers may pursue different goals.

Sales revenue maximisation (associated with the economist William Baumol): managers may aim to maximise total revenue rather than profit, because managerial salaries, bonuses, prestige and job security are often linked more closely to firm size/turnover than to profit, and because maximising sales/market share can deter new entrants and rivals. Since TR is maximised exactly where $MR = 0$, a sales-revenue-maximising firm produces at a **higher** output than a profit-maximising firm (since $MC > 0$ almost always, the profit-maximising output where $MR = MC$ is always below the output where $MR = 0$).

Sales (growth) maximisation subject to a minimum profit constraint: a more realistic refinement is that managers seek to maximise sales or growth, but subject to earning *at least* some minimum acceptable level of profit – enough to keep shareholders satisfied and avoid a takeover threat or the sacking of management, while still pursuing growth, market share and prestige beyond the level a strict profit-maximiser would choose.

Satisficing behaviour: in large, complex organisations, managers often lack complete information and the ability to calculate a true profit-maximising output at all (the assumption of “perfect knowledge” behind $MR = MC$ is unrealistic). Instead, different stakeholders (shareholders, managers, workers, unions) may have competing objectives, and the firm settles for a set of “good enough” (satisfactory) outcomes across several goals simultaneously, rather than optimising any single one perfectly.

The principal-agent problem (divorce of ownership from control): in a large public company, shareholders (the **principals**, who own the firm and wish to maximise their return) delegate day-to-day decision-making to professional managers (the **agents**). Because managers’ personal interests (job security, larger budgets and teams, higher salaries, prestige, an easier working life) do not automatically align with shareholders’ interest in profit, and because shareholders cannot perfectly monitor everything managers do (asymmetric information), managers may run the firm in ways that depart from strict profit maximisation. This is a key economic reason why large firms may pursue growth, sales, or “satisfactory” profit rather than the theoretical profit-maximising output.

Ví dụ mẫu · Worked example – Comparing objectives, same firm

Using the same firm as above ($AR = 100 - 2Q$, $TC = 20Q + 0.5Q^2 + 200$, so profit $\pi = 80Q - 2.5Q^2 - 200$):

Sales revenue maximisation ($MR = 0$): $100 - 4Q = 0 \Rightarrow Q = 25$. $P = 100 - 2(25) = \$50$. $TR = 50 \times 25 = \$1250$. $TC = 20(25) + 0.5(25)^2 + 200 = 500 + 312.5 + 200 = \1012.5 . Profit

$$= 1250 - 1012.5 = \$237.50.$$

Growth (sales) maximisation subject to a minimum profit of \$80: solve $80Q - 2.5Q^2 - 200 = 80$, i.e. $2.5Q^2 - 80Q + 280 = 0$, i.e. $Q^2 - 32Q + 112 = 0$. This gives $Q = \frac{32 \pm \sqrt{1024 - 448}}{2} = \frac{32 \pm 24}{2} = 28$ or 4. Since profit is a downward-opening (concave) function of Q , profit is $\geq \$80$ for all Q between 4 and 28; a growth-maximiser picks the **largest** feasible output, $Q = 28$ (any higher and profit would fall below the \$80 minimum). Check: $\pi(28) = 80(28) - 2.5(28)^2 - 200 = 2240 - 1960 - 200 = \80 exactly.

Objective	Output Q	Total revenue	Profit
Profit maximisation ($MR = MC$)	16	\$1088	\$440
Sales revenue maximisation ($MR = 0$)	25	\$1250	\$237.50
Growth max. s.t. min. profit $\geq \$80$	28	\$1232	\$80

Table 4.3 – The same cost and demand conditions, three different managerial objectives.

As the firm moves away from strict profit maximisation toward growth/sales objectives, output and revenue rise but profit falls – exactly the trade-off that a principal-agent conflict between shareholders and managers can produce.

GIẢI THÍCH TIẾNG VIỆT

VN

Ngoài mục tiêu tối đa hoá lợi nhuận, doanh nghiệp (đặc biệt doanh nghiệp lớn có sự tách biệt giữa chủ sở hữu và người quản lý) có thể theo đuổi: **tối đa hoá doanh thu** (sản xuất tại $MR=0$, sản lượng cao hơn mức tối đa hoá lợi nhuận); **tối đa hoá tăng trưởng/doanh thu với ràng buộc lợi nhuận tối thiểu** (đủ làm hài lòng cổ đông); **hành vi thoả mãn** (satisficing – chấp nhận kết quả “đủ tốt” cho nhiều mục tiêu thay vì tối ưu hoá một mục tiêu duy nhất); và **vấn đề uỷ quyền-tác nghiệp** (principal-agent – người quản lý theo đuổi lợi ích riêng như lương cao, uy tín, thay vì lợi nhuận tối đa của cổ đông, vì cổ đông không thể giám sát hoàn toàn hành vi quản lý). Ví dụ số cho thấy: càng rời xa mục tiêu tối đa hoá lợi nhuận để theo đuổi tăng trưởng, sản lượng và doanh thu càng tăng nhưng lợi nhuận càng giảm.

4.7 The growth of firms

4.7.1 Organic versus external growth

Firms can grow in two broad ways. **Organic (internal) growth** occurs when a firm expands using its own resources and reinvested profits – building new stores, hiring more staff, developing new products, or expanding into new markets under its own steam. It tends to be slower but lower-risk, and preserves the firm's existing culture and management style. **External growth** occurs through **merger** (two firms agreeing to combine, usually as roughly equal partners) or **takeover/acquisition** (one firm buying a controlling stake in another, which may be unwilling – a “hostile” takeover). External growth is typically much faster than organic growth, but carries integration risk (merging different corporate cultures, IT systems and management structures) and can be expensive.

4.7.2 Types of integration

When firms merge or one takes over another, the relationship between the two firms' industries determines the **type of integration**:

Type		Definition	Example
Horizontal integration		Merger/takeover between firms at the same stage of production in the same industry – often direct competitors	Two national airlines merging; two supermarket chains combining
Vertical integration (forward)	in-	Merger/takeover with a firm further forward in the same supply chain, closer to the final consumer	A car manufacturer buying a chain of car dealerships
Vertical integration (backward)	in-	Merger/takeover with a firm further back in the supply chain, closer to raw materials/suppliers	A car manufacturer buying a steel or tyre supplier
Conglomerate integration		Merger/takeover between firms in entirely unrelated industries	A tobacco company acquiring an insurance company

Table 4.4 – Types of integration in the growth of firms.

4.7.3 Why firms merge

- **Economies of scale:** combining production, purchasing, finance and management functions across two firms can capture the internal economies of scale described in Section 4.4 (e.g. a merged firm negotiates larger bulk-buying discounts, or spreads a fixed advertising budget over a larger combined output).
- **Increased market power:** horizontal integration in particular reduces the number of competing firms in the market, potentially allowing the merged firm greater pricing power and higher long-run profits (though this may attract the attention of competition authorities, covered in a later unit).
- **Diversification of risk:** conglomerate mergers in particular allow a firm to spread its commercial risk across unrelated markets, so that a downturn affecting one product/industry is offset by stability or growth in another, unrelated one.
- **Security of supply or outlets:** vertical integration (forward or backward) can guarantee a firm reliable access to key inputs (backward) or guaranteed retail outlets/distribution for its output (forward), reducing uncertainty and the market power of external suppliers or distributors.

4.7.4 Why small firms survive

Despite the cost advantages of scale documented in Section 4.4, small firms remain common – and often thrive – in most economies, for several reasons:

- **Niche markets:** some markets are simply too small, specialised, or localised to support (or attract) a large-scale producer – e.g. a bespoke tailor, a specialist local repair shop.
- **Personalised service:** small firms can often offer more personal, flexible, tailored service and build closer customer relationships than large, standardised organisations.
- **Limited size of the market:** in some industries, minimum efficient scale (Section 4.4) is reached at a low level of output relative to total market demand, so there is room in the market for many small firms without any single one needing to grow large to be efficient.
- **Owner preference:** some owner-managers deliberately choose not to grow beyond a size they can personally oversee, valuing control, flexibility, and work-life balance over the higher (but riskier, harder to manage) profits potentially available from expansion.
- **Easier management and monitoring:** small firms avoid the internal diseconomies of scale (communication breakdowns, worker alienation, principal-agent problems) that can afflict very large

organisations, since the owner can directly monitor and manage all aspects of the business.

GIẢI THÍCH TIẾNG VIỆT

VN

Doanh nghiệp có thể tăng trưởng theo hai cách: **tăng trưởng nội sinh/hữu cơ** (organic growth – dùng nguồn lực và lợi nhuận tái đầu tư của chính mình, chậm nhưng ít rủi ro) hoặc **tăng trưởng bên ngoài** (external growth – qua sáp nhập/mua lại, nhanh nhưng rủi ro tích hợp). Các loại sáp nhập: **theo chiều ngang** (cùng ngành, cùng giai đoạn sản xuất), **theo chiều dọc xuôi** (mua lại nhà phân phối/bán lẻ gần người tiêu dùng hơn), **theo chiều dọc ngược** (mua lại nhà cung cấp nguyên liệu), và **đa ngành/tập đoàn** (conglomerate – các ngành không liên quan). Lý do sáp nhập: lợi thế kinh tế theo quy mô, tăng sức mạnh thị trường, đa dạng hoá rủi ro, đảm bảo nguồn cung/kênh phân phối. Doanh nghiệp nhỏ vẫn tồn tại nhờ: thị trường ngách, dịch vụ cá nhân hoá, quy mô thị trường hạn chế, sở thích của chủ sở hữu (muốn tự quản lý), và dễ quản lý/giám sát hơn.

4.8 Practice questions

4.8.1 Production and short-run costs

Bài tập luyện tập

A firm adds workers to a fixed amount of capital. Total product is: $L = 1: 12; L = 2: 27; L = 3: 45; L = 4: 58; L = 5: 65; L = 6: 65; L = 7: 60$.

- Calculate the marginal product of the 2nd, 4th and 7th worker.
- Identify the range of L over which increasing marginal returns apply, and the range over which diminishing (but positive) marginal returns apply.
- At what value of L does total product reach its maximum, and what is MP at that point?

Lời giải chi tiết

- $MP_2 = 27 - 12 = 15$. $MP_4 = 58 - 45 = 13$. $MP_7 = 60 - 65 = -5$.
- (Taking the standard convention that $TP = 0$ when $L = 0$, so $MP_1 = 12 - 0 = 12$.)
Increasing marginal returns: MP rises from $L = 1$ to $L = 3$ (12, 15, 18) – computing $MP_3 = 45 - 27 = 18$, which is higher than $MP_2 = 15$, confirming increasing returns up to $L = 3$.
Diminishing (positive) marginal returns: MP falls but stays positive from $L = 4$ to $L = 5$ ($MP_4 = 13$, $MP_5 = 65 - 58 = 7$).
- TP is maximised at $L = 5$ and $L = 6$ (both = 65), so $MP_6 = 65 - 65 = 0$ – total product reaches its maximum where $MP = 0$, exactly as the theory predicts.

Bài tập luyện tập

Which of the following best explains why marginal cost eventually rises in the short run?

- | | |
|--|--|
| (A) Wages rise as more workers are hired | same wage cost |
| (B) The law of diminishing marginal returns causes marginal product to fall, so each extra worker adds less output for the | (C) Fixed costs rise with output |
| | (D) Firms deliberately restrict output to raise prices |

Lời giải chi tiết

Correct answer: **(B)**. With a constant wage rate, $MC = w/MP$. Once diminishing marginal returns set in, MP falls, so the same wage cost buys less extra output, driving MC up. (A) is

not assumed in the basic model (wage rate is normally held constant); (C) is wrong by definition (fixed costs do not vary with output); (D) describes a pricing decision, not a cost relationship.

Bài tập luyện tập

A firm has $TFC = \$200$. At $Q = 10$, $TVC = \$800$. Calculate AFC , AVC , ATC and TC at $Q = 10$.

Lời giải chi tiết

$TC = TFC + TVC = 200 + 800 = \1000 . $AFC = TFC/Q = 200/10 = \$20$. $AVC = TVC/Q = 800/10 = \$80$. $ATC = TC/Q = 1000/10 = \$100$ (check: $AFC + AVC = 20 + 80 = 100$, consistent).

Bài tập luyện tập

A firm's total cost at $Q = 6$ is \$540, and at $Q = 7$ is \$610. What is the marginal cost of the 7th unit?

Lời giải chi tiết

$MC = \Delta TC / \Delta Q = (610 - 540) / (7 - 6) = \70 .

Bài tập luyện tập

Explain why the MC curve must always cut both the AVC curve and the ATC curve exactly at their minimum points, never above or below.

Lời giải chi tiết

This is a mathematical property of any marginal-average relationship. If MC is below AVC (or ATC), each extra unit costs less than the current average, so it pulls the average **down**. If MC is above the average, each extra unit costs more than the current average, pulling the average **up**. The average can only be at its minimum (turning from falling to rising) at the exact output where MC equals it – if MC were still below the average at that point, the average would keep falling; if MC were already above, the average would already be rising. Hence $MC = AVC$ at min AVC , and $MC = ATC$ at min ATC .

4.8.2 The shutdown decision

Bài tập luyện tập

A firm's cost curves give min $AVC = \$25$ at $Q = 40$, and min $ATC = \$35$ at $Q = 55$. For each of the following market prices, state whether the firm should shut down, produce at a loss, or produce at a profit: (a) $P = \$20$; (b) $P = \$30$; (c) $P = \$40$.

Lời giải chi tiết

(a) $P = \$20 < \min AVC(\$25)$: the firm should **shut down** – price does not even cover average variable cost. (b) $\min AVC(\$25) < P = \$30 < \min ATC(\$35)$: the firm should **produce at a loss** – price covers all variable costs and part of fixed costs, so producing minimises the loss compared with shutting down. (c) $P = \$40 > \min ATC(\$35)$: the firm **produces at a profit**.

(supernormal) profit.

Bài tập luyện tập

A firm has $TFC = \$150$ per week. At its current output, $TVC = \$600$ and $TR = \$500$. Should the firm shut down this week? Justify your answer with a numerical comparison.

Lời giải chi tiết

If the firm produces: $\text{loss} = TR - (TFC + TVC) = 500 - (150 + 600) = 500 - 750 = -\250 . If the firm shuts down: it still owes $TFC = \$150$, so $\text{loss} = -\$150$. Since $-\$150$ is a smaller loss than $-\$250$, the firm should **shut down** – its revenue (\$500) does not even cover its variable costs (\$600), so continuing to produce adds an extra \$100 of loss on top of the unavoidable fixed costs.

Bài tập luyện tập

Which statement correctly distinguishes the shutdown point from the break-even point?

- (A) They are the same point on the cost diagram
- (B) The shutdown point is where $P = \min ATC$; the break-even point is where $P = \min AVC$
- (C) The break-even point is where $P = \min ATC$ (zero economic profit); the shutdown point is the lower price $P = \min AVC$, below which the firm ceases production
- (D) The shutdown point only applies in the long run

Lời giải chi tiết

Correct answer: (C). The break-even point ($P = \min ATC$) is where profit is exactly zero (normal profit); the shutdown point ($P = \min AVC$) is a lower price at which the firm ceases production altogether, because revenue no longer covers variable costs.

Bài tập luyện tập

"A firm making a loss should always shut down immediately." Is this statement true? Explain, using the concepts of AVC and ATC .

Lời giải chi tiết

The statement is **false**. A firm making a loss (price below ATC) should only shut down if price also falls below AVC . As long as $AVC < P < ATC$, continuing to produce allows the firm to cover all variable costs and make a partial contribution towards its unavoidable fixed costs, resulting in a *smaller* loss than shutting down (where the loss would equal the full amount of fixed costs). Only when $P < AVC$ does producing add to the loss beyond the fixed costs, making immediate shutdown the loss-minimising choice.

4.8.3 Economies of scale and the long run

Bài tập luyện tập

Classify each of the following as (i) an internal economy of scale, (ii) an internal diseconomy of scale, or (iii) an external economy of scale:

- (a) A car manufacturer negotiates a 15% discount on steel by ordering in much larger quantities.
- (b) A large multinational's head office struggles to coordinate decisions quickly across its many regional divisions.
- (c) A cluster of specialist component suppliers sets up near a country's main car-manufacturing region, cutting delivery costs for every car firm located there.
- (d) A large firm issues corporate bonds on the stock exchange at a lower interest rate than a small firm could obtain from a bank loan.

Lời giải chi tiết

(a) Internal economy of scale (purchasing/bulk-buying economy). (b) Internal diseconomy of scale (communication/coordination problem). (c) External economy of scale (arises from the whole industry clustering, not from any one firm's own growth). (d) Internal economy of scale (financial economy).

Bài tập luyện tập

Explain, using the concept of the principal-agent problem, why very large firms may experience internal diseconomies of scale even if their technical production processes remain efficient.

Lời giải chi tiết

In a very large firm, ownership (shareholders) is separated from day-to-day control (professional managers). Shareholders cannot perfectly monitor every managerial decision (information is asymmetric), so managers may pursue their own goals – larger budgets, bigger teams, higher personal status or job security – rather than strictly minimising costs on shareholders' behalf. This divergence of interests can raise average costs (e.g. through excessive management layers, unnecessary perks, or empire-building projects) even when the underlying factory floor/production technology is technically efficient, illustrating that diseconomies of scale can be organisational/behavioural, not just technical.

Bài tập luyện tập

On a diagram of $LRAC$ against output, minimum efficient scale (MES) is best described as:

- (A) The output at which the firm first makes a profit
- (B) The lowest output at which $LRAC$ reaches its minimum point
- (C) The output at which AVC equals ATC
- (D) The maximum possible output a firm can produce

Lời giải chi tiết

Correct answer: (B). Minimum efficient scale is the lowest output level at which a firm has exhausted available economies of scale and reached the lowest point on its long-run average cost curve.

Bài tập luyện tập

A firm is currently producing at an output below its minimum efficient scale. Using the *LRAC* diagram, explain what would happen to its long-run average cost if it expanded output toward MES, and identify which family of curves (*SRAC* or *LRAC*) it moves along in the short run versus the long run.

Lời giải chi tiết

If output is below MES, the firm is still on the falling part of the *LRAC* curve, meaning it is benefiting from economies of scale; expanding output toward MES would **reduce** long-run average cost. In the **short run**, with its current fixed plant size, the firm can only move along its existing *SRAC* curve. To actually reach a lower point on *LRAC*, the firm must, in the **long run**, change its scale of plant entirely – switching to a different, larger-scale *SRAC* curve that the *LRAC* envelope represents.

4.8.4 Revenue and profit maximisation**Bài tập luyện tập**

A firm's demand curve is $AR = P = 60 - Q$.

- (a) Find the equation for *TR* and *MR*.
- (b) At what output is *TR* maximised, and what is that maximum *TR*?
- (c) Calculate *MR* at $Q = 10$ and at $Q = 35$, and comment on the sign of each.

Lời giải chi tiết

- (a) $TR = P \times Q = (60 - Q)Q = 60Q - Q^2$. Using $MR = a - 2bQ$ with $a = 60, b = 1$: $MR = 60 - 2Q$.
- (b) *TR* is maximised where $MR = 0$: $60 - 2Q = 0 \Rightarrow Q = 30$. $TR = 60(30) - 30^2 = 1800 - 900 = \900 .
- (c) At $Q = 10$: $MR = 60 - 20 = \$40$ (positive – *TR* is still rising). At $Q = 35$: $MR = 60 - 70 = -\$10$ (negative – *TR* is falling, since $Q = 35$ is beyond the revenue-maximising output of 30).

Bài tập luyện tập

For a perfectly competitive (price-taking) firm selling at a constant market price of \$45:

- (A) *AR* and *MR* both equal \$45 at every output level
- (B) $AR = \$45$ but *MR* falls below \$45 as output rises
- (C) *MR* is always zero
- (D) *AR* falls but *MR* stays constant at \$45

Lời giải chi tiết

Correct answer: (A). A price-taking firm can sell any quantity at the fixed market price without affecting it, so every extra unit adds exactly \$45 to revenue: $AR = MR = P = \$45$, a horizontal line.

Bài tập luyện tập

A firm faces $AR = P = 80 - Q$ and has $MC = 2Q$ (with no fixed costs stated in this question). Find the profit-maximising output and price using $MR = MC$.

Lời giải chi tiết

$MR = 80 - 2Q$. Set $MR = MC$: $80 - 2Q = 2Q \Rightarrow 80 = 4Q \Rightarrow Q = 20$. Price: $P = 80 - 20 = \$60$.

Bài tập luyện tập

A firm faces $AR = P = 120 - 2Q$ and total cost $TC = 10Q + Q^2 + 150$.

(a) Derive MR and MC .

(b) Find the profit-maximising output, price, total revenue, total cost and profit.

Lời giải chi tiết

(a) $MR = 120 - 4Q$ (twice the slope of AR). $MC = \frac{d(TC)}{dQ} = 10 + 2Q$.

(b) Set $MR = MC$: $120 - 4Q = 10 + 2Q \Rightarrow 110 = 6Q \Rightarrow Q = 18.33$. Rounding to a whole unit, $Q \approx 18$: $P = 120 - 2(18) = \$84$. $TR = 84 \times 18 = \$1512$. $TC = 10(18) + 18^2 + 150 = 180 + 324 + 150 = \654 . Profit = $1512 - 654 = \$858$ (supernormal profit).

Bài tập luyện tập

A firm faces $AR = P = 50 - 0.5Q$ and $MC = 10$ (constant marginal cost). Find the profit-maximising output and the price charged.

Lời giải chi tiết

$MR = 50 - Q$ (twice the slope of AR , i.e. -1 instead of -0.5). Set $MR = MC$: $50 - Q = 10 \Rightarrow Q = 40$. Price: $P = 50 - 0.5(40) = 50 - 20 = \30 .

4.8.5 Firm objectives**Bài tập luyện tập**

A firm faces $AR = P = 100 - Q$ and $TC = 10Q + 0.5Q^2 + 100$ (so $MC = 10 + Q$).

(a) Find the profit-maximising output using $MR = MC$, and the resulting profit.

(b) Find the sales-revenue-maximising output (where $MR = 0$), and the resulting profit.

(c) Compare the two outputs and comment on why a manager might prefer (b) to (a).

Lời giải chi tiết

$MR = 100 - 2Q$ (twice the slope of AR).

(a) Profit max: $MR = MC$: $100 - 2Q = 10 + Q \Rightarrow 90 = 3Q \Rightarrow Q = 30$. $P = 100 - 30 = \$70$. $TR = 70 \times 30 = \$2100$. $TC = 10(30) + 0.5(30)^2 + 100 = 300 + 450 + 100 = \850 . Profit = $2100 - 850 = \$1250$.

(b) Sales revenue max: $MR = 0$: $100 - 2Q = 0 \Rightarrow Q = 50$. $P = 100 - 50 = \$50$. $TR = 50 \times 50 = \$2500$. $TC = 10(50) + 0.5(50)^2 + 100 = 500 + 1250 + 100 = \1850 . Profit = $2500 - 1850 = \$650$.

(c) The sales-revenue-maximising output (50 units) is much higher than the profit-maximising

output (30 units); revenue is higher (\$2500 vs \$2100) but profit is much lower (\$650 vs \$1250). A manager whose pay, status or job security depends more on firm size/turnover than on profit might rationally prefer (b) – this is the essence of Baumol's sales revenue maximisation hypothesis and the principal-agent problem.

Bài tập luyện tập

Which of the following best describes "satisficing" behaviour by managers?

- (A) Managers always choose the output where $MR = MC$ ten due to imperfect information
- (B) Managers aim for a set of good-enough outcomes across competing objectives (profit, growth, employee welfare), rather than strictly optimising a single goal, of-
- (C) Managers always maximise sales revenue instead of profit
- (D) Managers set prices equal to marginal cost in every market

Lời giải chi tiết

Correct answer: **(B)**. Satisficing reflects the reality that large organisations have multiple stakeholders with competing objectives and imperfect information, so managers often settle for satisfactory (rather than optimal) performance across several goals at once, instead of precisely maximising profit or revenue.

Bài tập luyện tập

Using the concept of the principal-agent problem, explain one reason why the manager of a large public company might approve an expensive new head-office building that does not raise profit.

Lời giải chi tiết

Ownership (shareholders) is separated from control (managers) in a large public company. Shareholders cannot perfectly observe or monitor every managerial decision (asymmetric information), so managers may pursue objectives that benefit themselves personally – e.g. prestige, comfort, or status associated with an impressive head office – even where this does not raise (or even reduces) shareholder profit. This is a classic example of managers ("agents") pursuing their own interests rather than strictly maximising the return to owners ("principals").

4.8.6 The growth of firms

Bài tập luyện tập

Classify each of the following mergers/takeovers as horizontal, forward vertical, backward vertical, or conglomerate integration:

- (a) A smartphone manufacturer takes over a company that mines rare-earth metals used in batteries.
- (b) A coffee-shop chain merges with a rival coffee-shop chain.
- (c) A clothing manufacturer buys a chain of retail clothing stores.
- (d) A soft-drinks company acquires a film production studio.

Lời giải chi tiết

(a) Backward vertical integration (moving toward the raw-material/supplier end of the supply chain). (b) Horizontal integration (same stage, same industry, direct competitors). (c) Forward vertical integration (moving toward the final consumer/retail end). (d) Conglomerate integration (entirely unrelated industries).

Bài tập luyện tập

Explain **two** reasons why a firm might choose external growth (merger/takeover) rather than organic growth.

Lời giải chi tiết

Any two of: (i) **Speed** – external growth is typically much faster than building capacity organically, allowing a firm to gain scale, market share or new capabilities quickly. (ii) **Economies of scale** – merging allows the combined firm to immediately access internal economies of scale (bulk-buying, financial, managerial) that might otherwise take years to build up organically. (iii) **Acquiring capabilities/assets directly** – a takeover can instantly acquire a rival's brand, technology, patents, distribution network or skilled workforce, rather than developing these from scratch. (iv) **Reducing competition/gaining market power** – horizontal mergers reduce the number of rivals and may increase pricing power.

Bài tập luyện tập

Despite the potential cost advantages of large-scale production, small firms continue to survive in most economies. Which of the following is **not** a valid reason for this?

- | | |
|---|--|
| (A) Some markets are niche and too small to attract large-scale producers | (C) Small firms always have lower average costs than large firms in every industry |
| (B) Small firms can offer more personalised service and closer customer relationships | (D) Some owner-managers prefer to keep the firm at a size they can personally manage and monitor |

Lời giải chi tiết

Correct answer: **(C)**. This is not a valid general reason – in many industries, large firms benefit from substantial economies of scale and have *lower*, not higher, average costs than small firms. Small firms survive despite this cost disadvantage, for reasons such as niche markets, personalised service, limited market size relative to minimum efficient scale, and owner preference for manageable scale.

Bài tập luyện tập

A national dairy-processing company takes over a chain of milk delivery and distribution vans that previously operated independently. State and justify the type of integration involved.

Lời giải chi tiết

This is **forward vertical integration**: the dairy processor (further back in the supply chain, producing/processing milk) is acquiring a business (distribution/delivery) that sits closer to the final consumer, i.e. further forward in the same overall supply chain.

4.8.7 Essay-outline questions

Bài tập luyện tập

"A firm should always aim to maximise profit." Discuss the extent to which you agree with this statement. (Outline the key points your answer should cover.)

Lời giải chi tiết

A strong answer would outline both sides before reaching a justified conclusion:

Case for profit maximisation: profit funds investment, research and development, dividends to shareholders, and provides a buffer against future losses or economic downturns; in a competitive market, firms that do not at least approach profit maximisation risk being driven out by rivals or taken over; profit maximisation is the standard assumption used to predict firm behaviour (e.g. the $MR = MC$ rule) and is closest to what owners of small, owner-managed firms typically pursue.

Case against always maximising profit strictly: in large firms, the principal-agent problem means managers (who make day-to-day decisions) may rationally pursue sales/growth, satisfactory profit, or personal objectives instead (Section 4.6); firms may sacrifice short-run profit for long-run market share, brand-building, or to deter entry by rivals; firms increasingly also pursue corporate social responsibility, environmental, or ethical objectives that can conflict with strict short-run profit maximisation; satisficing behaviour reflects the reality of imperfect information and multiple competing stakeholders.

Balanced conclusion: some minimum level of profit is essential for any firm's survival (to attract investment and avoid takeover), but "always" strictly maximising profit at every moment is an unrealistic assumption for many real-world (especially large, public) firms; the appropriate objective may reasonably vary with firm size, ownership structure, competitive pressure, and time horizon (short run versus long run).

Bài tập luyện tập

"Growing larger always allows a firm to reduce its average costs." Discuss the extent to which you agree with this statement. (Outline the key points your answer should cover.)

Lời giải chi tiết

A strong answer would outline both sides before reaching a justified conclusion:

Case for the statement: internal economies of scale (technical, purchasing, financial, managerial, risk-bearing/marketing – Section 4.4) mean that, up to minimum efficient scale, growing larger genuinely does lower long-run average cost; external economies of scale (industry clustering, skilled labour pools, specialist local suppliers) can further reduce costs for all firms in a growing industry.

Case against the statement: beyond minimum efficient scale, internal diseconomies of scale (communication/coordination problems, worker alienation, principal-agent problems) can cause average costs to rise again, giving the $LRAC$ curve its U-shape rather than continuing to fall indefinitely; external diseconomies of scale (congestion, rising local wages/rents from over-concentration) can raise costs for an entire industry regardless of any one firm's actions; minimum efficient scale varies hugely by industry – in some industries (e.g. specialist/niche production) it is reached at low output, so growing much larger brings no further cost benefit and may only add diseconomies.

Balanced conclusion: growth reduces average costs only up to minimum efficient scale; beyond that point, further growth can just as easily raise average costs through diseconomies of

scale, so the statement is only true within a limited range of output, not universally or indefinitely.

Market Structure and the Behaviour of Firms

Mục tiêu Unit: [Mở rộng A2] Bốn cấu trúc thị trường: **cạnh tranh hoàn hảo**, **cạnh tranh độc quyền**, **độc quyền nhóm (oligopoly)** và **độc quyền (monopoly)** – giả định, đường cầu/doanh thu biên, cân bằng ngắn hạn và dài hạn; **hiệu quả phân bổ** ($P = MC$) và **hiệu quả sản xuất** ($P = \min AC$) trong cạnh tranh hoàn hảo dài hạn; **cạnh tranh phi giá** và hiện tượng **dư thừa năng lực sản xuất** trong cạnh tranh độc quyền; **đường cầu gãy khúc** và tính **cứng nhắc của giá** trong độc quyền nhóm; **cấu kết công khai/ngầm** và **lý thuyết trò chơi** (thế lưỡng nan của tù nhân) giải thích vì sao cấu kết dễ đổ vỡ; rào cản gia nhập của độc quyền; **phân biệt giá cấp 1/2/3** và ba điều kiện cần thiết; **độc quyền tự nhiên** và vấn đề điều tiết; khái niệm **thị trường có thể cạnh tranh (contestable markets)** qua chi phí chìm và đe dọa gia nhập "đánh nhanh rút gọn"; và đánh đổi giữa **hiệu quả tĩnh** và **hiệu quả động/động lực đổi mới** (lập luận Schumpeter).

[A2 extension] This unit builds on the AS-level introduction to demand, supply and costs to give a full analysis of how price and output are determined under four distinct **market structures**: perfect competition, monopolistic competition, oligopoly and monopoly. Throughout, the profit-maximising rule $MR = MC$ from AS is applied to each structure in turn, short-run outcomes are contrasted with long-run outcomes once entry and exit have had time to operate, and each structure's long-run economic efficiency is evaluated. The unit closes with two ideas unique to the A2 syllabus: **price discrimination** (including a full third-degree numerical example) and **contestable markets**.

5.1 Perfect Competition

5.1.1 Assumptions of the model

Perfect competition is a theoretical market structure built on a demanding set of assumptions. No real-world market satisfies every assumption exactly, but some markets for undifferentiated primary commodities (e.g. wheat, foreign exchange) come close, and the model is invaluable as a benchmark against which other, more realistic structures can be judged.

Assumptions of perfect competition

- **Very many buyers and sellers**, each so small relative to the size of the whole market that no single firm can influence the market price by varying its own output.
- **A homogeneous (identical) product**: every firm's output is a perfect substitute for every other firm's output, so buyers have no reason to prefer one firm's product over another's.
- **Freedom of entry and exit**: no barriers prevent new firms from entering the industry when it is profitable to do so, or existing firms from leaving when it is not.
- **Perfect information**: all buyers and sellers have complete, costless knowledge of prices, costs and technology, so no firm can charge above the going market price and expect to sell anything.
- **Firms aim to maximise profit**, and factors of production are perfectly mobile between uses.

GIẢI THÍCH TIẾNG VIỆT

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Cạnh tranh hoàn hảo giả định: rất nhiều người mua/bán nhỏ (không ai ảnh hưởng được giá thị trường), sản phẩm **đồng nhất**, **tự do gia nhập/rút lui**, và **thông tin hoàn hảo**. Không thị trường thực tế nào thoả mãn hoàn toàn các giả định này, nhưng mô hình là chuẩn mực lý thuyết để so sánh với các cấu trúc thị trường khác.

5.1.2 The firm as a price taker: $D = AR = MR$

Because each firm is infinitesimally small relative to the whole market, and its product is identical to every rival's, an individual firm cannot raise its price even slightly above the ruling market price – buyers would simply switch entirely to a rival firm's identical product. Nor does the firm need to lower its price to sell more, since at the ruling market price it can already sell as much as it wishes. The firm is therefore a **price taker**: it faces a perfectly elastic (horizontal) demand curve at the market price, set by the intersection of the whole industry's demand and supply curves.

For a price-taking firm, every extra unit sold adds exactly the market price P to total revenue. This means **average revenue equals marginal revenue equals price**: $AR = MR = P$, and the firm's demand curve, AR curve and MR curve are all the same horizontal line. This is the single feature that distinguishes a perfectly competitive firm from every other market structure studied in this unit, all of which face a downward-sloping demand curve and therefore $MR < AR$.

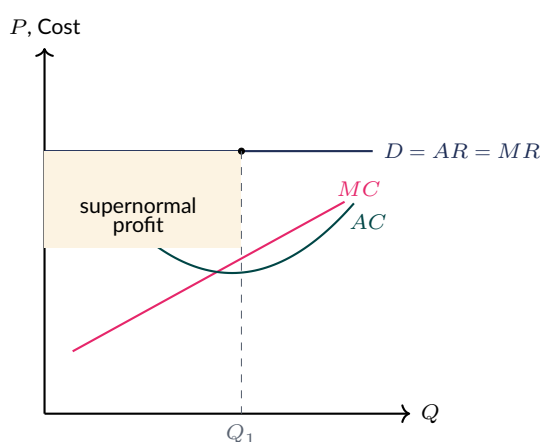
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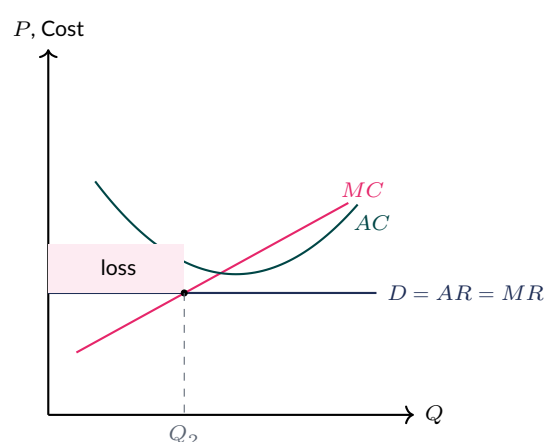
Vì doanh nghiệp quá nhỏ và sản phẩm đồng nhất, doanh nghiệp **không thể tự đặt giá** – phải chấp nhận giá thị trường (**price taker**). Do đó đường cầu của doanh nghiệp là đường **nằm ngang hoàn toàn co giãn** tại mức giá thị trường, và $D = AR = MR = P$ – khác hẳn với mọi cấu trúc thị trường khác trong bài (nơi đường cầu dốc xuống nên $MR < AR$).

5.1.3 Short-run equilibrium: supernormal profit and loss

In the short run, the number of firms in the industry is fixed (there has not been time for new firms to enter or existing firms to leave). Each existing firm still maximises profit by producing where $MR = MC$, but because $MR = P$, this rule becomes simply **produce where $P = MC$** . Depending on where the market price happens to sit relative to the firm's average cost curve, the firm may earn **supernormal profit** or make a **loss** in the short run.



Panel A: at price P_1 , $MC = MR$ at Q_1 , where $AR > AC$ – shaded **supernormal profit**.



Panel B: at the lower price P_2 , $MC = MR$ at Q_2 , where $AC > AR$ – shaded **loss**.

Figure 5.1. Short-run equilibrium in perfect competition. Panel A: the market price is high enough that the firm earns supernormal profit at its profit-maximising output. Panel B: the market price has fallen below the firm's average cost at

every output, so the profit-maximising firm minimises its unavoidable loss by still producing where $MC = MR$ (provided price still covers average variable cost).

GIẢI THÍCH TIẾNG VIỆT

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Trong ngắn hạn, số lượng doanh nghiệp trong ngành **cố định** (chưa kịp gia nhập/rút lui). Doanh nghiệp vẫn sản xuất tại $MC = MR$ (tức $P = MC$ vì $MR = P$). Nếu giá thị trường **cao** (Panel A), $AR > AC$ tại sản lượng tối ưu → **lợi nhuận siêu ngạch (supernormal profit)**. Nếu giá thị trường **thấp** (Panel B), $AC > AR$ → doanh nghiệp **lỗ**, nhưng vẫn tiếp tục sản xuất trong ngắn hạn miễn giá còn đủ bù đắp chi phí biến đổi bình quân (AVC).

5.1.4 Long-run equilibrium: entry, exit, and normal profit only

Perfect competition allows free entry and exit, and this is what turns the short-run outcomes above into a single, self-correcting long-run outcome.

The entry/exit adjustment mechanism

- If existing firms are earning **supernormal profit** (Figure 5.1, Panel A), this signals to firms outside the industry that returns here exceed what they could earn elsewhere. With no barriers to entry, new firms are attracted in. As they enter, total industry supply rises, shifting the industry supply curve right and pushing the market price down. Entry continues – and price keeps falling – for as long as supernormal profit remains available.
- If existing firms are making a **loss** (Figure 5.1, Panel B), some firms are earning less than they could elsewhere and, in the long run, choose to exit the industry. As firms leave, total industry supply falls, shifting the industry supply curve left and pushing the market price up. Exit continues – and price keeps rising – for as long as firms are making a loss.
- This process only comes to rest once price has been driven to the level at which every remaining firm earns **exactly normal profit** – no more, no less. At that point there is no further incentive for entry or exit, and the industry is in **long-run equilibrium**.

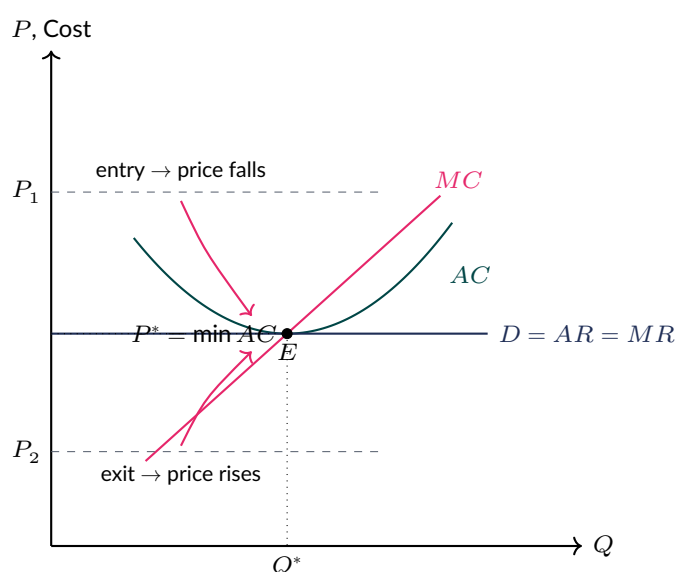


Figure 5.2. Long-run equilibrium in perfect competition. Entry (triggered by price P_1 , above P^*) shifts industry supply right and drives price down; exit (triggered by price P_2 , below P^*) shifts industry supply left and drives price up. Both processes converge on E , where $P = AR = MR = MC = \min AC$ and every firm earns only **normal profit**.

Long-run equilibrium in perfect competition: $P = AR = MR = MC = \min AC$. Because price has been driven all the way down (or up) to the minimum point of the average cost curve, every firm produces at its most cost-efficient output and earns only **normal profit** – the bare minimum return needed to keep the entrepreneur's resources in this industry rather than their next-best alternative.

GIẢI THÍCH TIẾNG VIỆT

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Lợi nhuận siêu ngạch thu hút doanh nghiệp mới **gia nhập** → cung ngành tăng → giá giảm dần. **Thua lỗ** khiến doanh nghiệp **rút lui** → cung ngành giảm → giá tăng dần. Quá trình này dừng lại khi giá đạt đúng mức $P^* = \min AC$, nơi mọi doanh nghiệp chỉ còn **lợi nhuận thông thường (normal profit)** – đây là **cân bằng dài hạn** của cạnh tranh hoàn hảo.

5.1.5 Efficiency in long-run perfect competition

The long-run equilibrium of perfect competition is remarkable because it simultaneously satisfies two separate efficiency conditions.

Allocative and productive efficiency

- **Allocative efficiency** ($P = MC$): the price paid by consumers exactly equals the marginal (opportunity) cost of producing one more unit. Resources are allocated exactly as consumers value them – no one could be made better off by producing more or less of the good without making someone else worse off.
- **Productive efficiency** ($P = \min AC$): the firm produces at the lowest point of its average cost curve, so output is produced using the fewest possible resources per unit – there is no technical waste.

Because long-run perfect competition delivers $P = MC = \min AC$ simultaneously, it achieves *both* forms of efficiency at once – a benchmark that, as later sections show, monopolistic competition, oligopoly and monopoly all fail to reach in the long run.

GIẢI THÍCH TIẾNG VIỆT

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Hiệu quả phân bổ (allocative efficiency): $P = MC$ – giá đúng bằng chi phí biên, nguồn lực được phân bổ đúng theo mong muốn người tiêu dùng. **Hiệu quả sản xuất (productive efficiency):** $P = \min AC$ – sản xuất tại điểm chi phí bình quân thấp nhất, không lãng phí nguồn lực. Cạnh tranh hoàn hảo dài hạn đạt **cả hai** cùng lúc – đây là chuẩn mực lý tưởng mà các cấu trúc thị trường khác không đạt được trong dài hạn.

(!) Lỗi thường gặp: Normal profit is a cost, not zero profit. Normal profit is already built into the average cost (AC) curve as the opportunity cost of the entrepreneur's time and capital – it is the minimum return needed to keep those resources in this industry rather than their next-best use elsewhere. So when long-run equilibrium gives $P = AC$, this does *not* mean the firm earns "zero profit" in any everyday sense: it means the firm earns exactly enough to cover all its costs, *including* a normal return to the entrepreneur. Never write that firms in long-run perfect competition "make no profit at all" – write that they earn "normal profit only, with zero *supernormal* (economic) profit."

5.2 Monopolistic Competition

5.2.1 Assumptions

Monopolistic competition relaxes exactly one assumption of perfect competition – the requirement that the product be homogeneous – and this single change has far-reaching consequences.

Assumptions of monopolistic competition

- **Many firms**, though typically fewer than in perfect competition, none large enough to dominate the market.
- **Differentiated products**: each firm's product is a close, but not perfect, substitute for its rivals' – differentiated by branding, design, quality, location or customer service (e.g. restaurants, hairdressers, coffee shops).
- **Freedom of entry and exit**, much as in perfect competition.
- Because its product is slightly different from rivals', each firm has a small degree of **price-setting power**: it faces a **downward-sloping but relatively elastic** demand curve (elastic because there remain many close substitutes to switch to if the firm raises its price).

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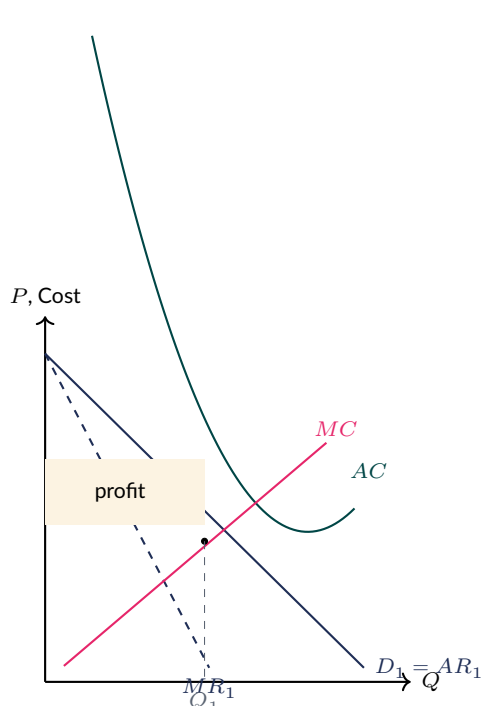
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Cạnh tranh độc quyền: nhiều doanh nghiệp, sản phẩm **khác biệt hoá** (thương hiệu, chất lượng, vị trí...), tự do gia nhập/rút lui. Vì sản phẩm khác biệt, doanh nghiệp có **chút quyền định giá** – đường cầu **dốc xuống nhưng tương đối co giãn** (do vẫn còn nhiều sản phẩm thay thế gần giống).

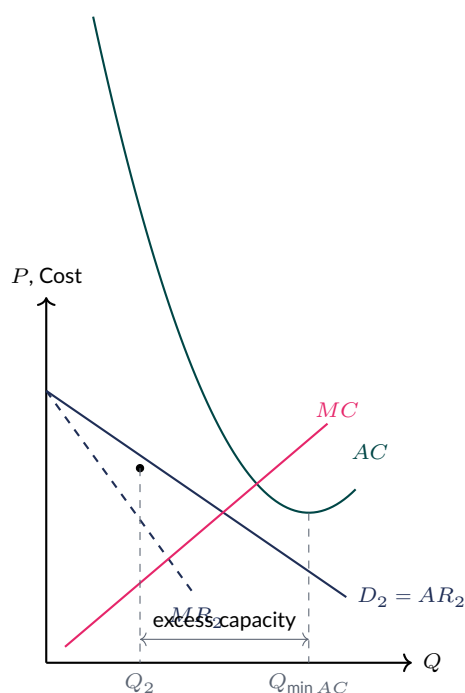
5.2.2 Short-run supernormal profit and long-run normal profit

In the short run, a monopolistically competitive firm maximises profit exactly like a monopolist: it sets $MR = MC$ and reads the price off its (downward-sloping) demand curve. If demand is favourable relative to costs, this can generate supernormal profit, exactly as in Panel A below.

But because entry is free, supernormal profit cannot persist. New firms, attracted by the profit, enter with their own similar (differentiated) products. Every incumbent firm now shares the total market with more rivals, so *each individual firm's* demand curve shifts **left** (and may become slightly more elastic, as more substitutes appear). Entry continues until each firm's demand curve has shifted left enough that it is exactly **tangent** to its average cost curve at the profit-maximising output – price equals average cost, and only normal profit remains.



Panel A (short run): $MR_1 = MC$ at Q_1 ; reading price off D_1 gives $AR > AC$ – supernormal profit.



Panel B (long run): entry has shifted demand left to D_2 , now tangent to AC at Q_2 where $MR_2 = MC$ – $AR = AC$, only normal profit, and Q_2 lies left of $Q_{\min AC}$ (excess capacity).

Figure 5.3. Monopolistic competition. Panel A: short-run supernormal profit, exactly as a monopolist would earn. Panel B: entry of new firms with differentiated products shifts each incumbent's demand curve left until it is tangent to AC – long-run normal profit only, with output below the cost-minimising quantity $Q_{\min AC}$.

GIẢI THÍCH TIẾNG VIỆT

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Ngắn hạn: doanh nghiệp có thể có **lợi nhuận siêu ngạch** (Panel A) giống hệt độc quyền. Vì tự do gia nhập, lợi nhuận này thu hút đối thủ mới với sản phẩm tương tự → đường cầu của từng doanh nghiệp dịch chuyển **sang trái** cho đến khi **tiếp xúc (tangent)** với đường AC tại điểm $MR = MC$ (Panel B) – chỉ còn **lợi nhuận thông thường**, và sản lượng nằm bên trái điểm AC tối thiểu, gọi là **dư thừa năng lực sản xuất (excess capacity)**.

5.2.3 Non-price competition

Because differentiation, not price, is the main weapon available to a monopolistically competitive firm, these markets are characterised by heavy **non-price competition**: advertising and branding to build customer loyalty and make demand less elastic; continuous product differentiation (new flavours, features, packaging, store design); investment in perceived quality and customer service; and loyalty schemes. Successful non-price competition can shift a firm's demand curve right and make it less elastic, allowing the firm to sustain supernormal profit for longer before new entry (or imitation by rivals) erodes it away.

5.2.4 Comparing efficiency with perfect competition

Monopolistic competition vs. perfect competition – efficiency

- **Allocative inefficiency:** because the firm's demand curve is downward-sloping (not horizontal), the tangency point in Figure 5.3, Panel B occurs where $AR > MC$ – price exceeds marginal cost, so monopolistic competition is **allocatively inefficient**, unlike perfect competition.

- **Productive inefficiency / excess capacity:** the tangency point occurs to the **left** of $Q_{\min AC}$, so the firm does not produce at its lowest-cost output – it operates with spare (excess) capacity, unlike the productively efficient long-run outcome in perfect competition.
- **But consumers gain from variety:** unlike perfect competition's single homogeneous product, monopolistic competition offers consumers a wide range of differentiated products to match diverse tastes – a genuine consumer benefit that the efficiency conditions above do not capture.

GIẢI THÍCH TIẾNG VIỆT

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So với cạnh tranh hoàn hảo, cạnh tranh độc quyền kém hiệu quả phân bổ hơn ($P > MC$) và kém hiệu quả sản xuất hơn (dư thừa năng lực, không sản xuất tại mức AC). Tuy nhiên, người tiêu dùng được lợi từ **sự đa dạng sản phẩm** – điều mà cạnh tranh hoàn hảo (sản phẩm đồng nhất) không mang lại được.

5.3 Oligopoly

5.3.1 Defining features

An **oligopoly** is a market dominated by a small number of large firms.

Defining features of oligopoly

- **Few, dominant firms:** a small number of large firms account for most of industry output or sales (often measured by a concentration ratio, e.g. the combined market share of the largest four or five firms).
- **High barriers to entry:** economies of scale, high advertising/branding costs, patents, or control over key inputs make it hard for new firms to enter and challenge incumbents.
- **Interdependence:** because there are so few firms, each is large enough that its pricing and output decisions *directly* affect its rivals' sales and profits – and vice versa. Firms must therefore consider how rivals are likely to *react* before making any decision. This mutual interdependence is the single feature that most distinguishes oligopoly from every other market structure in this unit.

GIẢI THÍCH TIẾNG VIỆT

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Độc quyền nhóm (oligopoly): ít doanh nghiệp lớn thống trị thị trường, rào cản gia nhập cao, và đặc điểm quan trọng nhất là **sự phụ thuộc lẫn nhau (interdependence)** – quyết định giá/sản lượng của một doanh nghiệp ảnh hưởng trực tiếp đến đối thủ, nên mỗi doanh nghiệp phải tính đến phản ứng có thể có của đối thủ trước khi hành động.

5.3.2 The kinked demand curve model

The **kinked demand curve** model explains a striking real-world feature of oligopoly: prices often stay remarkably **rigid (sticky)** for long periods, even when costs change, because firms fear how rivals will react to any price change they might make.

The reasoning behind the kink

Consider an oligopolist currently charging price P_0 at output Q_0 , and ask what its rivals are likely to do if it changes price.

- **If the firm raises its price above P_0 :** rivals have every incentive *not* to follow – by holding

their own price steady, rivals attract away many of the price-raising firm's customers. The firm therefore loses a large share of sales for a given price rise: demand is **relatively elastic** above P_0 .

- If the firm cuts its price below P_0 : rivals have every incentive to follow immediately, matching the cut to avoid losing their own market share. Because every rival matches the cut, the price-cutting firm gains only a small increase in sales (mostly from the market growing slightly, not from stealing rivals' customers): demand is **relatively inelastic** below P_0 .

This asymmetry – rivals match cuts but not rises – produces a demand curve with a **kink** at (Q_0, P_0) : relatively flat (elastic) above the kink, relatively steep (inelastic) below it.

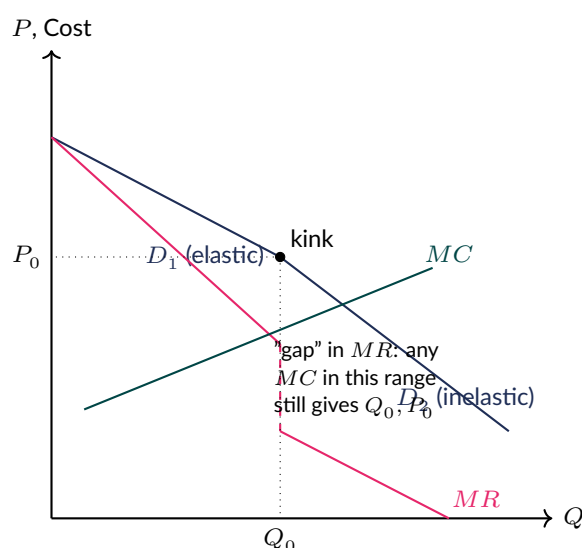


Figure 5.4. The kinked demand curve. Demand is relatively elastic (D_1) above the kink and relatively inelastic (D_2) below it, producing a **discontinuous "gap"** in the marginal revenue curve at Q_0 . Any MC curve passing through this vertical gap intersects MR at the same Q_0 – so the firm's profit-maximising price and output do not change even if costs shift moderately, explaining **price rigidity** in oligopoly.

Because MR is derived separately from each segment of demand, it is **discontinuous** exactly at the kink quantity Q_0 : it drops abruptly from a higher value (associated with the elastic segment D_1) to a lower value (associated with the inelastic segment D_2). As long as the firm's marginal cost curve cuts through this vertical gap – even after a moderate rise or fall in costs – the profit-maximising rule $MR = MC$ still points to exactly the same output Q_0 and price P_0 . This is why oligopoly prices are often observed to stay fixed for long periods despite changing costs: firms avoid price wars (from cutting) and avoid losing market share (from raising), so ordinary cost fluctuations are absorbed into profit margins rather than passed on to price.

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VN

Nếu doanh nghiệp **tăng giá**, đối thủ **không tăng theo** → doanh nghiệp mất nhiều khách hàng → cầu **co giãn** phía trên điểm gãy. Nếu doanh nghiệp **giảm giá**, đối thủ **giảm theo ngay** → doanh nghiệp chỉ tăng được ít lượng bán → cầu **kém co giãn** phía dưới điểm gãy. Điều này tạo ra **đường cầu gãy khúc** và một **khoảng gián đoạn (gap)** trong đường MR – miễn MC còn nằm trong khoảng gap này, giá và sản lượng tối ưu **không đổi** dù chi phí biến động – giải thích tính **cứng nhắc của giá (price rigidity)** trong độc quyền nhóm.

(!) Lỗi thường gặp: The kinked demand curve model explains why price, once set, tends to stay **rigid** – it does *not* explain how the initial price P_0 was determined in the first place. Do not claim the model predicts the level of oligopoly prices; it only predicts that, once some price has been established (by convention, history, or a former price war), oligopolists have little incentive to change it unilaterally.

5.3.3 Collusion: overt and tacit

Given their mutual interdependence, oligopolists have a strong incentive to cooperate rather than compete, since coordinating on a high, monopoly-like price raises the profits of *every* firm in the industry at once.

Overt collusion vs. tacit collusion

- **Overt (explicit) collusion:** firms formally agree, often in secret, to fix prices, restrict output, or divide up the market – the clearest example is a **cartel**, such as the Organization of the Petroleum Exporting Countries (**OPEC**), whose members coordinate oil production quotas to influence the world price of oil. Overt collusion is illegal under competition law in most countries and, if detected, attracts heavy fines.
- **Tacit (implicit) collusion:** firms coordinate their behaviour *without* any explicit agreement, simply by observing and following a recognised pattern – most commonly **price leadership**, where a dominant firm sets the price and smaller rivals follow it, avoiding a price war that would harm everyone. Tacit collusion is far harder for competition authorities to detect or prove than an explicit cartel agreement.

GIẢI THÍCH TIẾNG VIỆT

VN

Cấu kết công khai (overt collusion): các doanh nghiệp **thoả thuận trực tiếp** về giá/sản lượng, ví dụ điển hình là **cartel** như **OPEC** (thoả thuận hạn ngạch sản xuất dầu). Đây là **bất hợp pháp** ở hầu hết các nước. **Cấu kết ngầm (tacit collusion):** các doanh nghiệp phối hợp **không cần thoả thuận rõ ràng**, phổ biến nhất là **doanh nghiệp dẫn đầu về giá (price leadership)** – doanh nghiệp lớn đặt giá, các doanh nghiệp nhỏ hơn làm theo.

5.3.4 Non-collusive oligopoly and the game-theory logic of the prisoner's dilemma

In practice, collusion (especially overt collusion) is often unstable and tends to break down. **Game theory** – specifically, the **prisoner's dilemma** – explains why: even when collusion would make both firms better off, each firm individually has an incentive to secretly break the agreement (“cheat”) by cutting its own price to grab market share, especially if it expects the other firm to keep to the high price.

		Firm Y	
		High price	Low price
Firm X	High price	(50, 50)	(20, 60)
	Low price	(60, 20)	(30, 30)

Table 5.1. Payoff matrix for a simultaneous pricing game between two firms. Each cell shows (Firm X's profit, Firm Y's profit) in \$m, given the two firms' simultaneous price choices.

Ví dụ mẫu · Worked example – Finding the Nash equilibrium in Table 5.1

Two firms, X and Y, each independently choose to charge a High price or a Low price. Explain, using dominant strategy reasoning, why both firms end up charging a Low price even though both would earn more profit if they both charged a High price.

Step 1 – analyse Firm X's best response to each of Y's choices. If Firm Y charges a High price, Firm X earns \$50m by also charging High, but \$60m by undercutting with a Low price – so Low price is better for X. If Firm Y charges a Low price, Firm X earns \$20m by charging High (badly undercut) but \$30m by also charging Low – so Low price is again better for X. **Charging a Low price is therefore a dominant strategy for Firm X:** it is X's best choice *no matter what Y does*.

Step 2 – by the symmetry of the payoff table, exactly the same reasoning applies to Firm Y: Low price is Y's dominant strategy too, regardless of what X does.

Step 3 – the Nash equilibrium. Since Low price is each firm's best response to the other firm's Low price, neither firm can do better by unilaterally switching – so **(Low price, Low price), with payoffs (\$30m, \$30m), is the Nash equilibrium** of this game.

Step 4 – the prisoner's dilemma logic. Notice that if both firms had instead charged a High price, both would have earned \$50m each – strictly more than the \$30m each earns in the Nash equilibrium. (High price, High price) is **Pareto superior** (better for both firms) to (Low price, Low price), but it is *not* a Nash equilibrium: each firm, tempted by the higher \$60m payoff available from secretly undercutting the other, has an incentive to break any collusive High-price agreement. This is exactly why collusion between oligopolists is inherently **unstable**: even a formal cartel agreement to keep prices high is vulnerable to cheating, because cheating raises the cheater's own profit given the rival is expected to stick to the agreement.

GIẢI THÍCH TIẾNG VIỆT

VN

Chiến lược trội (dominant strategy): một lựa chọn luôn tốt hơn **bất kể** đối thủ làm gì. Trong Bảng 5.1, "giá thấp" là chiến lược trội của cả hai doanh nghiệp, nên **cân bằng Nash** là (giá thấp, giá thấp) với lợi nhuận (30, 30) – dù (giá cao, giá cao) mang lại (50, 50) tốt hơn cho *cả hai*. Đây chính là logic của **thế lưỡng nan của tù nhân (prisoner's dilemma)**: mỗi doanh nghiệp đều có động cơ "lật kèo" giảm giá để giành thị phần, khiến **cấu kết dễ đổ vỡ**.

5.4 Monopoly

5.4.1 Barriers to entry

A **monopoly** is a market with a single seller, protected from competition by significant barriers to entry.

Barriers to entry that sustain a monopoly

- **Legal barriers:** patents, copyrights, licences or government franchises that give one firm the exclusive legal right to supply a good or service, at least for a period of time.
- **Natural monopoly / economies of scale:** if minimum efficient scale is very large relative to total market demand, a single large firm can supply the whole market at a lower average cost than two or more smaller firms could – discussed in detail below.
- **Brand loyalty:** heavy, sustained advertising and reputation-building can make it very costly for a new entrant to persuade consumers to switch away from an established, trusted brand.

- **Control of key resources:** ownership or control of an essential input (e.g. a unique raw material, a critical patent, or a strategic location) can physically prevent rivals from entering at all.

GIẢI THÍCH TIẾNG VIỆT

VN

Rào cản gia nhập giúp độc quyền tồn tại: **rào cản pháp lý** (bằng sáng chế, giấy phép độc quyền), **lợi thế kinh tế theo quy mô/độc quyền tự nhiên**, **lòng trung thành thương hiệu**, và **kiểm soát nguồn lực then chốt**.

5.4.2 Profit maximisation: $MR = MC$

Facing a downward-sloping market demand curve (since it is the whole market), a monopolist maximises profit exactly as any other firm does: by producing where $MR = MC$, then reading the price consumers are willing to pay off the demand curve at that output.

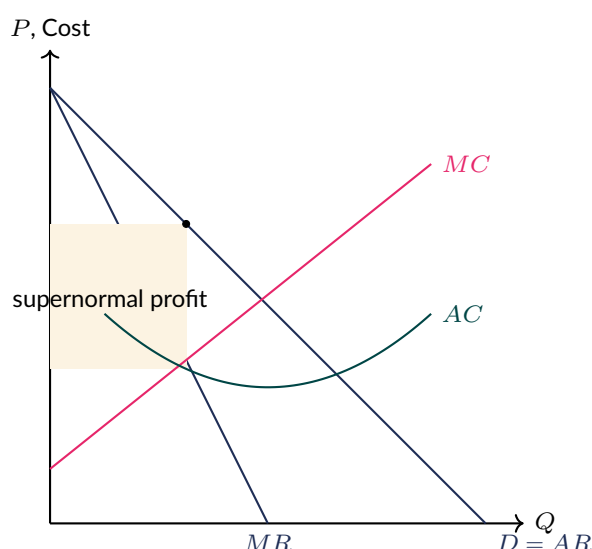


Figure 5.5. Monopoly profit maximisation: output Q_m where $MC = MR$; price P_m is read off the demand curve at Q_m . Because entry is blocked by barriers, the supernormal profit rectangle (shaded) can persist indefinitely, even in the long run.

Ví dụ mẫu · Worked example – Profit maximisation, $MR = MC$

A firm faces demand $P = 60 - Q$ and marginal cost $MC = 12 + Q$. Its average total cost at the profit-maximising output is \$30. Find the profit-maximising price, quantity and total profit.

$TR = PQ = (60 - Q)Q = 60Q - Q^2 \Rightarrow MR = 60 - 2Q$. Set $MR = MC$: $60 - 2Q = 12 + Q \Rightarrow Q = 16$, $P = \$44$. Profit = $(44 - 30) \times 16 = \$224$.

GIẢI THÍCH TIẾNG VIỆT

VN

Độc quyền tối đa hoá lợi nhuận tại $MR = MC$, sau đó đọc giá bán tương ứng trên đường cầu. Vì có rào cản gia nhập, **lợi nhuận siêu ngạch có thể tồn tại trong dài hạn** – khác với cạnh tranh hoàn hảo, nơi lợi nhuận siêu ngạch chỉ tồn tại trong ngắn hạn.

5.4.3 Price discrimination

Price discrimination occurs when a firm with market power charges *different* prices to different consumers (or groups of consumers) for an identical good or service, where the price difference is *not* justified by any difference in the cost of supplying them.

Three degrees of price discrimination

- **First-degree (perfect) price discrimination:** the firm charges every individual consumer the exact maximum price that consumer is willing to pay for each unit. This extracts the *entire* consumer surplus, converting it into extra producer revenue – rare in its pure form, but approximated by some online personalised pricing and haggled/negotiated sales.
- **Second-degree price discrimination:** the firm charges different prices for different *quantities or blocks* of the same good, e.g. bulk discounts, or a lower price per unit for consumption above a threshold (common in electricity, water and gas tariffs).
- **Third-degree price discrimination:** the firm separates the market into distinct groups of consumers based on some identifiable characteristic (e.g. age, student status, location, time of purchase) and charges each group a different price, based on the price elasticity of demand within each group. This is by far the most common form seen in practice (e.g. cinema, airline and rail tickets).

Three conditions necessary for price discrimination

1. The firm must have some degree of **market power** (a downward-sloping demand curve) – a perfectly competitive price-taking firm cannot price discriminate at all.
2. The firm must be able to **identify and separate** consumers into distinct groups (or charge individuals separately) by some observable characteristic linked to willingness to pay, e.g. age, student ID, or time of travel.
3. The firm must be able to **prevent resale (arbitrage)** between the groups: if consumers who buy at the low price could easily resell to those charged the high price, the price gap would be competed away.

GIẢI THÍCH TIẾNG VIỆT

VN

Phân biệt giá cấp 1 (hoàn hảo): tính đúng mức giá tối đa mỗi cá nhân sẵn lòng trả – lấy hết thặng dư tiêu dùng. **Phân biệt giá cấp 2:** giá khác nhau theo **khối lượng/gói** tiêu dùng (VD: giá điện bậc thang). **Phân biệt giá cấp 3:** chia thị trường thành các nhóm (tuổi, sinh viên, thời điểm mua) và tính giá khác nhau theo độ co giãn cầu – phổ biến nhất (vé xem phim, vé máy bay). **Ba điều kiện cần thiết:** (1) doanh nghiệp có **quyền lực thị trường**; (2) có thể **nhận diện và tách nhóm** khách hàng; (3) có thể **ngăn chặn việc bán lại (arbitrage)** giữa các nhóm.

Ví dụ mẫu · Worked example – Third-degree price discrimination: adult vs. student cinema tickets

A cinema has constant marginal cost $MC = \$5$ per ticket (cleaning, staffing and concession costs per seat). It can separate its audience into two segments by requiring student ID, preventing resale of tickets between groups. Demand in each segment is: **Adults:** $Q_A = 200 - 10P_A$; **Students:** $Q_S = 300 - 20P_S$. Find the profit-maximising price and quantity in each segment, and compare total profit with what the cinema would earn if forced to charge a single uniform price to the whole market.

Adult segment. Inverting demand: $P_A = 20 - 0.1Q_A \Rightarrow TR_A = 20Q_A - 0.1Q_A^2 \Rightarrow MR_A = 20 - 0.2Q_A$. Set $MR_A = MC$: $20 - 0.2Q_A = 5 \Rightarrow Q_A = 75$, $P_A = 20 - 0.1(75) = \$12.50$.

Student segment. $P_S = 15 - 0.05Q_S \Rightarrow MR_S = 15 - 0.1Q_S$. Set $MR_S = MC$: $15 - 0.1Q_S = 5 \Rightarrow Q_S = 100$, $P_S = 15 - 0.05(100) = \$10.00$.

Why students pay less: at these prices, the point elasticity of demand is $-10 \times \frac{12.50}{75} = -1.67$

for adults and $-20 \times \frac{10}{100} = -2.00$ for students – the student segment has the *more elastic* demand, so it is charged the *lower* price, exactly as the theory predicts.

Profit with discrimination: $\pi = (12.50 - 5)(75) + (10 - 5)(100) = \$562.50 + \$500 = \$1,062.50$.

Compare with a single uniform price. Combined demand (for prices where both segments buy, $P < \$15$): $Q = 500 - 30P \Rightarrow P = 16.6\bar{7} - 0.0\bar{3}Q \Rightarrow MR = 16.6\bar{7} - 0.0\bar{6}Q$. Set $MR = MC$: $16.6\bar{7} - 0.0\bar{6}Q = 5 \Rightarrow Q = 175$, $P = \frac{500 - 175}{30} = \10.83 . Uniform profit $= (10.83 - 5)(175) = \$1,020.83$.

Conclusion: price discrimination raises the cinema's profit from \$1,020.83 to \$1,062.50 – an extra \$41.67 – by charging closer to each segment's true willingness to pay, rather than one compromise price for everyone.

GIẢI THÍCH TIẾNG VIỆT

VN

Ví dụ: rạp chiếu phim tách vé người lớn và sinh viên. Sinh viên có cầu **co giãn hơn** nên được tính giá **thấp hơn** (\$10 so với \$12.50 của người lớn). Tổng lợi nhuận khi phân biệt giá (\$1.062,50) **cao hơn** so với chỉ tính một mức giá đồng nhất cho cả thị trường (\$1.020,83) – đây là lý do các doanh nghiệp có quyền lực thị trường luôn muốn phân biệt giá khi có thể.

5.4.4 Natural monopoly and regulation

A **natural monopoly** arises where the minimum efficient scale of production is so large, relative to total market demand, that having a single firm supply the entire market results in a lower average cost per unit than having two or more competing firms – because long-run average cost keeps falling over the whole relevant range of output (very high fixed infrastructure costs spread over more and more units). Classic examples are utilities with extensive fixed networks: water pipes, electricity and gas grids, and rail track – it would be hugely wasteful for several firms to each build a duplicate national network.

For a natural monopoly, allowing a single firm to supply the whole market can be the *most efficient* outcome technically (lowest cost per unit) – but, left unregulated, that same firm has every incentive to exploit its market power by restricting output and charging a price well above marginal cost, exactly as in Figure 5.5. This tension – efficient in production, but potentially exploitative in pricing – is the central case for regulating natural monopolies.

The case for and against regulating a natural monopoly

- **Case for regulation:** without it, an unregulated natural monopoly could restrict output and set price well above marginal cost, causing allocative inefficiency and transferring consumer surplus into monopoly profit; regulation (e.g. price caps, requiring the firm to charge closer to average or marginal cost, or government ownership) can push price and output closer to the efficient level while still allowing the firm to cover its costs.
- **Case against (or the limits of) regulation:** regulation is costly and complex to administer, and the regulator rarely has as much information about true costs as the firm itself (**information asymmetry**), risking a price cap set too high (little consumer benefit) or too low (the firm cannot cover costs and under-invests). Regulators can also become **captured** by the industry they oversee, and rigid price caps can blunt a firm's incentive to cut its own costs, since keeping costs artificially high can sometimes justify a higher allowed price (particularly under cost-plus style regulation).

GIẢI THÍCH TIẾNG VIỆT

VN

Độc quyền tự nhiên: chi phí cố định cực lớn (mạng lưới điện, nước, đường sắt) khiến **một doanh nghiệp duy nhất** sản xuất hiệu quả hơn nhiều doanh nghiệp cạnh tranh. Nhưng nếu không kiểm soát, doanh nghiệp này có thể lạm dụng quyền lực để đặt giá cao. **Ủng hộ điều tiết:** bảo vệ người tiêu dùng, đưa giá gần chi phí biên hơn. **Phản đối/hạn chế:** chi phí quản lý cao, **bất cân xứng thông tin** (nhà điều tiết không biết rõ chi phí thật bằng doanh nghiệp), nguy cơ **"bị thâm tóm"** bởi chính ngành mình giám sát, và có thể làm giảm động lực cắt giảm chi phí.

5.5 [A2 extension] Contestable Markets

5.5.1 Defining contestability

A **contestable market** is one in which the *threat* of entry, rather than the actual number of firms currently operating, disciplines the pricing and output behaviour of incumbent firms. The single most important requirement for a market to be contestable is the **absence of significant sunk costs**.

Sunk costs and hit-and-run entry

A **sunk cost** is a cost that, once incurred, cannot be recovered if the firm later decides to leave the market (e.g. money spent on a factory built to one specific, non-transferable design, or an advertising campaign). If entering a market requires *no* significant sunk costs – for example, capital equipment can be resold easily, or simply moved to another market – then a potential entrant can attempt **hit-and-run entry**: enter quickly whenever it observes incumbents earning supernormal profit, undercut their price, make a quick profit, and exit again (at little or no cost) if incumbents retaliate. Because incumbents know this threat is real and immediate, they are forced to keep price close to average cost *even without any actual entry ever taking place* – the mere *threat* is enough to discipline pricing.

A highly contestable market can behave much like perfect competition – price close to average cost, only normal profit, output close to the allocatively efficient level – **even if it is currently supplied by only one or a few firms**, provided entry and exit barriers (especially sunk costs) are low. Market structure (the number of firms observed today) is therefore not, by itself, a reliable guide to how competitively a market actually behaves; the *height of entry and exit barriers* matters at least as much.

GIẢI THÍCH TIẾNG VIỆT

VN

Thị trường có thể cạnh tranh (contestable market): hành vi của doanh nghiệp hiện tại bị kỷ luật bởi **đe dọa gia nhập**, không nhất thiết bởi số doanh nghiệp đang hoạt động. Điều kiện quan trọng nhất: **không có chi phí chìm (sunk costs)** đáng kể – nếu vậy, đối thủ tiềm năng có thể **"đánh nhanh rút gọn" (hit-and-run entry)**: gia nhập khi thấy lợi nhuận siêu ngạch, giành thị phần, rồi rút lui không tổn kém nếu bị trả đũa. Chỉ riêng **đe dọa** này cũng đủ buộc doanh nghiệp hiện tại giữ giá gần chi phí bình quân – một thị trường ít doanh nghiệp vẫn có thể hoạt động gần như cạnh tranh hoàn hảo nếu rào cản thấp.

5.5.2 Contrast with a monopoly protected by sunk costs

The theory of contestable markets sharpens the analysis of monopoly power: a monopoly is genuinely secure from competitive discipline only if it is protected by **high sunk costs** (e.g. a vast, non-resaleable pipeline or rail network, or an irrecoverable licence fee) – these barriers mean any potential entrant risks losing its entire investment if the incumbent retaliates, so hit-and-run entry is not a credible threat. Where sunk costs are low, even a market currently served by a single firm should be analysed as potentially contestable, and that firm may be forced to price much closer to average cost

than the simple monopoly diagram (Figure 5.5) would suggest, precisely because of the ever-present threat of entry.

GIẢI THÍCH TIẾNG VIỆT

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Độc quyền chỉ thực sự "an toàn" trước cạnh tranh nếu được bảo vệ bởi **chi phí chìm cao** (VD: hạ tầng đường ống, đường sắt không thể bán lại). Nếu chi phí chìm thấp, ngay cả thị trường hiện chỉ có một doanh nghiệp cũng có thể phải định giá gần chi phí bình quân hơn nhiều so với dự đoán của mô hình độc quyền đơn giản, vì luôn tồn tại đe dọa gia nhập.

(!) **Lỗi thường gặp:** Do not assume that observing only one or two firms in a market automatically means consumers are being exploited with monopoly-level prices, and do not assume that observing many firms automatically guarantees competitive outcomes. Always ask about the **height of entry and exit barriers** (especially sunk costs) before judging how contestable – and therefore how competitively priced – a market is likely to be. A market with two firms but low sunk costs (contestable) can behave more competitively than a market with ten firms that all face very high sunk costs.

5.6 Comparing Market Structures and Efficiency

	Perfect competition	Monopolistic competition	Oligopoly	Monopoly
Firms	Very many	Many	Few, dominant	One
Product	Homogeneous	Differentiated	Homogeneous or differentiated	Unique, no close substitutes
Barriers to entry/exit	None	Very low	High	Very high
Price/output control	None (price taker)	Some	Considerable, but constrained by rivals' reactions	Substantial, limited only by demand
Long-run economic profit	Normal profit only	Normal profit only	Can be supernormal (barriers protect it)	Can be supernormal (barriers protect it)
Long-run economic efficiency	Allocatively and productively efficient ($P=MC=\min AC$)	Neither: $P>MC$ and excess capacity ($Q < Q_{\min AC}$)	Typically allocatively inefficient ($P>MC$); productive efficiency possible via economies of scale	Allocatively inefficient ($P>MC$); may still achieve low unit costs if a natural monopoly
Non-price competition	None (identical product)	Extensive (branding, quality, advertising)	Extensive (branding, R&D, loyalty schemes)	Limited (little competitive pressure)

Table 5.2. Summary comparison of the four market structures, including long-run economic efficiency.

5.6.1 Static efficiency vs. dynamic efficiency: the Schumpeterian trade-off

The efficiency comparison above appears to make a clear-cut case for perfect competition over every other market structure. But this comparison captures only **static efficiency** – how well resources are allocated *at a single point in time*, given existing technology and products. It says nothing about **dynamic efficiency**: how quickly costs fall, products improve, and new technologies are developed *over time*. The economist **Joseph Schumpeter** argued that the very supernormal profits that make monopoly and oligopoly *statically* inefficient are also what *fund and motivate* large-scale research and development: a perfectly competitive firm, earning only normal profit and facing the constant threat of imitation by identical rivals, has little in the way of spare funds or protected incentive to innovate, whereas a monopolist or oligopolist, protected by barriers to entry, can retain the returns to a successful innovation for long enough to justify the risk and expense of the research in the first place – a process of “creative destruction” in which today’s monopoly profit funds the innovation that eventually displaces it. This sets up a genuine policy trade-off: pursuing perfect competition’s

ideal of static efficiency may come at the cost of the dynamic efficiency and innovation that require some degree of market power and supernormal profit to sustain.

GIẢI THÍCH TIẾNG VIỆT

VN

Bảng so sánh cho thấy cạnh tranh hoàn hảo đạt **hiệu quả tĩnh (static efficiency)** tốt nhất tại một thời điểm. Nhưng nhà kinh tế học **Schumpeter** lập luận rằng chính **lợi nhuận siêu ngạch** của độc quyền/độc quyền nhóm mới tài trợ và tạo động lực cho **nghiên cứu & phát triển (R&D)** – gọi là **hiệu quả động (dynamic efficiency)**. Đây là một sự **đánh đổi chính sách** thực sự: theo đuổi hiệu quả tĩnh tuyệt đối (cạnh tranh hoàn hảo) có thể phải hy sinh động lực đổi mới công nghệ dài hạn.

5.7 Practice Questions

Bài tập luyện tập

Which of the following is *not* an assumption of the perfect competition model?

- | | |
|---------------------------|--|
| (A) A homogeneous product | (C) Firms are price takers |
| (B) Free entry and exit | (D) Significant economies of scale relative to market size |

Lời giải chi tiết

(D). Significant economies of scale relative to the size of the market is precisely the condition that gives rise to a **natural monopoly**, not perfect competition. Perfect competition assumes very many small firms, none large enough to influence price, a homogeneous product, and free entry/exit.

Bài tập luyện tập

A perfectly competitive firm faces a market price of \$18 per unit. Its total cost function is $TC = 50 + 2Q + 0.5Q^2$. (a) Find the profit-maximising output. (b) Calculate the firm's profit or loss at this output.

Lời giải chi tiết

(a) $MC = \frac{dTC}{dQ} = 2 + Q$. Since the firm is a price taker, $MR = P = 18$. Set $MC = MR$: $2 + Q = 18 \Rightarrow Q = 16$.

(b) $TC(16) = 50 + 2(16) + 0.5(16)^2 = 50 + 32 + 128 = 210$. $TR = 18 \times 16 = 288$. Profit = $TR - TC = 288 - 210 = \$78$ (supernormal profit). Check via AC : $AC = 210/16 = 13.125$; profit = $(18 - 13.125) \times 16 = 78$. ✓

Bài tập luyện tập

A perfectly competitive firm faces a market price of \$10 per unit. Its total cost function is $TC = 40 + 4Q + 0.5Q^2$. (a) Find the profit-maximising output. (b) Calculate the firm's profit or loss.

Lời giải chi tiết

- (a) $MC = 4 + Q$. $MR = P = 10$. Set $MC = MR$: $4 + Q = 10 \Rightarrow Q = 6$.
(b) $TC(6) = 40 + 4(6) + 0.5(6)^2 = 40 + 24 + 18 = 82$. $TR = 10 \times 6 = 60$. **Profit** = $60 - 82 = -\$22$ (a loss of \$22). Check via AC : $AC = 82/6 = 13.67$; loss = $(10 - 13.67) \times 6 = -22$. ✓

Bài tập luyện tập

In the long run, a perfectly competitive industry is initially earning supernormal profit. Explain, step by step, what happens to (a) the number of firms, (b) the market supply curve, and (c) the market price and each firm's profit, as the industry moves to long-run equilibrium.

Lời giải chi tiết

(a) Supernormal profit attracts **new firms** into the industry, since free entry is assumed. (b) As new firms enter, total industry output rises, shifting the **market supply curve to the right**. (c) The rightward shift of supply lowers the **market price**. Because each existing firm is a price taker, its own $AR = MR$ line falls with the market price. Entry continues, and price keeps falling, until price reaches the minimum point of each firm's average cost curve, at which point supernormal profit has been competed away to **zero** and every firm earns only **normal profit**. At that point there is no further incentive for entry, and the industry has reached long-run equilibrium.

Bài tập luyện tập

In long-run equilibrium, a perfectly competitive firm earns "normal profit only." Explain what this phrase means, and why it is incorrect to describe this outcome as "the firm makes no profit."

Lời giải chi tiết

Normal profit is the minimum return needed to keep the entrepreneur's capital and effort employed in this industry rather than in its next-best alternative use – it is the *opportunity cost* of enterprise, and it is already included as a cost within the firm's average cost (AC) curve. In long-run equilibrium, $P = AC$, so the firm earns exactly enough revenue to cover all of its costs, *including* this normal profit. It would be wrong to say the firm "makes no profit," because normal profit is still being earned; what is correctly zero is **supernormal (economic) profit** – any profit *over and above* normal profit.

Bài tập luyện tập

Which pair of conditions is achieved simultaneously in the long-run equilibrium of perfect competition?

- (A) $P = MC$ only (allocative efficiency only) (C) $P = MC = \min AC$ (both allocative and productive efficiency)
(B) $P = \min AC$ only (productive efficiency only) (D) Neither allocative nor productive efficiency

Lời giải chi tiết

(C). In long-run perfect competition, $P = AR = MR = MC = \min AC$, so both $P = MC$ (allocative efficiency) and $P = \min AC$ (productive efficiency) hold at the same time – a combination not achieved in the long run by monopolistic competition, oligopoly or monopoly.

Bài tập luyện tập

Explain why a monopolistically competitive firm's demand curve shifts left over time if the firm is initially earning supernormal profit, and describe the condition that holds once long-run equilibrium is reached.

Lời giải chi tiết

Supernormal profit signals to firms outside the industry that entering (with a similarly, but not identically, differentiated product) is worthwhile, and entry is free. As new firms enter, the total market is shared among more competitors, so each individual incumbent firm retains a smaller share of total demand at every price – its own demand curve shifts **left**. Entry continues until each firm's demand curve has shifted left enough to become exactly **tangent** to its average cost curve at the profit-maximising output ($MR = MC$): at that point $AR = AC$, so only **normal profit** remains, entry stops, and long-run equilibrium is reached.

Bài tập luyện tập

A monopolistically competitive firm faces demand $P = 40 - 2Q$ and marginal cost $MC = 4 + 2Q$. Average total cost at the profit-maximising output is \$14. Find the profit-maximising price, quantity, and total profit.

Lời giải chi tiết

$TR = (40 - 2Q)Q = 40Q - 2Q^2 \Rightarrow MR = 40 - 4Q$. Set $MR = MC$: $40 - 4Q = 4 + 2Q \Rightarrow 36 = 6Q \Rightarrow Q = 6$, $P = 40 - 2(6) = \$28$. Profit = $(28 - 14) \times 6 = \$84$.

Bài tập luyện tập

In the long-run equilibrium diagram for monopolistic competition (Figure 5.3, Panel B), why is the firm's output Q_2 said to represent "excess capacity," and why is this outcome allocatively inefficient?

Lời giải chi tiết

Q_2 lies to the **left** of $Q_{\min AC}$, the output at which average cost is minimised – the firm is producing *less* than the output that would minimise its unit costs, so it has spare, unused ("excess") productive capacity relative to its most efficient scale; this is why long-run monopolistic competition is not productively efficient. Separately, because the firm's demand curve is downward sloping (not horizontal), the tangency with AC occurs where price still exceeds marginal cost ($P > MC$) – consumers value an extra unit more than it costs to produce, so output is allocatively inefficient (too little is produced relative to the efficient level).

Bài tập luyện tập

Explain briefly why monopolistic competition, despite being both allocatively and productively inefficient in the long run, may still generate a net benefit for consumers that perfect competition does not.

Lời giải chi tiết

Perfect competition assumes a single, homogeneous product, so consumers have no choice beyond quantity purchased. Monopolistic competition offers **differentiated products** – varying in brand, quality, design or location – that better match the diverse tastes of different consumers. This **variety** is a genuine benefit not captured by the standard allocative/productive efficiency criteria, and many consumers may value the wider choice highly enough to outweigh the slightly higher price ($P > MC$) and cost inefficiency (excess capacity) associated with monopolistic competition.

Bài tập luyện tập

Which of the following best describes the defining feature of an oligopolistic market that is *not* shared by monopolistic competition?

- (A) Product differentiation (C) Mutual interdependence between a small number of dominant firms
(B) A downward-sloping firm demand curve (D) Freedom of entry and exit

Lời giải chi tiết

(C). Both monopolistic competition and oligopoly can feature product differentiation and downward-sloping demand curves, and monopolistic competition explicitly assumes free entry/exit. What is unique to oligopoly is that there are so few large firms that each must explicitly consider its rivals' likely reactions before making decisions – **mutual interdependence**.

Bài tập luyện tập

Using the kinked demand curve model, explain why an oligopolist is unlikely to raise its price above the current level, even if its costs rise moderately.

Lời giải chi tiết

Above the current (kink) price, demand is relatively **elastic**: rivals have every incentive not to match a price rise, since holding their own price steady lets them attract customers away from the firm that raises its price. The price-raising firm would therefore lose a disproportionately large share of its sales, so a price rise is unattractive even if costs have risen – provided the new, higher marginal cost still cuts through the "gap" in the marginal revenue curve at the original kink quantity, the firm's profit-maximising choice remains the original (unchanged) price.

Bài tập luyện tập

Explain, using the concept of the "gap" in the marginal revenue curve, why oligopoly prices are often described as "sticky" or "rigid."

Lời giải chi tiết

Because demand is relatively elastic above the kink and relatively inelastic below it, the marginal revenue curve associated with each segment is different, producing a vertical discontinuity ("gap") in MR exactly at the kink quantity. As long as the firm's marginal cost curve intersects this gap – even after a moderate rise or fall in production costs – the rule $MR = MC$ continues to point to exactly the same profit-maximising price and quantity. Cost changes are absorbed into the firm's profit margin rather than passed through to price, so price stays "sticky" until a cost change is large enough to push MC right through the top or bottom of the gap.

Bài tập luyện tập

Distinguish between overt collusion and tacit collusion, giving one real-world-style example of each.

Lời giải chi tiết

Overt (explicit) collusion involves a formal, direct agreement between firms to fix prices, restrict output, or divide markets – typically illegal – for example, a **cartel** such as OPEC coordinating members' oil output quotas. **Tacit (implicit) collusion** involves firms coordinating their behaviour without any explicit agreement, most commonly through **price leadership**, where smaller firms simply follow the pricing decisions of a recognised dominant firm, avoiding a mutually damaging price war without ever formally agreeing to do so.

Bài tập luyện tập

Two airlines, A and B, simultaneously decide whether to offer a discounted fare ("Discount") or keep the standard fare ("Standard") on a shared route. The payoff matrix (profit in \$m) is:

		Airline B	
		Standard	Discount
Airline A	Standard	(40, 40)	(10, 55)
	Discount	(55, 10)	(25, 25)

- (a) Show that "Discount" is a dominant strategy for both airlines. (b) State the Nash equilibrium. (c) Explain why this outcome illustrates the prisoner's dilemma.

Lời giải chi tiết

(a) **For Airline A:** if B chooses Standard, A earns 40 from Standard but 55 from Discount, so Discount is better; if B chooses Discount, A earns 10 from Standard but 25 from Discount, so Discount is again better. Discount is therefore a dominant strategy for A regardless of B's choice. By the symmetry of the table, exactly the same reasoning shows Discount is also a dominant strategy for B.

(b) Since each airline's best response to the other's Discount is also Discount, **(Discount, Discount), with payoffs (\$25m, \$25m), is the Nash equilibrium.**

(c) Both airlines would earn more (\$40m each) if both chose Standard rather than Discount, so (Standard, Standard) is Pareto superior – yet it is not a Nash equilibrium, because each airline is individually tempted to discount and grab the higher \$55m payoff while the rival keeps the standard fare. This mirrors the prisoner's dilemma: the individually rational choice for each firm (discount) leads to a jointly worse outcome (\$25m each) than if both had cooperated

(\$40m each), which is exactly why price wars break out and collusive high-fare agreements tend to collapse.

Bài tập luyện tập

Which of the following is *not* typically classified as a barrier to entry that helps sustain a monopoly?

- (A) A patent on a key production process (C) Strong brand loyalty built up over many years
(B) Very large economies of scale relative to market size (D) A large number of small competing firms

Lời giải chi tiết

(D). A large number of small competing firms describes a highly competitive market structure, the *opposite* of a barrier to entry – it is a symptom of *low* barriers. Patents, large economies of scale, and brand loyalty are all genuine barriers to entry that can protect a monopoly position.

Bài tập luyện tập

A monopolist faces demand $P = 80 - 2Q$ and marginal cost $MC = 8 + 2Q$. Average total cost at the profit-maximising output is \$30. Find the profit-maximising price, quantity, and total profit.

Lời giải chi tiết

$TR = (80 - 2Q)Q = 80Q - 2Q^2 \Rightarrow MR = 80 - 4Q$. Set $MR = MC$: $80 - 4Q = 8 + 2Q \Rightarrow 72 = 6Q \Rightarrow Q = 12$, $P = 80 - 2(12) = \$56$. Profit = $(56 - 30) \times 12 = \$312$.

Bài tập luyện tập

A monopolist faces demand $P = 50 - 0.5Q$ and marginal cost $MC = 5 + 0.5Q$. Average total cost at the profit-maximising output is \$20. Find the profit-maximising price, quantity, and total profit.

Lời giải chi tiết

$TR = (50 - 0.5Q)Q = 50Q - 0.5Q^2 \Rightarrow MR = 50 - Q$. Set $MR = MC$: $50 - Q = 5 + 0.5Q \Rightarrow 45 = 1.5Q \Rightarrow Q = 30$, $P = 50 - 0.5(30) = \$35$. Profit = $(35 - 20) \times 30 = \$450$.

Bài tập luyện tập

Identify whether each pricing practice below is first-degree, second-degree or third-degree price discrimination: (a) a cinema charges senior citizens a lower ticket price than other adults; (b) an electricity company charges a lower price per additional kilowatt-hour once a household's monthly usage exceeds a threshold; (c) a car salesperson individually negotiates the maximum price each specific buyer seems willing to pay.

Lời giải chi tiết

(a) **Third-degree**: consumers are separated into identifiable groups (senior citizens vs. other adults) and charged different prices by group. (b) **Second-degree**: the price varies by the *quantity/block* consumed by the same consumer, not by which group they belong to. (c) **First-degree (perfect)**: the seller attempts to charge each individual buyer their own personal maximum willingness to pay.

Bài tập luyện tập

A theme park has constant marginal cost $MC = \$4$ per visitor. It separates visitors into two segments using proof of residency, preventing resale of tickets. Local-resident demand: $Q_L = 180 - 20P_L$. Tourist demand: $Q_T = 240 - 15P_T$. (a) Find the profit-maximising price and quantity in each segment. (b) Explain which segment is charged the higher price and why.

Lời giải chi tiết

(a) **Locals**: $P_L = 9 - 0.05Q_L \Rightarrow MR_L = 9 - 0.1Q_L$. Set $MR_L = MC$: $9 - 0.1Q_L = 4 \Rightarrow Q_L = 50$, $P_L = 9 - 0.05(50) = \$6.50$.

Tourists: $P_T = 16 - \frac{1}{15}Q_T \Rightarrow MR_T = 16 - \frac{2}{15}Q_T$. Set $MR_T = MC$: $16 - \frac{2}{15}Q_T = 4 \Rightarrow \frac{2}{15}Q_T = 12 \Rightarrow Q_T = 90$, $P_T = 16 - \frac{90}{15} = 16 - 6 = \10.00 .

(b) **Tourists are charged the higher price** (\$10.00 vs. \$6.50). Checking point elasticity at the chosen prices: locals, $-20 \times \frac{6.50}{50} = -2.60$; tourists, $-15 \times \frac{10}{90} = -1.67$. Local demand is more elastic (tourists have fewer easy alternatives and are less price-sensitive on a one-off visit), so the more elastic segment (locals) receives the **lower** price and the less elastic segment (tourists) receives the **higher** price – exactly as the theory of third-degree price discrimination predicts.

Bài tập luyện tập

Which of the following industries is most likely to exhibit the characteristics of a natural monopoly?

- (A) Independent hairdressing salons (C) Small independent coffee shops
(B) A local water-pipe distribution network (D) Fast-fashion clothing retailing

Lời giải chi tiết

(B). A water-pipe network requires enormous, largely fixed infrastructure investment (laying pipes to every building in a region); average cost keeps falling as more households are connected to the same network, so a single firm can supply the whole area at far lower cost per household than several firms each duplicating a parallel network – the defining feature of a natural monopoly. Hairdressing, coffee shops and fashion retailing all have low fixed costs and no such economies of scale, and are typically monopolistically competitive.

Bài tập luyện tập

Outline one argument for, and one argument against, government regulation of the prices charged by a natural monopoly.

Lời giải chi tiết

For regulation: left alone, an unregulated natural monopoly can restrict output and set price well above marginal cost (as in Figure 5.5), causing allocative inefficiency and transferring consumer surplus into monopoly profit; a price cap or requirement to price closer to average (or marginal) cost can protect consumers while still letting the firm cover its costs. **Against regulation:** regulators typically know less about the firm's true costs than the firm itself (**information asymmetry**), risking a price cap set at the wrong level; regulation is costly to administer; regulators can become **captured** by the industry they oversee; and a price cap tied to costs can blunt the firm's incentive to cut costs, since higher costs can sometimes justify a higher allowed price.

Bài tập luyện tập

A market is most likely to be highly contestable if:

- | | |
|---|---|
| (A) Entry requires large, irrecoverable sunk costs | (C) Incumbent firms enjoy very strong brand loyalty |
| (B) Capital equipment used in the industry can be resold easily or redeployed to other markets at little cost | (D) Government licences strictly limit the number of firms permitted to operate |

Lời giải chi tiết

(B). Contestability depends chiefly on the **absence of sunk costs**. If capital can be resold or redeployed elsewhere at little cost, potential entrants can attempt hit-and-run entry with little risk, disciplining incumbents' pricing even without actual entry. Large sunk costs, strong brand loyalty and restrictive licensing are all barriers that reduce contestability.

Bài tập luyện tập

A country's domestic route between two cities is currently served by only two airlines, but aircraft can easily be redeployed to other routes at minimal cost, and there are no government restrictions on which routes an airline may fly. Using the concept of contestability, explain why fares on this route might already be close to the competitive level, despite only two firms currently operating.

Lời giải chi tiết

Because the main capital input (aircraft) can be redeployed to other routes at low cost, there are effectively no significant sunk costs to entering this specific route. If the two incumbent airlines were earning supernormal profit, any other airline could quickly reallocate a plane to the route (hit-and-run entry), undercut fares, and just as easily redeploy the aircraft elsewhere again if the incumbents retaliated – exiting at little or no cost. Because this threat of entry is credible and immediate, the incumbents have a strong incentive to keep fares close to average cost *even without any actual new entrant appearing*, since failing to do so would swiftly invite entry. The route can therefore behave much like a competitive market despite having only two firms currently active – it is highly **contestable**.

Bài tập luyện tập

Using Table 5.2, explain one respect in which oligopoly may achieve better long-run cost outcomes than monopolistic competition, despite having far fewer firms and higher barriers to entry.

Lời giải chi tiết

Because oligopolistic firms are typically much larger than monopolistically competitive firms, they can potentially exploit substantial **economies of scale** to lower their average costs, even though oligopoly output is generally allocatively inefficient ($P > MC$) due to market power. Monopolistic competition, by contrast, features many small firms that deliberately operate with **excess capacity** below the cost-minimising scale in long-run equilibrium (Figure 5.3, Panel B), so it may fail to capture these scale economies even though each individual firm faces low barriers to entry. This shows that comparing market structures purely by counting firms, or purely by the allocative-efficiency criterion, can be misleading – the potential cost savings from scale must also be weighed.

Bài tập luyện tập

Supernormal profit is most likely to persist into the long run in which two of the four market structures studied in this unit?

- (A) Perfect competition and monopolistic competition (C) Oligopoly and monopoly
(B) Monopolistic competition and oligopoly (D) Perfect competition and monopoly

Lời giải chi tiết

(C). In perfect competition and monopolistic competition, free entry competes away any supernormal profit in the long run. In oligopoly and monopoly, high barriers to entry (economies of scale, legal barriers, brand loyalty, control of resources, or collusive behaviour) can prevent entry, allowing supernormal profit to persist indefinitely.

Bài tập luyện tập – Essay outline

Essay: "Evaluate whether monopoly is always against the public interest." Set out a structured outline of the argument you would make, covering both sides.

Lời giải chi tiết

A strong outline should include: **(1) The case that monopoly harms the public interest:** restricted output and price above marginal cost cause **allocative inefficiency** (Figure 5.5); absence of competitive pressure can permit **productive inefficiency** (X-inefficiency, no pressure to minimise cost); supernormal profit can persist indefinitely, transferring consumer surplus into producer surplus; the firm may use market power to **price discriminate**, extracting further surplus from consumers with less elastic demand. **(2) The case that monopoly need not always harm the public interest:** where large **economies of scale** exist relative to market size (a **natural monopoly**), a single firm may achieve a much lower average cost than several smaller competing firms, potentially allowing lower prices than under fragmented competition, especially if regulated; a monopolist's protected supernormal profit can fund large-scale **research and development**, generating **dynamic efficiency** gains (the Schumpeterian argument) that a

competitive, normal-profit-only industry could not sustain; if the market is highly **contestable** (low sunk costs), even a single incumbent firm may be forced by the threat of hit-and-run entry to price close to average cost, limiting the harm from having only one seller. **(3) A reasoned conclusion:** whether monopoly is against the public interest depends on the specific case – the size of any efficiency losses from restricted output, weighed against possible cost savings from scale, the value of any dynamic/innovation gains, the degree of contestability, and whether effective regulation is in place – so no single blanket judgement fits every monopoly.

Bài tập luyện tập – Essay outline

Essay: "Discuss the extent to which oligopolistic markets serve the long-term interests of consumers." Set out a structured outline of the argument you would make, covering both sides.

Lời giải chi tiết

A strong outline should include: **(1) Ways oligopoly may harm consumers:** mutual interdependence can lead to **tacit or overt collusion** (price leadership, cartels such as OPEC), keeping prices above the competitive level and restricting output, as in a monopoly; the **kinked demand curve** model suggests prices can stay rigid even when costs fall, so consumers may not benefit fully from falling costs; high barriers to entry limit the competitive discipline that would otherwise protect consumers. **(2) Ways oligopoly may benefit consumers:** heavy **non-price competition** (product innovation, quality improvements, advertising-funded variety) can benefit consumers even without price competition; the game-theory logic of the **prisoner's dilemma** (Table 5.1) shows that collusive agreements are inherently unstable, since each firm is individually tempted to undercut rivals, so price wars and competitive pressure can still emerge even among a few dominant firms; large oligopolists may exploit **economies of scale**, potentially passing some cost savings on to consumers; oligopoly profits, like monopoly profits, can fund substantial **R&D** and innovation (dynamic efficiency). **(3) A reasoned conclusion:** the outcome depends on whether firms in practice tend towards collusive, monopoly-like behaviour or towards vigorous non-collusive rivalry, on the credibility and stability of any collusion (undermined by the prisoner's dilemma), and on the extent to which non-price competition and innovation genuinely benefit consumers rather than simply raising costs – so oligopoly's effect on consumers is ambiguous and must be assessed industry by industry.

Market Failure and Government Microeconomic Intervention

Mục tiêu Unit: Phân biệt hàng hóa tư nhân, hàng hóa công cộng, hàng hóa bán công (quasi-public), hàng hóa thiết yếu (merit goods) và hàng hóa có hại (demerit goods); giải thích vấn đề “kẻ ăn theo” (free-rider problem). Giải thích ngoại ứng tích cực và tiêu cực trong sản xuất và tiêu dùng; vẽ và diễn giải các sơ đồ MPC/MSC và MPB/MSB; tính diện tích tam giác tổn thất phúc lợi xã hội. Giải thích thất bại thông tin (information failure), bất cân xứng thông tin, lựa chọn ngược (adverse selection) và rủi ro đạo đức (moral hazard). Tính toán tác động của thuế gián thu (thuế theo đơn vị và thuế theo tỷ lệ giá trị) và trợ cấp lên giá, sản lượng, phúc lợi, nguồn thu/chỉ ngân sách nhà nước; liên hệ với độ co giãn cung cầu. Phân tích chính sách giá trần (price ceiling) và giá sàn (price floor); tính toán thiếu hụt và dư thừa thị trường. Đánh giá các công cụ can thiệp khác của chính phủ: quy định pháp luật, giấy phép phát thải có thể chuyển nhượng, cung cấp trực tiếp, chương trình dự trữ đệm (buffer stock), cung cấp thông tin. Phân tích thất bại của chính phủ (government failure) và đánh giá liệu can thiệp của chính phủ có luôn cải thiện kết quả so với thị trường tự do hay không.

6.1 Types of Goods

Not every good is best allocated by the free market. Whether a market can be relied upon to provide a good at all – and whether it will provide the socially efficient quantity – depends on two technical properties of the good: **excludability** and **rivalry**.

Khái niệm cốt lõi

A good is **excludable** if a supplier can prevent someone who has not paid from consuming it (e.g., a cinema ticket). It is **non-excludable** if, once provided, no one can be stopped from consuming it (e.g., a national defence system protects everyone in the country, payer or not). A good is **rivalrous** (or “rival in consumption”) if one person’s consumption reduces the amount available for others (e.g., eating an apple). It is **non-rivalrous** if one person’s consumption does not reduce what is available to anyone else (e.g., watching a lighthouse beam, listening to a free-to-air broadcast).

Combining these two properties gives a four-way classification of goods.

Table 6.1. Classification of goods by excludability and rivalry

	Excludable	Non-excludable
Rivalrous	<i>Private goods</i> – e.g., a sandwich, a pair of shoes, a haircut. Provided efficiently by the free market.	<i>Common-access resources</i> – e.g., open-sea fishing stocks, common grazing land. Non-excludable but rivalrous, so subject to overuse (“tragedy of the commons”).
Non-rivalrous	<i>Quasi-public (club) goods</i> – e.g., a toll motorway, cable/satellite television, a members-only golf course. Excludable (a toll booth or subscription can bar non-payers) but largely non-rivalrous up to a point of congestion.	<i>Pure public goods</i> – e.g., national defence, street lighting, a lighthouse, flood-defence systems. Neither excludable nor rivalrous.

Pure public goods have two defining properties:

- **Non-excludability:** it is technically impossible, or prohibitively costly, to exclude non-payers.
- **Non-rivalry:** consumption by one person does not diminish the amount available to anyone else, so the marginal cost of supplying an additional consumer is zero.

Two further categories are classified not by excludability/rivalry but by the **gap between private and social valuation** caused by information failure and externalities (developed later in this chapter):

- **Merit goods** – goods that are under-consumed relative to the socially optimal level if left to the free market, because consumers underestimate the private benefits (imperfect information) and/or because consumption generates positive externalities. Examples: education, healthcare, vaccination.
- **Demerit goods** – goods that are over-consumed relative to the socially optimal level if left to the free market, because consumers underestimate the private costs of consumption and/or because consumption generates negative externalities. Examples: tobacco, alcohol, gambling.

(!) Lỗi thường gặp: A very common exam error is to describe merit goods (e.g., education, healthcare) as “public goods”. Education is excludable (a school can refuse entry to those who do not pay or do not qualify) and rivalrous (a place taken by one student is not available to another), so it is a *private good in provision* that happens to be under-consumed and under-priced by the market – it is **not** a public good in the technical sense. Always check excludability and rivalry before using the term “public good”.

GIẢI THÍCH TIẾNG VIỆT

VN

Hàng hóa được phân loại theo hai đặc tính: **tính loại trừ** (có thể ngăn người không trả tiền sử dụng hay không) và **tính cạnh tranh** (một người sử dụng có làm giảm lượng còn lại cho người khác hay không). Hàng hóa tư nhân có cả hai tính chất; hàng hóa công cộng thuần túy (như quốc phòng, đèn hải đăng) không có tính chất nào; hàng hóa bán công (như đường cao tốc thu phí) có tính loại trừ nhưng gần như không cạnh tranh. Hàng hóa thiết yếu (merit goods, ví dụ giáo dục, y tế) và hàng hóa có hại (demerit goods, ví dụ thuốc lá) được phân loại theo mức độ tiêu dùng lệch khỏi mức tối ưu xã hội do thất bại thông tin và ngoại ứng, chứ không theo tính loại trừ/cạnh tranh – do đó **không nên nhầm** merit goods với public goods.

6.2 Externalities

Khái niệm cốt lõi

Market failure occurs when the free market fails to allocate resources efficiently, so that the quantity produced/consumed diverges from the socially optimal quantity. **Externalities** are costs or benefits of an economic transaction that fall on a third party not directly involved in that transaction, and which are therefore ignored by the private decision-makers. **Public goods** would not be provided at all by an unregulated market. **Information failure** occurs when economic agents make decisions based on inaccurate, incomplete, or asymmetric information, leading to a misallocation of resources.

Four cost/benefit concepts are used to analyse externalities:

- **MPC** (marginal private cost): the cost to the producer of producing one more unit.
- **MSC** (marginal social cost) = MPC + marginal external cost.
- **MPB** (marginal private benefit): the benefit to the consumer of consuming one more unit.
- **MSB** (marginal social benefit) = MPB + marginal external benefit.

The free market equates **private** costs and benefits ($MPC = MPB$); the socially efficient output equates **social** costs and benefits ($MSC = MSB$).

6.2.1 Negative Externalities

A **negative production externality** (e.g., a factory polluting a river) means $MSC > MPC$: the market ignores the external cost imposed on third parties, so the free market produces *more* than the socially optimal quantity. A **negative consumption externality** (e.g., passive smoking, loud music at night) means $MSB < MPB$: the consumer ignores the harm imposed on others, again leading to *overconsumption*.

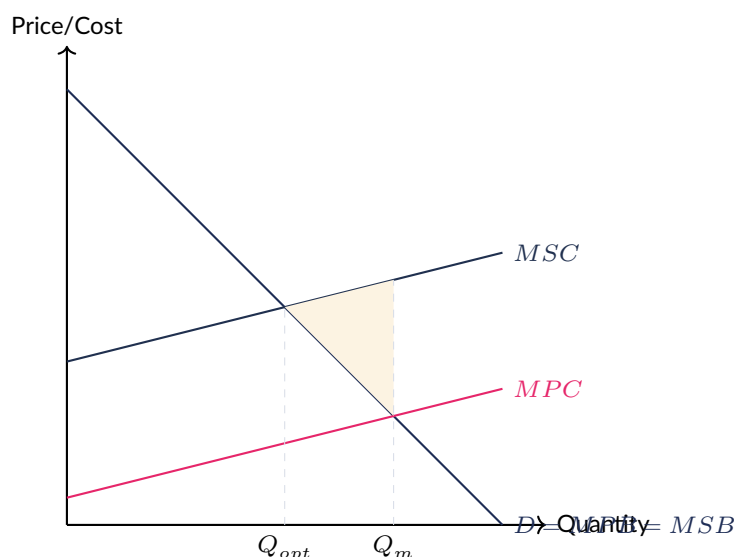


Figure 6.1. Negative externality: the free market produces at Q_m (where $MPB = MPC$), beyond the socially optimal Q_{opt} (where $MSB = MSC$). The shaded triangle is the deadweight welfare loss – for every unit between Q_{opt} and Q_m , MSC exceeds MSB .

Ví dụ mẫu · Worked example – Negative externality welfare loss

$MPB = MSB$: $P = 100 - Q$. MPC : $P = 10 + Q$. The marginal external cost of production is a constant \$20 per unit, so $MSC = 30 + Q$.

Market equilibrium ($MPB = MPC$): $100 - Q = 10 + Q \Rightarrow Q = 45, P = 55$.

Social optimum ($MSB = MSC$): $100 - Q = 30 + Q \Rightarrow Q = 35, P = 65$.

At $Q = 45$: $MSC = 30 + 45 = 75$; $MPB = 100 - 45 = 55$. **Gap** = \$20.

Deadweight welfare loss = $\frac{1}{2} \times (45 - 35) \times 20 = \frac{1}{2} \times 10 \times 20 = \100 .

GIẢI THÍCH TIẾNG VIỆT

VN

Ngoại ứng tiêu cực trong sản xuất xảy ra khi $MSC > MPC$ (ví dụ ô nhiễm từ nhà máy); ngoại ứng tiêu cực trong tiêu dùng xảy ra khi $MSB < MPB$ (ví dụ hút thuốc thụ động). Trong cả hai trường hợp, thị trường tự do sản xuất/tiêu thụ **nhều hơn** mức tối ưu xã hội Q_{opt} , tạo ra tam giác tổn thất phúc lợi xã hội (deadweight welfare loss) giữa Q_{opt} và Q_m . Trong ví dụ trên, tổn thất phúc lợi bằng \$100.

6.2.2 Positive Externalities

A **positive consumption externality** (e.g., education, vaccination) means $MSB > MPB$: third parties benefit from a more educated or healthier population, so the free market *under-consumes* relative to the social optimum. A **positive production externality** (e.g., a firm's staff training that raises skills across the industry, or R&D spillovers) means $MSC < MPC$, again leading to *underproduction*.

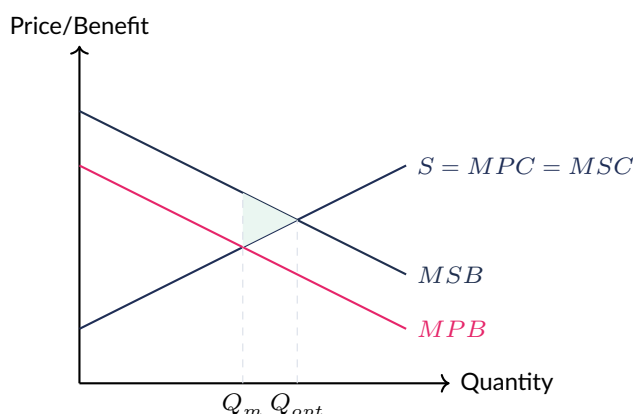


Figure 6.2. Positive externality: the free market consumes only Q_m (where $MPB = S$), below the socially optimal Q_{opt} (where $MSB = S$). The shaded triangle is the welfare loss from under-consumption.

Ví dụ mẫu · Worked example – Positive externality welfare loss

MPB : $P = 80 - 2Q$. Marginal external benefit is a constant \$8 per unit, so $MSB = 88 - 2Q$. Supply ($MPC = MSC$, no production externality): $P = 20 + 2Q$.

Market equilibrium ($MPB = S$): $80 - 2Q = 20 + 2Q \Rightarrow Q = 15, P = 50$.

Social optimum ($MSB = S$): $88 - 2Q = 20 + 2Q \Rightarrow Q = 17, P = 54$.

At $Q = 15$: $MSB = 88 - 30 = 58$; $S = 20 + 30 = 50$. **Gap** = \$8.

Welfare loss from under-consumption = $\frac{1}{2} \times (17 - 15) \times 8 = \frac{1}{2} \times 2 \times 8 = \8 .

GIẢI THÍCH TIẾNG VIỆT

VN

Ngoại ứng tích cực trong tiêu dùng xảy ra khi $MSB > MPB$ (ví dụ giáo dục, tiêm chủng); ngoại ứng tích cực trong sản xuất xảy ra khi $MSC < MPC$ (ví dụ lan tỏa công nghệ từ nghiên

cứu & phát triển). Trong cả hai trường hợp, thị trường tự do sản xuất/tiêu thụ **ít hơn** mức tối ưu xã hội, gây tổn thất phúc lợi do tiêu dùng dưới mức. Đây chính là lý do kinh tế học cho việc chính phủ trợ cấp giáo dục và y tế – coi đây là các merit goods.

(!) Lỗi thường gặp: Students frequently draw the wrong pair of curves for a given scenario. The rule is: if the externality arises **during production** (pollution, resource depletion), shift the **cost** curve ($MPC \rightarrow MSC$) and leave demand alone. If the externality arises **during consumption** (passive smoking, herd immunity from vaccination), shift the **benefit** curve ($MPB \rightarrow MSB$) and leave supply alone. Shifting the wrong curve, or shifting both when only one market failure is described, is one of the most heavily penalised errors in externality questions.

6.3 Public Goods and the Free-Rider Problem

Because pure public goods are non-excludable, anyone can enjoy the good once it exists, whether or not they contributed to its cost. Because they are also non-rivalrous, one more consumer imposes no extra cost. These two properties together generate the **free-rider problem**.

The **free-rider problem**: since non-payers cannot be excluded from consuming a public good, rational, self-interested consumers have no incentive to pay for it voluntarily – each individual hopes that others will pay and that they can “free ride” on the resulting provision. If everyone reasons this way, no one pays, and **the private market will not provide the good at all**, even though its total social benefit may vastly exceed its cost. This is a case of *complete* market failure (missing market), not merely an inefficient quantity.

Because the market mechanism fails entirely, the standard remedy is **direct government provision**, funded out of general taxation rather than a market price. The government estimates the social benefit (e.g., via cost-benefit analysis) and provides the good (national defence, street lighting, flood defences, basic scientific research) directly, financing it collectively so that free-riding cannot prevent provision. Note that governments do not have to *produce* the good themselves – they may contract private firms to build and operate it – but they must arrange for its collective *financing* through compulsory taxation, since voluntary payment will under-fund it.

GIẢI THÍCH TIẾNG VIỆT

VN

Vì hàng hóa công cộng thuần túy không có tính loại trừ và không có tính cạnh tranh, mỗi cá nhân đều có động cơ “ăn theo” (free-rider) – chờ người khác trả tiền còn mình vẫn được hưởng lợi ích. Nếu mọi người đều suy nghĩ như vậy, thị trường tư nhân sẽ **hoàn toàn không cung cấp** hàng hóa này, dù lợi ích xã hội có thể rất lớn. Giải pháp tiêu chuẩn là chính phủ **trực tiếp cung cấp** và tài trợ bằng thuế bắt buộc, vì việc đóng góp tự nguyện sẽ không đủ.

6.4 Information Failure

Khái niệm cốt lõi

Information failure occurs when buyers and/or sellers do not have full, accurate information to make an economically efficient decision, so private decisions diverge from what would be socially optimal with perfect information. A particularly important form is **asymmetric information**, where one party to a transaction knows significantly more than the other.

Two named problems arise from asymmetric information:

- **Adverse selection:** occurs *before* a transaction, when one party's hidden characteristics distort the market. Classic example: the used-car ("lemons") market – sellers know whether their car is reliable or a "lemon", but buyers cannot tell the difference. Because buyers cannot distinguish good cars from bad, they will only pay an average price, which is too low for owners of genuinely good cars to want to sell. Good cars are driven out of the market, leaving a disproportionate share of low-quality cars – the average quality of cars offered for sale falls.
- **Moral hazard:** occurs *after* a transaction, when one party changes their behaviour because they no longer bear the full consequences of their actions. Classic example: a driver with comprehensive car insurance may take less care to avoid accidents (drive less cautiously, leave the car unlocked) because the insurer, not the driver, bears most of the cost of a claim.

Merit and demerit goods are, in part, an information-failure problem: consumers may underestimate the future health benefits of exercise and education (leading to under-consumption of merit goods) or underestimate the long-run harm of tobacco and gambling (leading to over-consumption of demerit goods).

GIẢI THÍCH TIẾNG VIỆT

VN

Thất bại thông tin xảy ra khi người mua và/hoặc người bán không có đầy đủ thông tin chính xác để đưa ra quyết định hiệu quả. **Lựa chọn ngược** (adverse selection) xảy ra *trước* giao dịch, khi một bên biết nhiều thông tin ẩn hơn (ví dụ thị trường xe cũ: người bán biết xe có phải là "xe kém chất lượng" hay không, còn người mua thì không). **Rủi ro đạo đức** (moral hazard) xảy ra *sau* giao dịch, khi một bên thay đổi hành vi vì không còn phải chịu toàn bộ hậu quả (ví dụ người mua bảo hiểm ô tô lái xe bất cẩn hơn).

6.5 Indirect Taxes and Subsidies

Governments can correct externalities and information failures by altering relative prices through indirect taxes (on demerit goods / negative externalities) and subsidies (on merit goods / positive externalities).

6.5.1 Specific Tax on a Demerit Good or Negative Externality

Ví dụ mẫu · Worked example – Tax incidence

Demand: $P = 50 - Q$. Supply: $P = 10 + Q$. Government imposes a specific tax of \$8/unit on producers. Original equilibrium: $Q = 20$, $P = 30$. New supply: $P = 18 + Q$. New equilibrium: $Q = 16$. $P_c = \$34$, $P_p = \$26$. Consumer share = \$4; Producer share = \$4. Tax revenue = \$128. $DWL = \frac{1}{2} \times 8 \times 4 = \16 .

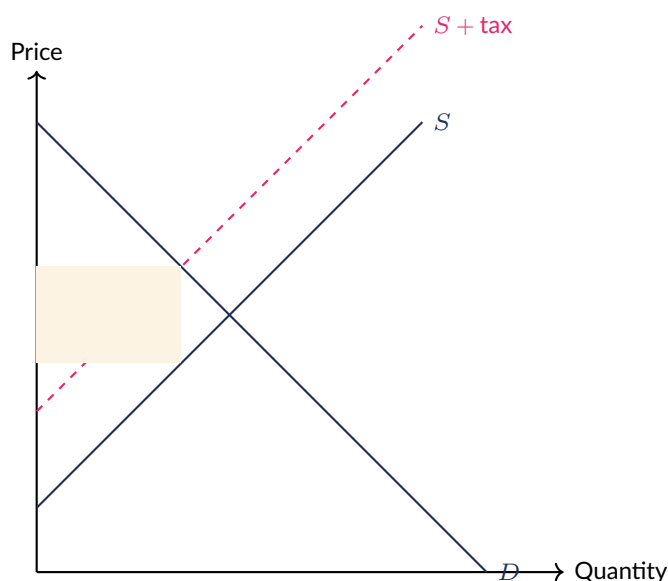


Figure 6.3. Specific tax: supply shifts up (parallel) by the amount of the tax. Consumer price rises, producer price falls; the shaded area = government tax revenue; the gap between S and $S + \text{tax}$ at the new quantity that is not captured as revenue represents the deadweight welfare loss.

A specific tax is a **fixed amount per unit** (e.g., \$8/unit regardless of price), so it shifts the supply curve *parallel* upward – the vertical gap is constant at every quantity. An **ad valorem** tax is a **percentage of the price** (e.g., 20% of the selling price), so it *rotates* the supply curve – the absolute vertical gap widens as price rises, since the tax amount is proportional to price.

Ví dụ mẫu · Worked example – Specific vs. ad valorem tax

A good normally sells for \$20. A specific tax of \$5/unit raises the price paid by exactly \$5 *at any price level*. A 25% ad valorem tax on the same good raises the price by $0.25 \times \$20 = \5 when the market price is \$20 – but if the market price were instead \$40 (e.g. after a demand increase), the ad valorem tax would add $0.25 \times \$40 = \10 , whereas the specific tax would still only add \$5. Ad valorem taxes therefore generate more revenue automatically as prices rise, which is why VAT/sales taxes (ad valorem) are used far more widely than specific excise-style taxes for general goods; specific taxes are more common for narrowly targeted demerit goods (tobacco, alcohol, fuel) where a fixed real deterrent per unit is wanted.

6.5.2 Subsidy on a Merit Good or Positive Externality

Ví dụ mẫu · Worked example – Subsidy

Demand: $P = 60 - 2Q$. Supply: $P = 6 + 2Q$. Subsidy \$8/unit. Original eq: $Q = 13.5$, $P = 33$. New supply: $P = 2Q - 2$. New eq: $Q = 15.5$. $P_c = \$29$, $P_p = \$37$. Cost to govt = \$124.

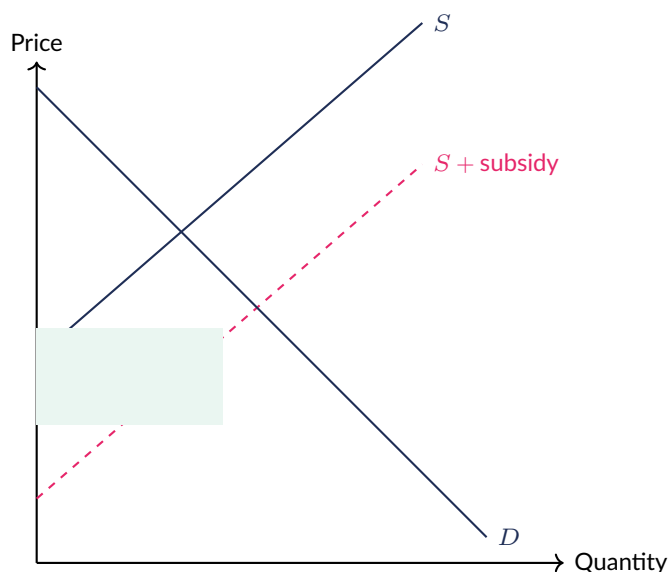


Figure 6.4. Subsidy: supply shifts down (parallel) by the amount of the subsidy. Consumer price falls, producer price rises; quantity traded increases; the shaded area = total cost to the government (subsidy per unit $\times$ new quantity).

6.5.3 Linking Tax Incidence to Elasticity

The size of the consumer and producer share of a tax (or subsidy) is not fixed – it depends on the **relative price elasticities of demand and supply**, exactly as introduced when studying PED and PES.

Rule of thumb: the side of the market that is relatively more price-*inelastic* bears the larger share of a tax (and receives the larger share of a subsidy), because that side is less able to adjust the quantity it demands/supplies in response to the price change. As an approximation, at the pre-tax equilibrium, the consumer share of the tax burden relative to the producer share is roughly in the ratio $PES : |PED|$.

Ví dụ mẫu · Worked example – Elasticity and incidence

Demand: $P = 100 - Q$. Supply: $P = 10 + 0.25Q$. A specific tax of \$10/unit is imposed on producers.

Original equilibrium: $100 - Q = 10 + 0.25Q \Rightarrow Q = 72, P = 28$.

At this point, $PED = \frac{dQ}{dP} \times \frac{P}{Q} = (-1) \times \frac{28}{72} \approx -0.39$ (inelastic); $PES = 4 \times \frac{28}{72} \approx 1.56$ (elastic).

Since demand is far more inelastic than supply, consumers should bear most of the tax.

New supply: $P = 20 + 0.25Q$. New equilibrium: $100 - Q = 20 + 0.25Q \Rightarrow Q = 64, P_c = \$36; P_p = \$26$.

Consumer burden = $36 - 28 = \$8$; producer burden = $28 - 26 = \$2$ – consumers indeed bear 80% of the \$10 tax, consistent with demand being much more inelastic than supply.

GIẢI THÍCH TIẾNG VIỆT

VN

Mức độ chịu thuế của người tiêu dùng và người sản xuất phụ thuộc vào độ co giãn tương đối của cầu và cung. Bên nào có đường cầu/cung **kém co giãn hơn** sẽ chịu phần thuế **lớn hơn**, vì bên đó khó điều chỉnh lượng mua/bán khi giá thay đổi. Ví dụ trên cho thấy khi cầu co giãn khoảng -0.39 (kém co giãn) và cung co giãn khoảng 1.56 (co giãn nhiều), người tiêu dùng gánh tới 80% của khoản thuế \$10.

6.6 Price Controls

Governments sometimes intervene directly in a market by legally fixing a price rather than taxing or subsidising.

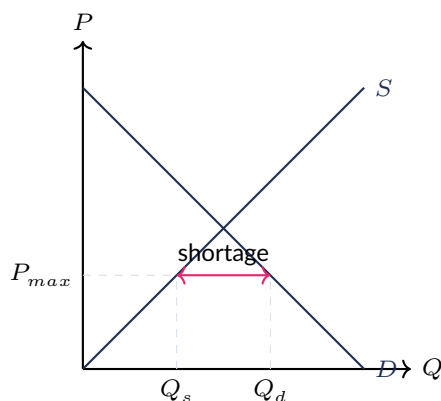
A **maximum price (price ceiling)** is a legal price set *below* the free-market equilibrium, intended to make a good more affordable (e.g., rent controls, price caps on staple foods). Because it is set below equilibrium, quantity demanded exceeds quantity supplied – a persistent **shortage**. A **minimum price (price floor)** is a legal price set *above* the free-market equilibrium, intended to guarantee producers a minimum income (e.g., agricultural minimum prices, a national minimum wage). Because it is set above equilibrium, quantity supplied exceeds quantity demanded – a persistent **surplus**. A price control set at or inside the equilibrium price has no effect, since it is not binding.

Ví dụ mẫu · Worked example – Price ceiling and shortage

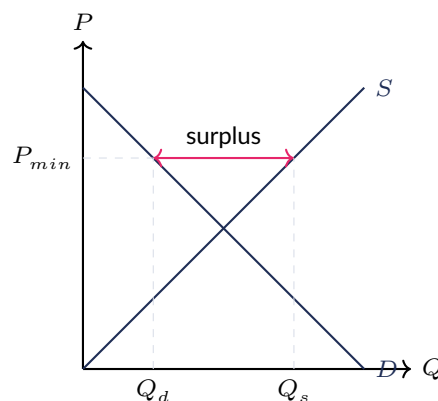
Demand: $P = 45 - Q$. Supply: $P = 5 + 2Q$. Max price $P = 15$. $Q_d = 30$, $Q_s = 5$. Shortage = 25 units.

Ví dụ mẫu · Worked example – Price floor and surplus

Demand: $P = 80 - 2Q$. Supply: $P = 20 + 2Q$. Free-market equilibrium: $80 - 2Q = 20 + 2Q \Rightarrow Q = 15$, $P = 50$. Government imposes a minimum price of $P = 60$ (above equilibrium, to protect producer incomes). $Q_d = \frac{80 - 60}{2} = 10$. $Q_s = \frac{60 - 20}{2} = 20$. **Surplus** = $20 - 10 = 10$ units.



Panel A. Maximum price P_{max} below equilibrium:
 $Q_d > Q_s$, creating a shortage.



Panel B. Minimum price P_{min} above equilibrium:
 $Q_s > Q_d$, creating a surplus.

Figure 6.5. Maximum price (shortage) and minimum price (surplus) compared.

(!) Lỗi thường gặp: Do not confuse a **price ceiling** with a **tax**, or a **price floor** with a **subsidy**. A tax and a subsidy work *through the market mechanism* by shifting the supply curve (changing the price at which a given quantity is willingly supplied), and the new equilibrium is still where the (shifted) curves intersect. A price ceiling or floor is a **legal control that overrides the market mechanism** – the supply and demand curves do not move at all; instead, the actual quantity traded is fixed at whichever of Q_d or Q_s is *smaller* (rationing by the binding constraint), and a persistent gap (shortage or surplus) remains rather than clearing.

GIẢI THÍCH TIẾNG VIỆT

VN

Giá trần (price ceiling) là mức giá tối đa hợp pháp, đặt **dưới** giá cân bằng, gây ra **thiếu hụt** vì lượng cầu vượt lượng cung. Giá sàn (price floor) là mức giá tối thiểu hợp pháp, đặt **trên** giá cân bằng, gây ra **dư thừa** vì lượng cung vượt lượng cầu. Cần phân biệt rõ: kiểm soát giá là mệnh lệnh hành chính đè lên thị trường (đường cung/cầu không dịch chuyển), khác với thuế/trợ cấp làm dịch chuyển đường cung.

6.7 Other Government Policy Tools

Besides taxes, subsidies, and price controls, governments use several other tools to correct market failure:

- **Regulation and legislation:** direct legal rules on quantity, quality, or behaviour (e.g., emissions standards, a smoking ban in public places, compulsory seatbelt laws, minimum food-safety standards).
- **Tradable (pollution) permits:** the government sets a maximum total quantity of pollution (a “cap”) and issues permits up to that limit; firms that pollute less than their allowance can sell surplus permits to firms that pollute more, so the market finds the cheapest way to hit the aggregate target.
- **Direct government provision:** the government itself supplies a good or service (state schools, public hospitals, national defence) rather than relying on private firms, particularly appropriate for pure public goods.
- **Buffer stock schemes:** government stabilisation of the price of a (typically agricultural) commodity by buying and storing surplus, and releasing stock during shortages (detailed below).
- **Provision of information:** the government supplies or mandates information to correct information failure (e.g., mandatory nutritional labelling, public health advertising campaigns, mandatory fuel-economy labels on cars) without directly changing the price or legal quantity.

6.7.1 Buffer Stock Schemes

Agricultural markets are prone to volatile prices because supply is subject to unpredictable shocks (weather, disease) while demand and supply are both often price-inelastic in the short run – a small shift in supply can cause a large swing in price. A **buffer stock scheme** aims to stabilise price within a target band.

Mechanics of a buffer stock scheme:

- The government (or a marketing board) sets a **price band** with a floor (minimum) and a ceiling (maximum).
- If a bumper harvest would push the market price *below* the floor, the government **buys** the surplus at the floor price and adds it to a stored buffer, preventing the price from falling further and protecting farmer incomes.
- If a poor harvest would push the market price *above* the ceiling, the government **sells** from the stored buffer, increasing supply and preventing the price from rising further, protecting consumers.
- Over time, purchases in good years and sales in bad years are intended to roughly offset one another, stabilising both farmer incomes and consumer prices without a permanent net budget cost.

Ví dụ mẫu · Worked example – Buffer stock purchase

Demand for wheat: $P = 90 - Q$ (\$ per tonne). Normal supply: $P = 30 + Q$, giving a target equilibrium of $Q = 30$, $P = \$60$ – the government sets its price floor at \$60 to protect farmer incomes at this level.

A bumper harvest increases the quantity farmers wish to sell at any price. At the floor price of \$60, farmers now wish to supply $Q_s = 50$ tonnes, while consumers still demand only $Q_d = 90 - 60 = 30$ tonnes.

To hold the price at the \$60 floor, the government must **buy the surplus**: $50 - 30 = 20$ tonnes, at a cost of $20 \times \$60 = \$1,200$, adding 20 tonnes to the buffer stock.

Practical problems of buffer stock schemes:

- **Storage costs:** warehousing, spoilage (especially for perishable produce), and insurance are costly and recurrent.
- **Cost of buying surplus:** in a run of good harvests, the government may have to buy repeatedly without ever releasing stock, requiring large and growing budget outlays.
- **Risk of running out of stock:** a run of poor harvests can exhaust the buffer, so the scheme collapses exactly when consumers need it most, forcing the government to import at the world price or abandon the ceiling.
- **Setting the “right” band:** if the target price band is set above the long-run equilibrium (as is politically common, to favour farmers), the scheme tends to accumulate ever-larger unsold stockpiles over time.

GIẢI THÍCH TIẾNG VIỆT

VN

Chương trình dự trữ đệm (buffer stock) ổn định giá nông sản bằng cách đặt một **biên độ giá** (giá sàn và giá trần). Khi được mùa, chính phủ **mua vào** kho dự trữ để giữ giá không giảm dưới sàn; khi mất mùa, chính phủ **bán ra** từ kho để giữ giá không tăng vượt trần. Các vấn đề thực tiễn gồm: chi phí lưu kho, chi phí mua vào lớn khi được mùa liên tục, và rủi ro cạn kho khi mất mùa liên tục.

6.8 Government Failure [A2 extension]**Khái niệm cốt lõi**

Government failure occurs when government intervention, intended to correct a market failure, instead leads to a **net welfare loss** – a less efficient allocation of resources than would have existed either under the free market or under some alternative policy. Government failure does not mean intervention is always wrong; it means the costs of a particular intervention (including unintended side effects) can outweigh its benefits.

Common causes of government failure:

- **Imperfect information:** governments often cannot accurately measure externalities (e.g., the exact monetary value of the external cost of one tonne of CO_2), so a tax or subsidy may be set at the wrong level, over- or under-correcting the market failure.
- **Administrative and compliance costs:** designing, monitoring, and enforcing regulation, permits, or price controls consumes real resources (bureaucracy, inspection, litigation) that are a genuine cost to society, and which must be weighed against the benefit of correcting the original market failure.
- **Unintended consequences:** a policy can distort behaviour in unforeseen ways – for example, a very high specific tax on cigarettes can drive a profitable **black market** in smuggled or counterfeit tobacco, undermining both the tax revenue and the intended reduction in smoking (and removing quality/safety controls entirely).
- **Regulatory capture:** the regulator responsible for policing an industry becomes unduly influenced by, or aligned with the interests of, the firms it is meant to regulate (e.g., through lobbying, revolving-door employment, or reliance on industry data), so regulation ends up protecting incumbent producers rather than consumers.
- **Political self-interest and short-termism:** elected policymakers may choose popular but economically inefficient policies (e.g., generous subsidies to a declining industry that preserves visible jobs before an election) over less popular but more efficient ones, since electoral incentives favour short-run visibility over long-run efficiency.
- **Moral hazard from bailouts and subsidies:** if firms or individuals expect that government will bail them out of the consequences of excessive risk-taking (e.g., banks judged “too big to fail”), they have a distorted incentive to take on more risk than is socially efficient.

Ví dụ mẫu · Worked example – Government failure in practice

Suppose a government imposes a very high specific tax on cigarettes, intending to reduce the negative externality of secondhand smoke and reduce demerit-good over-consumption. If the tax pushes the legal price far above what many smokers are willing/able to pay, a black market in smuggled or counterfeit cigarettes can emerge. The government loses tax revenue on units sold illegally, smokers may switch to more dangerous, unregulated products with no quality control, and enforcement (customs, policing) imposes further administrative costs. The policy, intended to reduce net social cost, can in this scenario result in a **worse** outcome for both public health and the public purse than a more moderate tax would have – an example of government failure driven by an unintended consequence.

GIẢI THÍCH TIẾNG VIỆT

VN

Thất bại của chính phủ (government failure) xảy ra khi sự can thiệp của chính phủ, vốn nhằm sửa chữa thất bại thị trường, lại gây ra tổn thất phúc lợi ròng lớn hơn. Các nguyên nhân gồm: thông tin không hoàn hảo (khó định giá chính xác ngoại ứng), chi phí hành chính, hậu quả không mong muốn (ví dụ thuế cao tạo ra thị trường chợ đen), sự thao túng cơ quan quản lý (regulatory capture), động cơ chính trị ngắn hạn, và rủi ro đạo đức từ các gói cứu trợ. Đây là chủ đề tổng hợp quan trọng ở cấp độ A2, đòi hỏi đánh giá cân bằng giữa thất bại thị trường và thất bại của chính phủ.

6.9 Practice Bank

Bài tập luyện tập

Q1. Demand: $P = 80 - 2Q$. Supply: $P = 20 + 2Q$. A specific tax of \$8/unit is imposed on producers. Calculate: (a) the original equilibrium; (b) the new equilibrium quantity; (c) the price paid by consumers and received by producers; (d) the consumer and producer share of the tax; (e) tax revenue; (f) the deadweight welfare loss.

Lời giải chi tiết

- (a) $80 - 2Q = 20 + 2Q \Rightarrow Q = 15, P = 50$.
(b) New supply: $P = 28 + 2Q$. $80 - 2Q = 28 + 2Q \Rightarrow Q = 13$.
(c) $P_c = 80 - 2(13) = \$54$; $P_p = 54 - 8 = \$46$.
(d) Consumer share = $54 - 50 = \$4$; producer share = $50 - 46 = \$4$.
(e) Tax revenue = $8 \times 13 = \$104$.
(f) $DWL = \frac{1}{2} \times 8 \times (15 - 13) = \frac{1}{2} \times 8 \times 2 = \8 .

Bài tập luyện tập

Q2. Demand: $P = 100 - Q$. Supply: $P = 10 + 0.25Q$. A specific tax of \$10/unit is imposed on producers. Calculate the new equilibrium quantity, P_c , P_p , and the consumer/producer split of the tax. Which side bears more of the burden, and why?

Lời giải chi tiết

Original equilibrium: $Q = 72, P = 28$. New supply: $P = 20 + 0.25Q$. New equilibrium: $100 - Q = 20 + 0.25Q \Rightarrow Q = 64$. $P_c = \$36, P_p = \26 . Consumer burden = \$8; producer burden = \$2. Consumers bear 80% of the tax because demand ($PED \approx -0.39$) is much more price-inelastic than supply ($PES \approx 1.56$) at the original equilibrium – the more inelastic side of the market always bears the larger tax share.

Bài tập luyện tập

Q3. Using your answer to Q2, explain in words (no further calculation) why the government would collect *more* total tax revenue by taxing a good with inelastic demand (such as cigarettes) rather than a good with elastic demand, for a given tax rate per unit.

Lời giải chi tiết

When demand is inelastic, a given price rise causes only a small fall in quantity demanded, so quantity traded (and hence the tax base Q) falls by relatively little after the tax. Since tax revenue = tax per unit $\times$ new quantity, a smaller fall in Q means more of the original quantity is preserved and taxed, so total revenue is higher (and the deadweight welfare loss triangle is smaller) than for an equivalent tax on an elastic-demand good, where quantity collapses by more.

Bài tập luyện tập

Q4. Which of the following best describes an ad valorem tax, as opposed to a specific tax?

- (A) A fixed sum per unit, shifting supply upward in a parallel manner
- (B) A percentage of the selling price, rotating the supply curve so the vertical gap widens as price rises
- (C) A tax levied only on producers, never on consumers
- (D) A tax that always leads to a larger dead-weight loss than a specific tax on the same good

Lời giải chi tiết

Answer: B. An ad valorem tax is a percentage of price, so its absolute size grows as the price level rises, causing supply to pivot rather than shift in parallel; the legal incidence (A) and the size of DWL (D) are not defining features – economic incidence is shared regardless of who legally remits the tax, and DWL depends on elasticities and the size of the tax, not on tax type alone.

Bài tập luyện tập

Q5. Demand: $P = 50 - Q$. Supply: $P = 10 + Q$. Subsidy of \$6/unit paid to producers. Calculate the original equilibrium, the new equilibrium quantity, P_c , P_p , and the total cost to the government.

Lời giải chi tiết

Original: $50 - Q = 10 + Q \Rightarrow Q = 20, P = 30$. New supply: $P = 4 + Q$. New equilibrium: $50 - Q = 4 + Q \Rightarrow Q = 23$. $P_c = 50 - 23 = \$27$. $P_p = 27 + 6 = \$33$ (check: $10 + 23 = 33, \checkmark$). Cost to government = $6 \times 23 = \$138$.

Bài tập luyện tập

Q6. Using the reference subsidy example (Demand $P = 60 - 2Q$; Supply $P = 6 + 2Q$; subsidy \$8/unit; new equilibrium $Q = 15.5, P_c = \$29, P_p = \37), calculate the proportion of the total government subsidy spending that is received (as extra revenue above the original price) by producers versus passed on to consumers as a price reduction.

Lời giải chi tiết

Original price $P = 33$. Consumers gain $33 - 29 = \$4$ per unit; producers gain $37 - 33 = \$4$ per unit. Total subsidy = $\$8 \times 15.5 = \124 . Since the per-unit gain is split evenly (\$4 and \$4), each side captures exactly half of the total subsidy cost, i.e., \$62 worth of benefit each (in per-unit terms, 50% to consumers via lower prices, 50% to producers via higher received prices) – consistent with demand and supply here having equal (symmetric) slopes.

Bài tập luyện tập

Q7. A government wants to increase consumption of a merit good toward the socially optimal level. Explain, using the concept of MSB and MPB, why a subsidy (rather than leaving the market alone) can move the market closer to allocative efficiency.

Lời giải chi tiết

For a merit good with a positive consumption externality, $MSB > MPB$, so the free market under-consumes (equilibrium at $MPB = S$, below the social optimum where $MSB = S$).

A subsidy lowers the effective price paid by consumers, increasing the quantity consumed. If the subsidy per unit is set equal to the marginal external benefit, the new market quantity coincides with Q_{opt} where $MSB = S$, eliminating the welfare loss from under-consumption (in principle – in practice this requires the government to correctly measure the external benefit).

Bài tập luyện tập

Q8. Demand: $P = 100 - 2Q$. Supply: $P = 10 + 3Q$. Government sets a maximum price of $P = 40$. Calculate Q_d , Q_s , and the resulting shortage.

Lời giải chi tiết

Q_d : $100 - 2Q = 40 \Rightarrow Q = 30$. Q_s : $10 + 3Q = 40 \Rightarrow Q = 10$. Shortage = $30 - 10 = 20$ units.

Bài tập luyện tập

Q9. Using the same demand and supply as Q8 (Demand $P = 100 - 2Q$; Supply $P = 10 + 3Q$), the government instead sets a minimum price of $P = 70$. Calculate the free-market equilibrium, Q_d and Q_s at the floor, and the resulting surplus.

Lời giải chi tiết

Equilibrium: $100 - 2Q = 10 + 3Q \Rightarrow Q = 18$, $P = 64$ (floor of \$70 is above this, so it is binding).
At $P = 70$: $Q_d = \frac{100 - 70}{2} = 15$; $Q_s = \frac{70 - 10}{3} = 20$. Surplus = $20 - 15 = 5$ units.

Bài tập luyện tập

Q10. Rent controls on housing and a national minimum wage are both examples of legal price controls. Which of these is a *maximum* price and which is a *minimum* price? What market condition (shortage or surplus) would basic theory predict for each if binding?

Lời giải chi tiết

Rent controls are a **maximum price** (price ceiling) set below the market-clearing rent, predicted to cause a **shortage** of rental housing (excess quantity demanded, e.g., long waiting lists, informal “key money” payments). A minimum wage is a **minimum price** (price floor) set above the market-clearing wage in the low-skill labour market, predicted to cause a **surplus** of labour, i.e., unemployment among affected workers (excess quantity of labour supplied over quantity demanded).

Bài tập luyện tập

Q11. A government sets a minimum (floor) price for milk to protect farmer incomes, alongside a buffer stock scheme. At the floor price, $Q_d = 200,000$ litres and $Q_s = 260,000$ litres. If the floor price is \$0.90 per litre, how much must the government spend to maintain the floor, and what happens to the milk it buys?

Lời giải chi tiết

Surplus = $260,000 - 200,000 = 60,000$ litres. Cost to buy the surplus = $60,000 \times \$0.90 = \$54,000$. The purchased milk (or, more realistically for a perishable good, milk powder/other storable derivatives) is added to the government's buffer stock, to be released back onto the market if a future harvest shortfall pushes the price above the ceiling of the price band.

Bài tập luyện tập

Q12. $MPB = MSB$: $P = 90 - Q$. MPC : $P = 10 + Q$. A constant marginal external cost of production of \$16 per unit means $MSC = 26 + Q$. Calculate the market equilibrium, the social optimum, and the deadweight welfare loss.

Lời giải chi tiết

Market ($MPB = MPC$): $90 - Q = 10 + Q \Rightarrow Q = 40, P = 50$.
Social optimum ($MSB = MSC$): $90 - Q = 26 + Q \Rightarrow Q = 32, P = 58$.
At $Q = 40$: $MSC = 26 + 40 = 66$; $MPB = 90 - 40 = 50$; gap = \$16.
 $DWL = \frac{1}{2} \times (40 - 32) \times 16 = \frac{1}{2} \times 8 \times 16 = \64 .

Bài tập luyện tập

Q13. MPB : $P = 80 - 2Q$. A constant marginal external benefit of \$8 per unit means $MSB = 88 - 2Q$. Supply ($MPC = MSC$): $P = 20 + 2Q$. Calculate the market equilibrium, the social optimum, and the welfare loss from under-consumption.

Lời giải chi tiết

Market ($MPB = S$): $80 - 2Q = 20 + 2Q \Rightarrow Q = 15, P = 50$.
Social optimum ($MSB = S$): $88 - 2Q = 20 + 2Q \Rightarrow Q = 17, P = 54$.
At $Q = 15$: $MSB = 88 - 30 = 58$; $S = 20 + 30 = 50$; gap = \$8.
Welfare loss = $\frac{1}{2} \times (17 - 15) \times 8 = \frac{1}{2} \times 2 \times 8 = \8 .

Bài tập luyện tập

Q14. A steel factory's production process pollutes a nearby river, imposing costs on downstream fishing communities. Which curve should be adjusted to represent this externality on a standard diagram, and in which direction?

- | | |
|---------------------------|---------------------------|
| (A) Shift MPB up to MSB | (C) Shift MPC up to MSC |
| (B) Shift MPB down to MSB | (D) Shift MPC down to MSC |

Lời giải chi tiết

Answer: C. This is a negative *production* externality (pollution generated during production), so the marginal social cost curve lies above the marginal private cost curve ($MSC > MPC$); the demand/benefit side of the market is unaffected.

Bài tập luyện tập

Q15. Classify each of the following as (i) a negative production externality, (ii) a negative consumption externality, (iii) a positive production externality, or (iv) a positive consumption

externality: (a) a chemical plant discharging waste into a river; (b) a person playing loud music late at night in an apartment block; (c) a firm's investment in staff training that raises general skill levels which benefit the wider industry; (d) an individual receiving a flu vaccination.

Lời giải chi tiết

- (a) Negative production externality – pollution generated while producing a good, imposing a cost on third parties ($MSC > MPC$).
- (b) Negative consumption externality – noise imposed on neighbours by the consumer's choice to play music ($MSB < MPB$).
- (c) Positive production externality – skills spill over to the wider industry beyond the training firm ($MSC < MPC$, since social cost of producing with a more skilled workforce is effectively lower).
- (d) Positive consumption externality – vaccination reduces the individual's own risk and also reduces transmission to others (herd immunity), so $MSB > MPB$.

Bài tập luyện tập

Q16. For each good below, state whether it is best classified as a private good, a pure public good, a quasi-public (club) good, a merit good, or a demerit good, and briefly justify your answer: (a) a lighthouse; (b) a toll bridge; (c) a bag of crisps; (d) a state-funded vaccination programme; (e) cigarettes.

Lời giải chi tiết

- (a) Pure public good – non-excludable (any ship can see the beam) and non-rivalrous (one ship benefiting does not reduce the light available to another).
- (b) Quasi-public (club) good – excludable (a toll can be charged) but largely non-rivalrous until the bridge becomes congested.
- (c) Private good – excludable (a shop can refuse a non-payer) and rivalrous (one person eating the crisps leaves none for another).
- (d) Merit good – under-consumed if left purely to individual choice, because of positive externalities (herd immunity) and information failure (individuals may underestimate personal/social benefit); it is excludable/rivalrous in provision so not a public good technically.
- (e) Demerit good – over-consumed relative to the social optimum because consumers underestimate long-run health costs and impose negative externalities (passive smoking, healthcare costs) on others.

Bài tập luyện tập

Q17. Explain, in two or three sentences, why an unregulated free market will provide zero units of a pure public good such as a national flood-defence system, even if its total social benefit greatly exceeds its cost.

Lời giải chi tiết

Because the flood-defence system is non-excludable, anyone in the protected area benefits whether or not they paid toward it, so individuals have an incentive to free-ride on others' contributions rather than pay voluntarily. If every rational individual reasons this way, total voluntary contributions collected will be far too low to cover the cost, so no private firm can profitably supply it – the good is provided in a quantity of zero unless government steps in to

fund it collectively through compulsory taxation.

Bài tập luyện tập

Q18. Which single property of a good is most directly responsible for the free-rider problem?

- | | |
|----------------------------|--------------------------------------|
| (A) Rivalry in consumption | (C) High income elasticity of demand |
| (B) Non-excludability | (D) Being produced by a monopoly |

Lời giải chi tiết

Answer: B. Non-excludability means non-payers cannot be prevented from consuming the good once it is provided, which removes the incentive to pay voluntarily and creates the free-rider problem. Non-rivalry (not listed as the best single answer here) reinforces why the good should ideally be provided to everyone at zero marginal cost, but it is non-excludability that directly causes the free-riding incentive.

Bài tập luyện tập

Q19. A buyer purchasing a second-hand car cannot tell whether it is mechanically reliable or a “lemon”; meanwhile, a driver who has just taken out fully comprehensive car insurance starts parking carelessly in areas prone to theft. Identify and distinguish the two information-failure concepts illustrated.

Lời giải chi tiết

The used-car scenario illustrates **adverse selection**: the information asymmetry exists *before* the transaction (the seller knows the car’s true quality; the buyer does not), which can drive good-quality cars out of the market since buyers will only pay an average price. The insurance scenario illustrates **moral hazard**: the change in behaviour occurs *after* the transaction, because the insured driver no longer bears the full cost of a theft, reducing their incentive to take care.

Bài tập luyện tập

Q20. Match each government policy tool to the market failure it is most directly designed to address: (1) tradable pollution permits; (2) direct provision funded by taxation; (3) mandatory nutrition labelling; (4) a specific excise tax. Market failures: (a) information failure; (b) a pure public good; (c) a negative production externality with an uncertain but capped socially acceptable total; (d) a demerit good with a negative consumption externality.

Lời giải chi tiết

(1)–(c): tradable permits cap the aggregate quantity of pollution while letting the market find the least-cost distribution of abatement across firms. (2)–(b): public goods are not provided at all by an unregulated market due to free-riding, so government must provide and fund them directly. (3)–(a): labelling corrects information failure by giving consumers facts they previously lacked, without changing the legal price or quantity. (4)–(d): an excise tax raises the price of a demerit good, discouraging over-consumption caused by the underestimated private and social costs.

Bài tập luyện tập

Q21. Explain one advantage of a tradable permit scheme over a uniform emissions tax when the government's main objective is to guarantee a specific, known total quantity of pollution reduction.

Lời giải chi tiết

A cap-and-trade permit scheme fixes the *total quantity* of allowed pollution directly (the number of permits issued), so the environmental outcome (total emissions) is known with certainty in advance. A tax instead fixes the *price* of polluting; the resulting quantity of pollution reduction depends on how firms respond to that price (which depends on the price elasticity of demand for pollution-intensive inputs), so the government cannot be certain in advance exactly how much total pollution will fall.

Bài tập luyện tập

Q22. Demand for wheat: $P = 90 - Q$. Normal supply: $P = 30 + Q$, giving a target price floor of \$60 (the free-market equilibrium price). A bumper harvest means that, at the \$60 floor, farmers now wish to supply $Q_s = 55$ tonnes. Calculate the quantity the government must buy to maintain the floor, and the cost of doing so.

Lời giải chi tiết

Q_d at $P = 60$: $90 - 60 = 30$ tonnes. Surplus = $55 - 30 = 25$ tonnes. The government must buy 25 tonnes at \$60 each = \$1,500, adding 25 tonnes to the buffer stock.

Bài tập luyện tập

Q23. Identify and briefly explain two practical problems a government might face in operating a buffer stock scheme over a run of several consecutive bumper harvests.

Lời giải chi tiết

- (1) **Rising storage costs:** each successive bumper harvest adds further unsold stock to the buffer, and storage/warehousing/spoilage costs (especially for perishable produce) accumulate continuously with no offsetting sales.
- (2) **Escalating budget cost:** the government must keep buying the surplus at the floor price every year, with no corresponding revenue from sales (since there is no shortage to sell into), so the scheme's net cost to the public budget keeps growing rather than averaging out, potentially becoming financially unsustainable.

Bài tập luyện tập

Q24. A national government imposes strict quality-and-safety regulations on a chemical industry it is concerned poses environmental risks, but the regulatory body responsible is staffed largely by former industry executives who set testing standards well below what independent scientists recommend. Which cause of government failure does this best illustrate, and why is it a form of government *failure* rather than success?

Lời giải chi tiết

This illustrates **regulatory capture**: the regulator has become aligned with the interests of the industry it is meant to police (via staffing links to former executives), so the resulting standards protect industry profits rather than correcting the environmental market failure the regulation was meant to address. It is a government failure because the intervention, though nominally correcting a negative externality, in practice under-corrects it (weak standards permit more pollution than the socially efficient level), potentially leaving society worse off than a more independently designed regulation would have – the cost of the failure is borne by those affected by the under-regulated externality.

Bài tập luyện tập

Q25. A government imposes a very high specific tax on a demerit good to reduce over-consumption. A large illegal black market subsequently emerges, supplying a cheaper, untaxed, and unregulated version of the good. Explain why this is an example of government failure, referring to both the government's original objective and the actual outcome.

Lời giải chi tiết

The government's objective was to reduce the negative externality/over-consumption of the demerit good and raise tax revenue. In practice, the very high tax created a strong financial incentive for illegal supply, so a substantial share of consumption shifted to the untaxed black market. The government therefore collects less tax revenue than intended (revenue leaks to smugglers), consumption of the good may not fall by nearly as much as predicted from the legal-market price rise alone (since black-market prices are lower), and consumers face additional risks from unregulated, potentially more dangerous products. The unintended consequence (a black market) means the policy delivers a worse combined outcome (less revenue, an unregulated product, and continued high consumption) than a more moderate tax might have – a clear instance of government failure.

Bài tập luyện tập

Q26. Which of the following is the best definition of government failure?

- (A) Any government intervention that changes market prices welfare, or a less efficient outcome than existed before intervention
- (B) A situation where a government intervention results in a net loss of economic (C) A government running a budget deficit
- (D) Any policy that is unpopular with voters

Lời giải chi tiết

Answer: B. Government failure specifically refers to intervention causing a net welfare loss (or a less efficient allocation than the pre-intervention situation), not merely any price change (A), any fiscal deficit (C), or unpopularity (D), none of which are, by themselves, evidence of an inefficient allocation of resources.

Bài tập luyện tập

Q27. [Essay outline] "Evaluate whether a tradable pollution permit scheme or a carbon tax is more effective at reducing a country's carbon emissions." Sketch a balanced essay-outline answer.

Lời giải chi tiết

Define: carbon tax = a per-unit charge on carbon emissions (fixes price, quantity uncertain); tradable permits = a cap-and-trade system (fixes quantity, price uncertain).

Case for permits: guarantees a known total quantity of emissions reduction (important if there is a hard environmental target); creates a continuous financial incentive to innovate and abate, since firms can profit from selling unused permits; least-cost abatement is automatically achieved as trading reallocates permits to firms who value them most.

Case for a carbon tax: administratively simpler to introduce (no need to design and monitor a permit market, which can suffer manipulation or an oversupply of permits that collapses the permit price, as some real-world schemes have experienced); provides a stable, predictable price signal for long-term investment decisions; revenue can be earmarked for green subsidies or used to cut other distortionary taxes.

Weaknesses of both: both require government to estimate the marginal external cost of carbon accurately (imperfect information – a government failure risk); both can face industry lobbying to weaken caps/rates (regulatory capture risk); both can be undermined if applied in only one country (carbon leakage to unregulated jurisdictions).

Evaluation/conclusion: the “better” tool depends on the policy priority – if the priority is a guaranteed quantity outcome (e.g., binding international commitment), permits are preferable; if the priority is price stability and administrative simplicity, a tax is preferable; many economies now combine both approaches (e.g., a carbon tax with a floor price under a permit scheme) to capture the advantages of each while limiting the weaknesses.

Bài tập luyện tập

Q28. [Essay outline] “Discuss whether government intervention in a market always improves on the free-market outcome.” Sketch a balanced essay-outline answer.

Lời giải chi tiết

Define: market failure (free market misallocates resources: externalities, public goods, information failure, market power) versus government failure (intervention itself causes a net welfare loss).

Case that intervention improves outcomes: correcting a negative externality with a Pigouvian tax set equal to marginal external cost can move output exactly to the social optimum, eliminating the deadweight welfare loss shown in the negative-externality diagram; direct provision solves the free-rider problem for public goods that the market would not supply at all; subsidies for merit goods and information campaigns can close the gap between MPB and MSB caused by information failure.

Case that intervention does not always improve outcomes: government failure can arise from imperfect information (a tax/subsidy set at the wrong level either under- or over-corrects the externality), high administrative and enforcement costs, unintended consequences such as black markets, regulatory capture, and short-termist policies driven by electoral incentives rather than efficiency.

Evaluation: whether intervention helps depends on the size of the original market failure relative to the costs and risks of the specific intervention chosen, the quality of the information available to policymakers, and the political-economy environment (independence of regulators, time horizon of decision-makers).

Conclusion: intervention does not automatically improve on the free market; it should be judged case by case, weighing the welfare gain from correcting market failure against the realistic risk and magnitude of government failure, and policymakers should prefer instruments

(e.g., tradable permits, clearly costed subsidies) that minimise information requirements and unintended distortions.

Bài tập luyện tập

Q29. [Essay outline] “Discuss the view that indirect taxes on demerit goods and subsidies on merit goods are the best way for government to correct information failure and externalities in consumption.” Sketch a balanced essay-outline answer.

Lời giải chi tiết

Define: demerit goods (over-consumed due to information failure/negative externalities, e.g., tobacco); merit goods (under-consumed due to information failure/positive externalities, e.g., education, healthcare).

Case for taxes/subsidies: they work through the price mechanism, preserving consumer choice while changing incentives; if set at a rate equal to the marginal external cost/benefit, they can in principle move the market exactly to the socially optimal quantity, shown by the negative/positive externality diagrams; tax revenue can additionally fund public information campaigns or healthcare spending.

Limitations: governments rarely know the true monetary value of the externality (imperfect information), so taxes/subsidies are often set by political judgement rather than precise calculation, risking government failure; demand for many demerit goods (e.g., addictive substances) can be highly inelastic, so very large taxes are needed to significantly cut consumption, which risks creating a black market; subsidies for merit goods must be funded from taxation elsewhere, which has its own distortionary costs (and taxpayer opportunity cost).

Alternative/complementary tools: regulation (e.g., minimum legal age, advertising bans), direct provision (e.g., free state healthcare/education) and information campaigns (e.g., mandatory labelling) can address information failure directly rather than only through price, and are often used alongside taxes/subsidies rather than as substitutes for them.

Conclusion: taxes and subsidies are a powerful and administratively common tool, but are best evaluated as *one part* of a policy mix alongside regulation, information, and direct provision, rather than as a universally “best” single instrument, since their effectiveness depends heavily on the price elasticity of the good and the accuracy with which the externality can be valued.

Bài tập luyện tập

Q30. A country currently has an unregulated market for a good that generates a negative production externality, and separately a market for a merit good that suffers from information failure and a positive consumption externality. For each market, name (i) the direction in which free-market output diverges from the social optimum, and (ii) one specific policy tool (other than an indirect tax/subsidy) that could be used, briefly justifying your choice.

Lời giải chi tiết

Negative production externality market: (i) free-market output is **above** the socially optimal quantity ($Q_m > Q_{opt}$), since $MSC > MPC$ but the market only equates $MPB = MPC$. (ii) **Regulation** (e.g., an emissions-intensity limit or mandatory abatement technology) could cap output/pollution directly without relying on the government correctly pricing the externality via a tax – useful when the external cost is hard to quantify in money terms but a maximum acceptable level of harm can be specified.

Merit good market: (i) free-market output is **below** the socially optimal quantity ($Q_m < Q_{opt}$),

since $MSB > MPB$ but the market only equates $MPB = MPC/S$. (ii) **Direct government provision** (e.g., free state schooling or public vaccination clinics) removes the price barrier entirely and bypasses the risk that consumers, due to information failure, would still under-consume even at a subsidised price.

National Income, Economic Growth and the AD-AS Model

Mục tiêu Unit: Sơ đồ chu chuyển thu nhập (circular flow of income): mô hình hai khu vực (hộ gia đình – doanh nghiệp) và mô hình đầy đủ với khu vực tài chính, chính phủ và khu vực đối ngoại; ba khoản rút ra (tiết kiệm S, thuế T, nhập khẩu M) và ba khoản bơm vào (đầu tư I, chi tiêu chính phủ G, xuất khẩu X); điều kiện cân bằng $I + G + X = S + T + M$. Ba phương pháp đo lường thu nhập quốc dân (sản lượng, thu nhập, chi tiêu), phân biệt GDP và GNI, khái niệm giá trị gia tăng để tránh tính trùng. Ứng dụng và hạn chế của số liệu thu nhập quốc dân khi so sánh mức sống theo thời gian (GDP thực tế bình quân đầu người) và giữa các quốc gia (ngang giá sức mua PPP); các hạn chế: phân phối thu nhập, khu vực phi chính thức, suy thoái môi trường, và chỉ số phát triển con người (HDI) như một thước đo thay thế. Tăng trưởng kinh tế thực tế và tăng trưởng tiềm năng; nguyên nhân tăng trưởng; chi phí và lợi ích của tăng trưởng nhanh. Mô hình tổng cầu – tổng cung (AD-AS): các thành phần và yếu tố quyết định tổng cầu, quan điểm cổ điển/tiền tệ về AS dài hạn thẳng đứng, và đường AS theo trường phái Keynes với ba đoạn.

7.1 The circular flow of income

7.1.1 The simple two-sector model

The **circular flow of income** is a model showing how income and spending flow continuously between the different sectors of an economy. In its simplest form, the economy is divided into just two sectors: **households** (who own all factors of production – land, labour, capital, enterprise) and **firms** (who employ those factors to produce goods and services).

There are two flows moving in opposite directions around this simple loop:

- The **real flow**: households supply factor services (labour, land, capital, enterprise) to firms; firms, in turn, supply finished goods and services back to households.
- The **money flow**: firms pay households factor incomes (wages, rent, interest and profit) in return for the use of their factor services; households, in turn, spend that income on firms' output (consumer expenditure).

In this simplified two-sector world, households spend *all* of their income on domestically produced goods and services, and firms spend *all* of the revenue they receive on factor payments. There are no withdrawals from the flow and no injections into it, so the value of income, output and expenditure are always exactly equal, and the flow simply circulates at a constant level period after period.

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VN

Sơ đồ chu chuyển thu nhập mô tả dòng chảy liên tục của thu nhập và chi tiêu giữa các khu vực trong nền kinh tế. Ở dạng đơn giản nhất (hai khu vực), hộ gia đình cung cấp dịch vụ yếu tố sản xuất cho doanh nghiệp (dòng thực), đổi lại nhận thu nhập yếu tố (tiền lương, tiền thuê, lãi suất, lợi nhuận); doanh nghiệp cung cấp hàng hoá/dịch vụ cho hộ gia đình, đổi lại nhận chi tiêu tiêu dùng (dòng tiền). Trong mô hình đơn giản này không có rò rỉ hay bơm vào nên thu nhập, sản lượng và chi tiêu luôn bằng nhau và dòng chảy tiếp diễn ở mức không đổi.

7.1.2 Extending the model: withdrawals and injections

Real economies are far more complex than the two-sector model, because not all income received by households is spent directly on domestic firms' output, and firms' revenue is not the only source of demand for their output. To make the model realistic, three further sectors are added: the **financial sector** (banks and other institutions that accept savings and provide funds for investment), the **government sector**, and the **foreign sector** (the rest of the world).

Each of these three additional sectors is connected to the circular flow through one **withdrawal (leakage)** – income that leaves the domestic circular flow instead of being spent on domestic output – and one **injection** – an addition of spending into the flow that does not originate from domestic household income.

Three withdrawals (leakages) – income received by households or firms but not passed on as spending on domestic output:

- **Savings (S)**: household income not spent, deposited with the financial sector.
- **Taxes (T)**: income taken by the government (direct and indirect taxes).
- **Imports (M)**: spending on goods and services produced abroad, which leaves the domestic flow.

Three injections: spending on domestic output that does not arise from current domestic household income:

- **Investment (I)**: firms' spending on capital goods, financed via the financial sector (including from savings).
- **Government spending (G)**: government spending on goods, services and public-sector wages.
- **Exports (X)**: spending by foreign residents on domestically produced goods and services.

Figure 7.1 shows the full five-sector circular flow, with the leakages and injections attached to the basic household–firm loop.

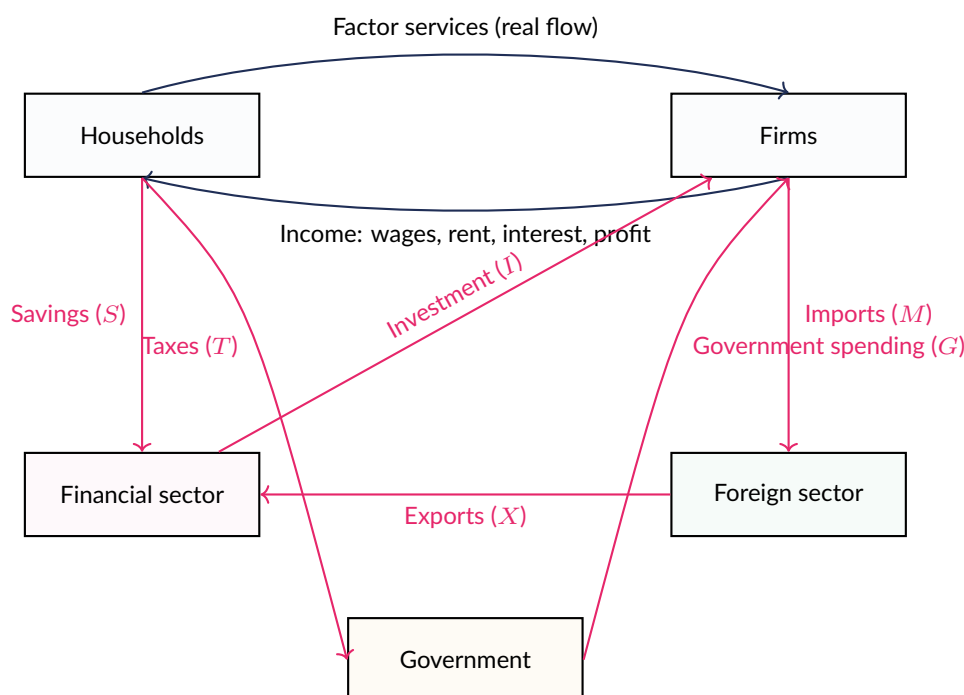


Figure 7.1 The full circular flow of income. The core household–firm loop (navy) is joined by three withdrawals – savings S , taxes T , imports M – and three injections – investment I , government spending G , exports X (pink), routed through the financial, government and foreign sectors.

7.1.3 The equilibrium condition

National income is in **equilibrium** when total planned withdrawals from the flow exactly equal total planned injections into the flow:

$$I + G + X = S + T + M$$

In words: the total value of spending being *added back* into the circular flow from investment, government spending and exports is exactly matched by the total value of income being *taken out* of the flow as savings, taxes and imports. When this condition holds, the level of national income is neither rising nor falling, since the amount of demand being generated for domestic output equals the amount of income leaking out of active domestic spending.

If injections exceed withdrawals ($I + G + X > S + T + M$), aggregate demand for domestic output exceeds the leakages out of the flow, so national income and output tend to **rise**. If withdrawals exceed injections ($S + T + M > I + G + X$), demand is insufficient to sustain the current level of output, and national income tends to **fall**. [A2 extension] This withdrawals–injections framework underpins the multiplier process: any change in an injection (or withdrawal) disturbs the equilibrium and sets off a chain of further changes in income and spending until a new equilibrium, where injections again equal withdrawals, is reached.

GIẢI THÍCH TIẾNG VIỆT

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Ba khoản **rút ra** (rò rỉ): tiết kiệm S , thuế T , nhập khẩu M – là thu nhập không được chi tiêu ngay cho sản lượng trong nước. Ba khoản **bơm vào**: đầu tư I , chi tiêu chính phủ G , xuất khẩu X – là các khoản chi tiêu không xuất phát trực tiếp từ thu nhập hộ gia đình hiện tại. Nền kinh tế cân bằng khi tổng bơm vào bằng tổng rút ra: $I + G + X = S + T + M$. Nếu bơm vào $>$ rút ra, thu nhập quốc dân có xu hướng tăng; nếu rút ra $>$ bơm vào, thu nhập quốc dân có xu hướng giảm.

(!) **Lỗi thường gặp:** Students sometimes assume the equilibrium condition means $S = I$, $T = G$ and $M = X$ must hold *individually* at all times. This is not required: equilibrium only needs the *totals* to match, $I + G + X = S + T + M$. It is entirely possible (indeed common) for a government to run a budget deficit ($G > T$) while the economy is still in overall equilibrium, provided this is offset elsewhere – for example by a trade surplus ($X > M$) or by savings exceeding investment ($S > I$).

7.2 Measuring national income

7.2.1 Three methods of measuring national income

National income can, in principle, be measured in three different ways, which should all give the same total value because one sector's expenditure is another sector's income, which is itself generated by production.

- **Output (product) method:** sum the **value added** at each stage of production across all industries in the economy, avoiding double counting of intermediate goods.
- **Income method:** sum all factor incomes earned in producing that output – wages and salaries (labour), rent (land), interest (capital) and profit (enterprise).
- **Expenditure method:** sum all spending on final goods and services produced within the economy: $GDP = C + I + G + (X - M)$.

Gross Domestic Product (GDP) is the total value of output produced *within a country's borders* in a given time period, regardless of who owns the factors of production. **Gross National Income (GNI)**, by contrast, measures the income earned by a country's *residents*, wherever in the world it is earned:

$$GNI = GDP + \text{net income from abroad}$$

where net income from abroad is the income earned by domestic residents' factors of production employed overseas, minus income earned domestically by foreign-owned factors of production.

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Ba cách đo thu nhập quốc dân: (1) phương pháp **sản lượng** – cộng giá trị gia tăng ở mỗi giai đoạn sản xuất; (2) phương pháp **thu nhập** – cộng các khoản thu nhập yếu tố (lương, tiền thuê, lãi suất, lợi nhuận); (3) phương pháp **chi tiêu** – cộng chi tiêu cho hàng hoá/dịch vụ cuối cùng: $GDP = C + I + G + (X - M)$. **GDP** đo sản lượng tạo ra *trong lãnh thổ* quốc gia; **GNI** đo thu nhập của *công dân/cư dân* quốc gia đó dù kiếm được ở đâu: $GNI = GDP +$ thu nhập ròng từ nước ngoài.

7.2.2 Worked examples

Ví dụ mẫu · Worked example – GDP by the expenditure method

$C = \$300\text{bn}$, $I = \$150\text{bn}$, $G = \$100\text{bn}$, $X = \$80\text{bn}$, $M = \$60\text{bn}$. $GDP = \$570\text{bn}$.

GIẢI THÍCH TIẾNG VIỆT

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$GDP = C + I + G + (X - M) = 300 + 150 + 100 + (80 - 60) = 300 + 150 + 100 + 20 = \570 tỷ .

Ví dụ mẫu · Worked example – Real vs nominal GDP

Nominal GDP \$500bn Yr1 (index 100), \$550bn Yr2 (index 110). Real GDP Yr2 = \$500bn. Real growth = 0%.

GIẢI THÍCH TIẾNG VIỆT

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Chỉ số giá tăng từ 100 lên 110 (lạm phát 10%), nên GDP thực tế năm 2 = $550 / 1.10 = \$500 \text{ tỷ}$ – bằng đúng GDP thực tế năm 1. Toàn bộ mức tăng 10% của GDP danh nghĩa chỉ phản ánh giá cả tăng, không có tăng trưởng thực tế nào (0%).

7.2.3 Avoiding double counting: the value-added approach

When using the output method, statisticians must be careful not to add up the *full sale value* of every transaction in the economy, because many goods pass through several stages of production

before reaching the final consumer – this would count the value of intermediate goods multiple times. Instead, only the **value added** at each stage – the difference between the value of a firm's output and the cost of the inputs it purchased from other firms – is included.

Ví dụ mẫu · Worked example – value added in a production chain

A farmer grows wheat and sells it to a miller for \$2 per unit (the farmer buys no intermediate inputs from other firms). The miller grinds the wheat into flour and sells it to a baker for \$5 per unit. The baker bakes bread and sells it to the final consumer for \$9 per unit. Calculate the value added at each stage, and compare the sum of value added to the value of final output.

Stage	Sale value (\$)	Cost of purchased inputs (\$)	Value added (\$)
Farmer (wheat)	2	0	2
Miller (flour)	5	2	3
Baker (bread)	9	5	4
Total	16	–	9

Figure 7.2 Value added at each stage of a simple wheat–flour–bread production chain.

Summing the value added at each stage gives $2 + 3 + 4 = \$9$, which exactly equals the sale value of the *final* good (bread) to the consumer. Simply adding up all the sale values in the chain ($\$2 + \$5 + \$9 = \16) would triple-count the value of the original wheat and double-count the value of the flour, overstating the true contribution to national output.

GIẢI THÍCH TIẾNG VIỆT

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Giá trị gia tăng ở mỗi khâu = doanh thu bán hàng trừ chi phí đầu vào mua từ doanh nghiệp khác. Nông dân: $2 - 0 = 2\$$; người xay bột: $5 - 2 = 3\$$; thợ làm bánh: $9 - 5 = 4\$$. Tổng giá trị gia tăng = $2 + 3 + 4 = 9\$$, đúng bằng giá trị bán bánh mì cuối cùng. Nếu cộng toàn bộ doanh thu của cả chuỗi ($2 + 5 + 9 = 16\$$) thì lúa mì và bột sẽ bị tính trùng nhiều lần, làm phóng đại sản lượng thực của nền kinh tế.

7.3 Uses and limitations of national income statistics

7.3.1 Comparing living standards over time

National income data are often used to judge whether living standards are rising or falling over time. Two adjustments are essential before a valid comparison can be made:

- **Adjust for inflation:** compare **real GDP** (using constant prices), not nominal GDP, since nominal GDP can rise purely because prices have risen, with no more goods and services actually produced (as in the worked example above, where 0% real growth was hidden inside a 10% nominal rise).
- **Adjust for population:** compare **real GDP per capita** (= real GDP ÷ population), not real GDP alone, since a growing population can absorb – or even exceed – growth in total output, leaving average living standards unchanged or falling even while total real GDP rises.

Ví dụ mẫu · Worked example – why population matters

Using the real-GDP figures above (real GDP = \$500bn in both Year 1 and Year 2), suppose population was 50 million in Year 1 and grew by 2% to 51 million in Year 2. Calculate real GDP per capita in each year and interpret the result.

$$\text{Real GDP per capita, Yr 1} = \frac{\$500\text{bn}}{50\text{m}} = \$10,000 \quad \text{Real GDP per capita, Yr 2} = \frac{\$500\text{bn}}{51\text{m}} \approx \$9,804$$

Even though real GDP itself did not grow at all between the two years, real GDP per capita actually **fell** by about 2%, because the same total output now has to be shared among more people. This illustrates why total real GDP alone can give a misleadingly rosy picture of changing living standards in a country with a growing population.

GIẢI THÍCH TIẾNG VIỆT

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Khi so sánh mức sống theo thời gian, cần điều chỉnh theo cả **lạm phát** (dùng GDP thực tế) và **dân số** (dùng GDP thực tế bình quân đầu người). Ví dụ trên cho thấy dù GDP thực tế không đổi, GDP thực tế bình quân đầu người vẫn **giảm** khoảng 2% vì dân số tăng, chứng tỏ chỉ nhìn vào tổng GDP thực tế có thể đánh giá sai lệch về mức sống.

7.3.2 Comparing living standards between countries: purchasing power parity (PPP)

Comparing GDP per capita figures between countries using **market exchange rates** can also be misleading, because the cost of living – particularly of non-traded goods and services such as housing, haircuts and local transport – differs greatly between countries. A **purchasing power parity (PPP)** adjustment converts GDP per capita figures using an exchange rate based on what the same basket of goods actually costs in each country, rather than the market (financial) exchange rate.

Ví dụ mẫu · Worked example – adjusting for PPP

Country A has nominal GDP per capita of \$60,000 measured at market exchange rates. Country B has nominal GDP per capita of \$15,000 at market exchange rates. A representative basket of goods and services costs \$1,000 in Country A but only \$400 in Country B. Estimate Country B's PPP-adjusted GDP per capita, and compare the market-exchange-rate gap with the PPP-adjusted gap.

The same basket is $1,000/400 = 2.5$ times more expensive in Country A than in Country B, so each dollar of income in Country B buys 2.5 times more in real purchasing power than the exchange-rate comparison alone suggests:

$$\text{PPP-adjusted GDP per capita (B)} = \$15,000 \times 2.5 = \$37,500$$

At market exchange rates, Country A appears $60,000/15,000 = 4$ times richer than Country B. After adjusting for the lower cost of living in Country B, the gap narrows considerably: Country A's real purchasing power is only $60,000/37,500 \approx 1.6$ times that of Country B. PPP adjustment therefore gives a far more accurate picture of the *relative* living standards actually experienced by residents of each country.

GIẢI THÍCH TIẾNG VIỆT

VN

So sánh mức sống giữa các quốc gia bằng tỷ giá hối đoái thị trường có thể sai lệch vì chi phí sinh hoạt (đặc biệt hàng hoá/dịch vụ phi thương mại như nhà ở, cắt tóc) khác nhau nhiều. Điều chỉnh theo **ngang giá sức mua (PPP)** dùng tỷ giá dựa trên chi phí thực tế của cùng một rổ hàng hoá ở mỗi nước. Ở ví dụ trên, chênh lệch GDP đầu người theo tỷ giá thị trường là 4 lần, nhưng sau khi điều chỉnh PPP chỉ còn khoảng 1.6 lần – phản ánh đúng hơn mức sống thực tế.

7.3.3 Limitations of national income statistics as a measure of well-being

Even after adjusting for inflation, population and PPP, national income statistics remain an imperfect measure of a nation's overall welfare or standard of living, for several further reasons.

- **Income distribution:** GDP per capita is an *average* figure and says nothing about how income is shared. Two countries with identical GDP per capita could have very different levels of inequality; the **Gini coefficient** (ranging from 0, perfect equality, to 1, maximum inequality) is often used alongside GDP data to capture this.
- **Non-marketed and informal economic activity:** GDP only captures activity that passes through recorded, priced market transactions. It excludes subsistence farming, unpaid household work (childcare, cooking, cleaning) and informal/black-market activity, so countries with a large informal or subsistence sector will have their true output understated relative to countries where similar activity is formally marketed and recorded.
- **Environmental degradation:** GDP records the value of output produced but does not subtract the value of resources depleted or environmental damage caused (pollution, deforestation, climate costs) in producing it. Two countries could have identical GDP per capita while one achieves it far more sustainably than the other.
- **Composition of output and quality-of-life factors:** GDP treats all spending as equally desirable and does not capture how output is composed (e.g. spending on healthcare versus on armaments) nor factors such as leisure time, working hours, job security, political freedom or life expectancy. A country where citizens work very long hours to produce a high GDP may have lower overall well-being than a country with a somewhat lower GDP but far more leisure time.

GIẢI THÍCH TIẾNG VIỆT

VN

Hạn chế của số liệu thu nhập quốc dân: (1) không thể hiện **phân phối thu nhập** (hệ số Gini bổ sung thông tin này); (2) bỏ sót hoạt động **phi thị trường/phi chính thức** (nông nghiệp tự cung tự cấp, việc nhà không trả công, kinh tế ngầm); (3) không trừ đi chi phí **suy thoái môi trường**; (4) không phản ánh **cơ cấu sản lượng** và các yếu tố chất lượng cuộc sống như thời gian nghỉ ngơi, giờ làm việc, tuổi thọ.

7.3.4 An alternative measure: the Human Development Index (HDI)

Because of these limitations, international organisations often use broader, composite measures alongside GDP. The **Human Development Index (HDI)**, published by the United Nations, combines three dimensions of development into a single index between 0 and 1:

- **Income:** (real) GNI per capita, adjusted for PPP.
- **Health:** life expectancy at birth.
- **Education:** mean and expected years of schooling.

A higher HDI score indicates a country performs well across income, health and education simultaneously, rather than on income alone. This makes HDI useful for identifying countries that have converted income growth into broader human development (or failed to do so), although HDI itself still does not capture inequality within a country, environmental sustainability, or political freedoms – further composite measures exist to address these specific gaps.

GIẢI THÍCH TIẾNG VIỆT

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Chỉ số Phát triển Con người (HDI) do Liên Hợp Quốc công bố, kết hợp ba khía cạnh: **thu nhập** (GNI đầu người theo PPP), **sức khỏe** (tuổi thọ trung bình) và **giáo dục** (số năm đi học), cho điểm số từ 0 đến 1. HDI hữu ích hơn GDP đơn thuần vì phản ánh nhiều khía cạnh phát triển hơn,

nhưng vẫn chưa thể hiện được bất bình đẳng trong nước hay tính bền vững môi trường.

7.4 Economic growth

7.4.1 Actual growth versus potential growth

Economic growth is an increase in the real output of an economy over time, usually measured as the percentage annual change in real GDP. Cambridge economics distinguishes two different processes that can both be labelled “growth,” but which have very different causes and policy implications.

Actual growth is an increase in *actual* real output achieved by making fuller use of an economy's *existing* resources – represented as a movement of the economy *towards* its production possibility curve (PPC) or LRAS, closing an existing **output gap** (spare capacity/unemployed resources). Actual growth can be stimulated in the short run by expansionary demand-side policy that raises AD.

Potential growth is an increase in an economy's *productive capacity* – represented as an *outward shift* of the entire PPC or LRAS curve, achieved by increasing the quantity or quality of factors of production, improving technology, or effective supply-side policy.

Figure 7.3 illustrates the distinction using a production possibility curve. Point *A* lies inside the original PPC, showing an economy operating below its capacity (an output gap). A move from *A* to *B*, a point actually on the original PPC, represents **actual growth** – fuller use of existing resources. A subsequent outward shift of the whole curve to a new, larger PPC, allowing a move to point *C*, represents **potential growth** – an increase in the economy's productive capacity itself.

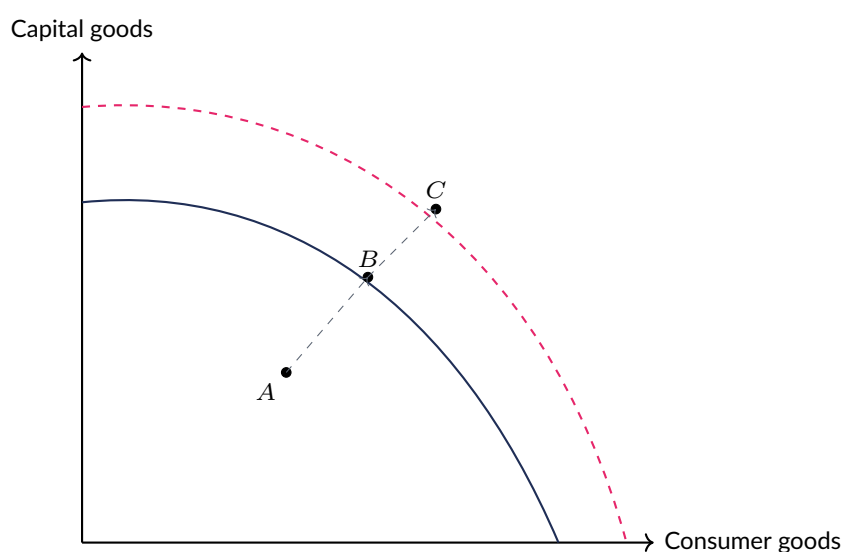


Figure 7.3 Actual growth (*A* → *B*: a movement towards the original PPC, closing an output gap) versus potential growth (the outward shift of the PPC itself, allowing a further move to *C*).

GIẢI THÍCH TIẾNG VIỆT

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Tăng trưởng thực tế là sự gia tăng sản lượng thực tế nhờ sử dụng đầy đủ hơn các nguồn lực hiện có – thể hiện bằng sự di chuyển vào trong đường PPC/LRAS (thu hẹp khoảng cách sản lượng), có thể kích thích bằng chính sách tổng cầu trong ngắn hạn. **Tăng trưởng tiềm năng** là sự gia tăng năng lực sản xuất của nền kinh tế – thể hiện bằng sự dịch chuyển ra ngoài của toàn bộ đường PPC/LRAS, nhờ tăng số lượng/chất lượng yếu tố sản xuất, công nghệ, hoặc chính sách trọng cung.

7.4.2 Causes of economic growth

Potential growth, in particular, depends on the following factors:

- **Labour force growth:** a rising population of working age, higher labour force participation (e.g. more women or older workers in employment), or net immigration of workers.
- **Capital accumulation:** higher investment in physical capital (machinery, factories, infrastructure) increases the economy's productive capacity.
- **Human capital:** investment in education, training and healthcare raises the skills, productivity and working lifespan of the labour force.
- **Technological progress:** innovation and new technology allow more output to be produced from the same quantity of factors of production (an outward shift of the PPC even without any increase in factor quantities).
- **Discovery of natural resources:** the discovery or improved extraction of natural resources (e.g. oil, minerals, fertile land) directly expands productive capacity.
- **Institutional quality:** secure property rights, political stability, the rule of law, low corruption and well-functioning markets and financial systems all encourage investment and the efficient use of resources, supporting sustained growth.

GIẢI THÍCH TIẾNG VIỆT

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Nguyên nhân tăng trưởng tiềm năng: tăng lực lượng lao động; tích lũy vốn vật chất (đầu tư); vốn con người (giáo dục, đào tạo, y tế); tiến bộ công nghệ; phát hiện tài nguyên thiên nhiên mới; và chất lượng thể chế (quyền sở hữu, ổn định chính trị, pháp quyền) khuyến khích đầu tư và sử dụng nguồn lực hiệu quả.

7.4.3 Costs and benefits of rapid economic growth

Rapid economic growth brings clear benefits, but also carries potential costs, which is why the desirability of very fast growth is a matter for economic evaluation rather than an automatic policy goal.

Benefits of rapid growth:

- Higher average living standards and consumption possibilities for the population.
- Higher tax revenue for the government (from income, corporate and consumption taxes) without needing to raise tax rates, funding public services and infrastructure.
- Reduced absolute poverty, as rising incomes lift more households above a poverty line, and typically lower unemployment.

Costs of rapid growth:

- If actual growth persistently exceeds the growth of potential output (the economy is pushed beyond full-employment capacity), demand-pull **inflationary pressure** results.
- **Environmental damage:** faster growth, especially if resource- or pollution-intensive, can accelerate depletion of natural resources, pollution and carbon emissions.
- **Unequal distribution of gains:** the benefits of growth are not always shared evenly; certain sectors, regions or income groups may benefit disproportionately, widening inequality even as average income rises.
- **Instability:** growth driven by unsustainable credit expansion or over-investment (asset bubbles) can lead to a subsequent, sharper economic downturn (boom-and-bust cycles).

Whether fast growth is desirable, therefore, depends heavily on whether it is **sustainable**: growth achieved mainly through potential-output expansion (investment, technology, human capital) with due regard for environmental limits and a reasonably equitable distribution of gains is far more likely to raise genuine long-run living standards than growth achieved by overheating the economy beyond its productive capacity or by depleting natural capital that future generations will need.

GIẢI THÍCH TIẾNG VIỆT

VN

Lợi ích của tăng trưởng nhanh: mức sống cao hơn, doanh thu thuế lớn hơn (không cần tăng thuế suất), giảm nghèo đói tuyệt đối. Chi phí: nếu tăng trưởng vượt quá năng lực sản xuất tiềm năng sẽ gây **lạm phát**; có thể gây **suy thoái môi trường**; lợi ích tăng trưởng có thể **phân phối không đều**; tăng trưởng dựa trên tín dụng/đầu tư quá mức có thể gây **bất ổn** (chu kỳ bùng nổ-suy thoái). Tăng trưởng chỉ thực sự có lợi lâu dài nếu **bền vững** – dựa trên mở rộng năng lực sản xuất tiềm năng và cân nhắc giới hạn môi trường, phân phối công bằng.

7.5 Aggregate demand and aggregate supply

7.5.1 Aggregate demand: components and determinants

Aggregate demand (AD) is total planned spending: $AD = C + I + G + (X - M)$. **Aggregate supply (AS)** is total output firms plan to produce at each price level. Each component of AD has its own set of determinants, summarised in Figure 7.4; any change in one of these determinants (other than the price level itself) shifts the whole AD curve.

Component	Key determinants	Typical effect
C (consumption)	Consumer confidence; interest rates (cost of borrowing, mortgage repayments); wealth (e.g. house or share prices); income tax rates and disposable income	Lower interest rates or higher confidence/wealth $\Rightarrow$ higher $C \Rightarrow$ AD shifts right
I (investment)	Interest rates (cost of financing capital projects); business confidence/expectations of future demand; availability and pace of new technology; corporate tax rates	Lower interest rates, higher confidence, lower corporate tax $\Rightarrow$ higher $I \Rightarrow$ AD shifts right
G (government spending)	The fiscal policy stance chosen by government (expansionary vs contractionary budgets); the automatic and discretionary components of the budget	Expansionary fiscal policy (higher G) $\Rightarrow$ AD shifts right
$(X - M)$ (net exports)	The exchange rate; growth/income levels in trading-partner economies; relative inflation rates (domestic competitiveness)	Depreciation of the currency, faster foreign income growth, or lower relative domestic inflation $\Rightarrow$ higher $(X - M) \Rightarrow$ AD shifts right

Figure 7.4 Key determinants of each component of aggregate demand.

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Các yếu tố quyết định từng thành phần của AD: C chịu ảnh hưởng của niềm tin người tiêu dùng, lãi suất, hiệu ứng của cải, thuế thu nhập; I chịu ảnh hưởng của lãi suất, niềm tin kinh doanh, công nghệ, thuế doanh nghiệp; G phụ thuộc định hướng chính sách tài khoá; $(X - M)$ phụ thuộc tỷ giá hối đoái, thu nhập nước ngoài, và lạm phát tương đối. Bất kỳ thay đổi nào trong các yếu tố này (ngoài chính mức giá) sẽ làm dịch chuyển toàn bộ đường AD.

7.5.2 Aggregate supply: the classical/monetarist view

Classical and monetarist economists argue that, in the **long run**, the economy's output is determined entirely by the quantity and quality of its factors of production and the state of technology – not by the price level. This means long-run aggregate supply (LRAS) is drawn as a **vertical** line at the economy's potential (full-employment) output, Y_{fe} .

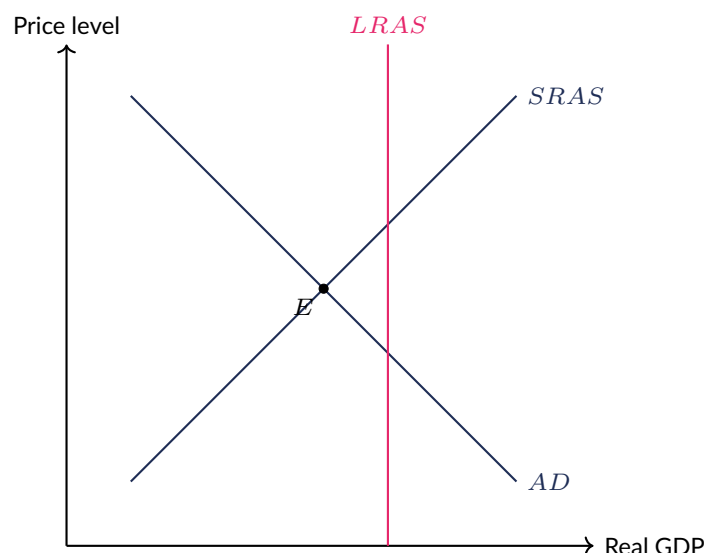


Figure 7.5 Short-run equilibrium E at Y_1 , below potential output Y_{fe} (the vertical LRAS). In the classical/monetarist view, only a rightward shift of AD (or an outward shift of LRAS itself) can move the economy permanently towards Y_{fe} ; in the long run, wages and prices adjust so that the economy always returns to producing at Y_{fe} .

GIẢI THÍCH TIẾNG VIỆT

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Theo quan điểm cổ điển/tiền tệ, trong **dài hạn**, sản lượng của nền kinh tế do số lượng & chất lượng yếu tố sản xuất và công nghệ quyết định, không phụ thuộc mức giá – nên đường AS dài hạn (LRAS) là đường **thẳng đứng** tại mức sản lượng tiềm năng Y_{fe} . Cân bằng ngắn hạn E tại Y_1 có thể thấp hơn Y_{fe} , nhưng tiền lương và giá cả sẽ tự điều chỉnh để đưa nền kinh tế trở về Y_{fe} trong dài hạn.

7.5.3 The Keynesian aggregate supply curve

A2 Extension – the Keynesian AS curve

[A2 extension] Keynesian economists argue AS has **three ranges**: flat, upward-sloping, vertical.

- **Flat (Keynesian) range**, at low levels of output: there is substantial spare capacity and high unemployment, so firms can raise output by re-employing idle resources *without* needing to raise prices or bid up wages. Output can increase with almost no change in the price level.
- **Upward-sloping (intermediate) range**: as output rises further, spare capacity starts to run out in some industries; firms begin to face rising costs (e.g. needing to pay overtime, or bidding for scarcer raw materials), so further increases in output are accompanied by a rising price level.
- **Vertical (classical) range**, at potential output Y_f : once the economy reaches full employment of its resources, no further real output can be produced in the short run no matter how much the price level rises – this range matches the classical/monetarist LRAS.

A key implication is that the effect of a change in AD on prices versus real output depends on

where the economy currently sits along this Keynesian AS curve.

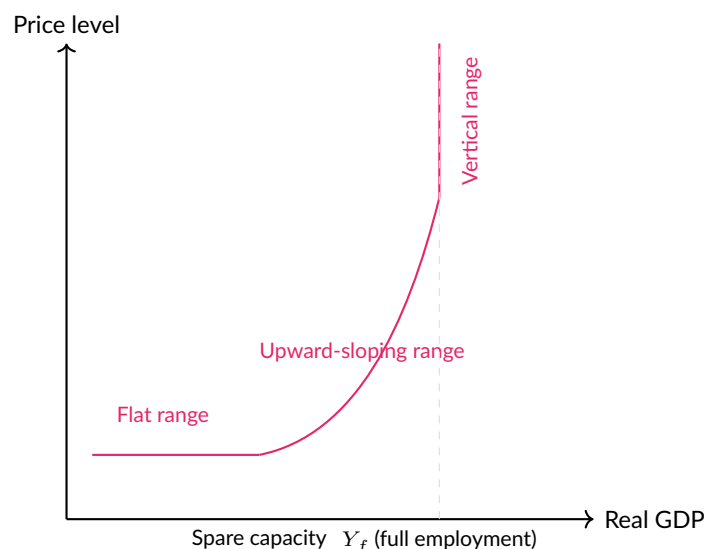


Figure 7.6 The Keynesian aggregate supply curve: flat where there is substantial spare capacity, upward-sloping as spare capacity is used up, and vertical at full-employment output Y_f .

GIẢI THÍCH TIẾNG VIỆT

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Đường AS theo Keynes có ba đoạn: đoạn **nằm ngang** khi còn nhiều công suất dư thừa (sản lượng tăng mà giá không đổi); đoạn **đốc lên** khi công suất dư dần cạn kiệt (chi phí tăng nên giá bắt đầu tăng theo sản lượng); đoạn **thẳng đứng** tại mức sản lượng toàn dụng Y_f (không thể tăng thêm sản lượng dù giá tăng bao nhiêu). Vị trí hiện tại của nền kinh tế trên đường này quyết định một thay đổi AD sẽ chủ yếu ảnh hưởng đến giá hay đến sản lượng.

7.5.4 Tracing a shift in AD: a worked scenario

Suppose a central bank cuts its policy interest rate. Two AD components respond directly: lower interest rates reduce the cost of borrowing and mortgage repayments, raising disposable income and business confidence, so **investment (I) rises**; lower returns on saving and lower borrowing costs also encourage households to save less and borrow/spend more, so **consumption (C) rises** too. Because two components of $AD = C + I + G + (X - M)$ have risen, the *whole* AD curve shifts rightward, from AD_1 to AD_2 , at every price level.

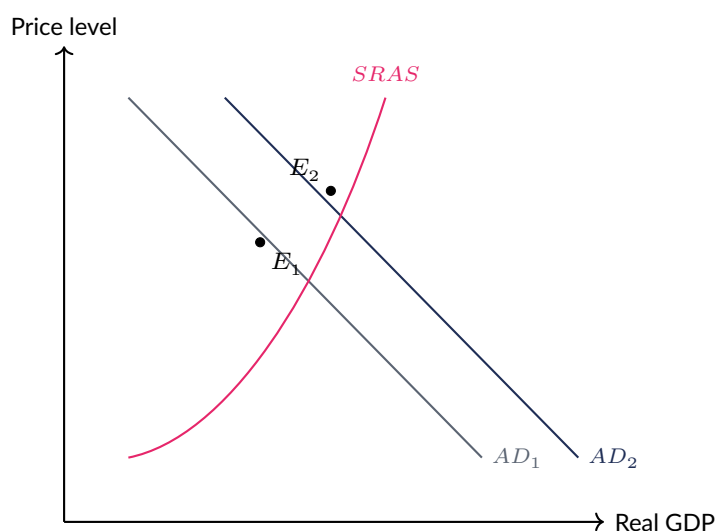


Figure 7.7 A fall in interest rates raises C and I , shifting AD from AD_1 to AD_2 . The new short-run equilibrium E_2 has both a higher price level and higher real output than E_1 .

Following this rightward shift of AD along the upward-sloping SRAS curve, the new short-run equilibrium (E_2) has *both* a higher price level *and* higher real output than the original equilibrium (E_1). How this rise in nominal spending splits between higher real output and higher prices depends on *where the economy started* on the (Keynesian) AS curve:

- If the economy starts with substantial spare capacity (on the flat range of AS, well below Y_f), the rightward AD shift mostly raises **real output**, with only a small rise in the price level.
- If the economy starts close to, or at, full-employment output Y_f (the steep or vertical range of AS), the same rightward AD shift mostly raises the **price level** (inflation), with only a small (or, at full employment, zero) increase in real output.

GIẢI THÍCH TIẾNG VIỆT

VN

Khi lãi suất giảm, cả C và I đều tăng nên toàn bộ đường AD dịch chuyển sang phải, từ AD_1 sang AD_2 . Cân bằng ngắn hạn mới E_2 có cả mức giá và sản lượng thực đều cao hơn E_1 . Nếu nền kinh tế đang có nhiều công suất dư thừa (đoạn AS nằm ngang), phần lớn tác động của việc AD tăng sẽ là tăng **sản lượng**; nếu nền kinh tế đã gần hoặc đạt mức toàn dụng (đoạn AS dốc đứng), phần lớn tác động sẽ là tăng **mức giá** (lạm phát).

(!) Lỗi thường gặp: A very common and exam-critical confusion is mixing up a **movement along** the AD curve (or the SRAS curve) with a **shift of the whole curve**. A change in the *price level itself* causes a movement *along* a given AD curve (via the wealth, interest rate and international trade effects of a changing price level) or along a given SRAS curve (firms supply more as prices/profit margins rise) – it does *not* shift either curve. Only a change in one of AD's *other* determinants (confidence, interest rates set independently of current inflation, government policy, exchange rates, foreign income) or in AS's other determinants (costs of production, technology, factor supply) causes the whole curve to **shift**. Always identify first whether a scenario describes a change in the price level (movement along the curve) or a change in a non-price determinant (shift of the curve) before answering.

7.6 Practice question bank

Bài tập luyện tập

In the circular flow of income, which of the following is classified as a **withdrawal (leakage)**?

- (A) Government spending on public infrastructure (C) Export sales to foreign buyers
(B) Household savings deposited with a bank (D) Firms' investment in new machinery

Lời giải chi tiết

Withdrawals are income that leaves the domestic circular flow instead of being spent on domestic output: savings (S), taxes (T) and imports (M). Government spending, exports and investment are all **injections**, not withdrawals. Correct answer: **(B)**.

Bài tập luyện tập

An economy has planned withdrawals of $S = \$40\text{bn}$, $T = \$60\text{bn}$, $M = \$50\text{bn}$, and planned injections of $I = \$45\text{bn}$, $G = \$65\text{bn}$. For the circular flow to be in equilibrium, what must planned exports (X) equal?

Lời giải chi tiết

Equilibrium requires $I + G + X = S + T + M$. Total withdrawals = $40 + 60 + 50 = \$150\text{bn}$. Known injections = $45 + 65 = \$110\text{bn}$. So $X = 150 - 110 = \$40\text{bn}$.

Bài tập luyện tập

In an economy, planned injections are $I + G + X = \$220\text{bn}$ and planned withdrawals are $S + T + M = \$195\text{bn}$. Explain, using the circular flow model, what is likely to happen to the level of national income, and why.

Lời giải chi tiết

Since injections (\$220bn) exceed withdrawals (\$195bn), more spending is being added into the circular flow than is being taken out of it. This extra demand for domestic output means firms will tend to raise output and/or employment to meet it, so national income is likely to **rise** until a new equilibrium is reached where injections once again equal withdrawals (e.g. as rising income raises S , T and M).

Bài tập luyện tập

Explain, using the two-sector and full (five-sector) circular flow models, why the two-sector model always shows income, output and expenditure as exactly equal, while the full model does not necessarily do so.

Lời giải chi tiết

In the two-sector model, households spend all their income on domestic firms' output and firms pay out all their revenue as factor income to households – there is no leakage from the flow and no outside injection into it, so income, output and expenditure are definitionally identical every period. In the full model, some household income is withdrawn as savings, taxes or spending on imports rather than being spent on domestic output, while investment, government spending and exports inject additional demand that does not come from current domestic household income. Total spending on domestic output (and hence output and income) will therefore only remain constant if these withdrawals and injections happen to be equal in total; if they are not equal, national income will rise or fall until they are.

Bài tập luyện tập

An economy has $C = \$420\text{bn}$, $I = \$180\text{bn}$, $G = \$150\text{bn}$, $X = \$95\text{bn}$, $M = \$105\text{bn}$. Calculate GDP using the expenditure method.

Lời giải chi tiết

$GDP = C + I + G + (X - M) = 420 + 180 + 150 + (95 - 105) = 420 + 180 + 150 - 10 = \740bn .

Bài tập luyện tập

A country's GDP (expenditure method) is \$900bn, with $C = \$540\text{bn}$, $I = \$210\text{bn}$, $G = \$130\text{bn}$, and $M = \$140\text{bn}$. Calculate the value of exports (X).

Lời giải chi tiết

$GDP = C + I + G + X - M \Rightarrow 900 = 540 + 210 + 130 + X - 140$. So $900 = 740 + X$, giving $X = 900 - 740 = \$160\text{bn}$.

Bài tập luyện tập

A country's GDP is \$480bn. Residents of this country earn \$35bn in factor income from assets and work abroad, while foreign residents earn \$22bn in factor income from assets they own within this country. Calculate this country's GNI.

Lời giải chi tiết

Net income from abroad = $35 - 22 = \$13\text{bn}$. $GNI = GDP + \text{net income from abroad} = 480 + 13 = \493bn .

Bài tập luyện tập

Nominal GDP rises from \$800bn in Year 1 (price index = 100) to \$920bn in Year 2 (price index = 115). Calculate real GDP in Year 2 and the real (as opposed to nominal) rate of economic growth.

Lời giải chi tiết

Real GDP Year 2 = $\frac{920}{115} \times 100 = \800bn . Since real GDP Year 1 was already \$800bn (price index = 100, so nominal = real in the base year), real GDP has not changed at all: real growth = 0%. The entire 15% rise in nominal GDP (800 → 920) simply reflects the 15% rise in the price level, with no actual increase in the quantity of goods and services produced.

Bài tập luyện tập

Data-response. A simple production chain has three stages: a logger sells timber to a sawmill for \$40 per unit (buying no inputs from other firms); the sawmill sells cut lumber to a furniture maker for \$90 per unit; the furniture maker sells a finished chair to the final consumer for \$150. Calculate the value added at each stage, and show that the sum of value added equals the value of the final good.

Lời giải chi tiết

Logger: value added = $40 - 0 = \$40$. Sawmill: value added = $90 - 40 = \$50$. Furniture maker: value added = $150 - 90 = \$60$. Sum of value added = $40 + 50 + 60 = \$150$, which exactly equals the sale value of the final chair (\$150) to the consumer. Simply adding the sale values at every stage ($40 + 90 + 150 = \$280$) would double- and triple-count the value of the timber and lumber inputs, overstating the chain's true contribution to output.

Bài tập luyện tập

Country X's total real GDP grows by 3% this year. Over the same year, its population also grows by 3%. What happens to real GDP per capita, and hence to average living standards on this measure?

- (A) Real GDP per capita rises by roughly 6% (C) Real GDP per capita is roughly unchanged
(B) Real GDP per capita rises by roughly 3% (D) Real GDP per capita falls sharply

Lời giải chi tiết

Real GDP per capita = real GDP ÷ population. When total real GDP and population grow at approximately the *same* rate (3% each), the extra output is almost exactly absorbed by the extra population, so real GDP per capita – and hence average living standards on this measure – is roughly **unchanged**, despite total real GDP genuinely growing by 3%. This illustrates why population growth must always be accounted for before treating total real GDP growth as evidence of rising living standards. Correct answer: (C).

Bài tập luyện tập

Country A has nominal GDP per capita of \$48,000 at market exchange rates. Country B has nominal GDP per capita of \$12,000 at market exchange rates. A comparable basket of goods costs \$800 in Country A and \$320 in Country B. Calculate Country B's PPP-adjusted GDP per capita and compare the market-exchange-rate income gap with the PPP-adjusted income gap.

Lời giải chi tiết

The basket is $800/320 = 2.5$ times more expensive in Country A. PPP-adjusted GDP per capita of B = $\$12,000 \times 2.5 = \$30,000$. At market exchange rates, A appears $48,000/12,000 = 4$ times richer than B. After PPP adjustment, the gap narrows to $48,000/30,000 = 1.6$ times. This shows market exchange rates overstate the true living-standards gap between the two countries because they ignore B's lower cost of living.

Bài tập luyện tập

Two countries have identical real GDP per capita. Country M has a Gini coefficient of 0.25; Country N has a Gini coefficient of 0.55. What does this additional information imply about living standards in the two countries?

Lời giải chi tiết

The Gini coefficient measures income inequality, ranging from 0 (perfect equality) to 1 (maximum inequality). Although average income (GDP per capita) is identical in both countries, Country M ($Gini = 0.25$) has a much more equal distribution of income than Country N ($Gini = 0.55$). This means that, despite an identical *average*, a much larger share of Country N's population is likely to be living on far less than the average income (with a small group earning very high incomes), while income in Country M is spread more evenly across the population. GDP per capita alone would fail to reveal this important difference in actual living standards experienced by most citizens.

Bài tập luyện tập

Which of the following forms of economic activity is **most likely** to be excluded from a country's measured GDP, even though it contributes to genuine economic welfare?

- (A) Wages paid to factory workers (C) Government spending on public hospitals
(B) A subsistence farmer growing food to feed their own family (D) Retail sales of consumer electronics

Lời giải chi tiết

GDP only records activity that passes through recorded, priced market transactions. A subsistence farmer growing food for their own family's consumption produces real economic value (food, avoided expenditure) but this never appears as a market transaction, so it is excluded from measured GDP. The other three options are all standard, recorded market transactions that are included in GDP. Correct answer: **(B)**.

Bài tập luyện tập

Two countries, P and Q, both grow real GDP by 5% this year. Country P achieves this mainly through a large increase in heavy manufacturing output accompanied by rising air and water pollution; Country Q achieves it mainly through growth in digital services with minimal environmental impact. Explain why GDP growth figures alone fail to distinguish between these two countries' growth experiences.

Lời giải chi tiết

GDP measures only the market value of output produced; it does not subtract the value of environmental damage or natural resource depletion caused in producing that output. Both P and Q are recorded as having identical 5% real GDP growth, but Country P's growth has imposed additional environmental costs (pollution, resource depletion, possible future health and clean-up costs) that are not reflected anywhere in its GDP figure, while Country Q's growth has been achieved with far fewer such costs. A simple GDP growth comparison therefore overstates the genuine improvement in welfare or sustainability in Country P relative to Country Q, even though their headline growth rates are identical.

Bài tập luyện tập

Essay outline. "Evaluate whether GDP per capita is a good measure of a country's standard of living." Produce a structured outline of the key points a full answer should cover.

Lời giải chi tiết

For (GDP per capita is a useful measure): it is based on standardised, regularly-collected, internationally comparable data; it correlates reasonably well in practice with many other measures of welfare (access to healthcare, education, life expectancy) since higher-income countries generally can, and do, spend more on these; real GDP per capita adjusts for both inflation and population, addressing two of the most basic distortions in a simple nominal-GDP comparison.

Against (GDP per capita has serious limitations): it is only an *average* and reveals nothing about the distribution of income (a high average can mask severe inequality, better captured by the Gini coefficient); it excludes non-marketed activity such as subsistence production and

unpaid household work, understating true output/welfare in economies with a large informal sector; it does not subtract environmental degradation or resource depletion; it ignores the composition of output and quality-of-life factors such as leisure time, working conditions, life expectancy and political freedom; comparisons between countries also require a PPP adjustment to be meaningful, since market exchange rates can distort relative living standards.

Balanced conclusion: GDP per capita is a useful, practical starting point and a reasonable proxy for standard of living, especially when comparing similar economies over short periods or when adjusted for PPP – but it should be used alongside broader measures (e.g. the Gini coefficient and the Human Development Index) rather than as a sole indicator, particularly when comparing very different economies or evaluating genuine long-run welfare and sustainability.

Bài tập luyện tập

Which of the following best describes **actual economic growth**, as opposed to potential economic growth?

- | | |
|--|--|
| (A) An outward shift of the entire production possibility curve | (C) An increase in the size and quality of the labour force |
| (B) A movement of the economy from a point inside the PPC towards a point on the PPC | (D) Technological progress that increases the maximum possible output of the economy |

Lời giải chi tiết

Actual growth is a movement *towards* the existing PPC (i.e. making fuller use of existing resources, closing an output gap), not a shift of the curve itself. The other three options describe causes of an outward shift in the PPC/LRAS, i.e. **potential** growth. Correct answer: **(B)**.

Bài tập luyện tập

An economy is initially operating well inside its production possibility curve, with high unemployment. The central bank cuts interest rates, boosting aggregate demand, and output rises to a point on the PPC over the following year. In the following five years, the government also invests heavily in infrastructure, education and R&D. Identify which type of growth occurred in each period, and explain your reasoning.

Lời giải chi tiết

In the first year, the economy moves from a point inside the PPC to a point actually on the existing PPC, driven by a demand-side stimulus (an interest rate cut boosting AD) – this is **actual growth**, since it closes an output gap using existing resources without requiring the productive capacity itself to expand. Over the following five years, sustained investment in infrastructure, education and R&D increases the quantity and quality of capital and human capital, and improves technology – these factors shift the entire PPC/LRAS outward, which is **potential growth**, an expansion of the economy's underlying productive capacity.

Bài tập luyện tập

Which of the following is **most likely** to cause an outward shift of an economy's long-run aggregate supply (LRAS) curve?

- (A) A fall in the central bank's policy interest rate (C) A sustained rise in net immigration of working-age adults with in-demand skills
- (B) An increase in government spending on public-sector wages (D) A rise in consumer confidence

Lời giải chi tiết

LRAS shifts occur due to changes in the quantity or quality of factors of production, or technology – i.e. supply-side changes. An increase in the working-age labour force with valuable skills directly raises the economy's productive capacity, shifting LRAS outward. The other three options (interest rate cuts, higher government spending, higher consumer confidence) are all demand-side changes that shift **AD**, not LRAS. Correct answer: **(C)**.

Bài tập luyện tập

An economy is growing at 8% per year, well above its long-run potential growth rate of 2.5% per year. Using the AD-AS framework, explain the most likely macroeconomic consequence of this gap, and identify one further cost of very rapid growth of this kind.

Lời giải chi tiết

If actual growth (driven by rising AD) persistently exceeds potential growth (the rate at which LRAS is expanding), the economy is being pushed to produce beyond its sustainable capacity, moving up the upward-sloping or vertical part of the (Keynesian) AS curve. This generates **demand-pull inflationary pressure**, as firms bid up wages and prices for increasingly scarce factors of production. A further cost of such rapid, capacity-exceeding growth could be increased strain on the environment and natural resources (e.g. pollution, overuse of raw materials) or the risk of unsustainable credit-fuelled over-investment leading to a subsequent sharp downturn (boom-and-bust instability).

Bài tập luyện tập

Essay outline. "Discuss the costs and benefits of rapid economic growth for a developing economy." Produce a structured outline of the key points a full answer should cover.

Lời giải chi tiết

Benefits: rapid growth can lift large numbers of people out of absolute poverty relatively quickly; it generates rising tax revenue (without raising tax rates) that a developing-country government can use to fund infrastructure, healthcare and education; it can attract further foreign investment as the economy becomes a more attractive market, reinforcing further growth (a virtuous circle).

Costs: if growth is driven mainly by demand-side stimulus and outpaces the expansion of potential output, it risks demand-pull inflation, which can be especially damaging for poorer households; rapid industrial growth in developing economies is often resource- and pollution-intensive, risking environmental degradation before adequate regulation is in place; the gains from growth may be captured disproportionately by owners of capital or by urban areas, widening rural-urban or income inequality; growth financed by large-scale foreign borrowing or rapid credit expansion risks financial instability and a sharp future downturn if conditions change (e.g. rising world interest rates).

Evaluation/conclusion: the desirability of rapid growth for a developing economy depends

heavily on whether it is achieved sustainably – through expanding potential output (investment, human capital, technology) with reasonable environmental safeguards and a policy framework (e.g. progressive taxation, targeted social spending) to help spread the benefits – rather than through unsustainable demand-side overheating or environmentally destructive resource extraction.

Bài tập luyện tập

A government cuts income tax rates significantly. Using the AD-AS model, identify which component of AD is most directly affected, the direction of the resulting shift in the AD curve, and the likely short-run effect on the price level and real output.

Lời giải chi tiết

A cut in income tax rates raises households' disposable income, which most directly raises **consumption** (C). Since $AD = C + I + G + (X - M)$, a rise in C shifts the whole AD curve **rightward**. Along an upward-sloping SRAS curve, this rightward shift raises *both* the equilibrium price level and equilibrium real output in the short run; the split between the two depends on how close the economy is to full-employment output (a larger output effect and smaller price effect if there is significant spare capacity, and vice versa near full employment).

Bài tập luyện tập

A country's currency depreciates sharply against major trading partners' currencies. Identify which component of AD is most directly affected, the direction of the AD shift, and explain your reasoning.

Lời giải chi tiết

A depreciation makes the country's exports cheaper for foreign buyers (raising X) and imports more expensive for domestic buyers (reducing M), so **net exports** ($X - M$) rise. Since $AD = C + I + G + (X - M)$, this shifts the whole AD curve **rightward** at every price level, assuming the volumes of exports and imports respond enough to the price changes (e.g. demand for exports and imports is sufficiently price elastic).

Bài tập luyện tập

The general price level in an economy rises. Explain whether this, by itself, causes a **movement along** the AD curve or a **shift** of the AD curve, and why this distinction matters.

Lời giải chi tiết

A change in the price level itself causes a **movement along** a given AD curve, not a shift of the whole curve – this is precisely what the downward-sloping AD curve shows (via wealth, interest rate and international trade effects of a changing price level on planned spending). The distinction matters because only changes in AD's *other* determinants (consumer/business confidence, interest rates set independently of current inflation, fiscal policy, exchange rates, foreign income) shift the entire curve; confusing a price-level-driven movement along AD with a curve shift is a common and exam-critical error that leads to misidentifying the true cause of a change in equilibrium output or prices.

Bài tập luyện tập

An increase in the world price of imported oil raises production costs for firms across an economy. Using the AD-AS model, identify which curve is most directly affected, the direction of the shift, and the likely short-run effect on the price level and real output.

- (A) AD shifts right; both price level and output rise (C) LRAS shifts right; price level falls and output rises
(B) SRAS shifts left; price level rises and real output falls (D) AD shifts left; both price level and output fall

Lời giải chi tiết

A rise in a key imported input cost (oil) raises firms' costs of production at every level of output, which is a supply-side shock, not a demand-side one. This shifts the short-run aggregate supply (SRAS) curve **left** (firms are willing to supply less at each price level, or equivalently require a higher price to supply the same output). Against an unchanged AD curve, the new equilibrium has a **higher price level** and **lower real output** – a combination known as **stagflation**. Correct answer: (B).

Bài tập luyện tập

An economy is currently operating on the flat (Keynesian) range of its aggregate supply curve, with significant spare capacity. The government substantially increases spending on infrastructure. Explain the likely short-run effect on the price level and real output, and contrast this with the effect of the same policy if the economy were instead already at full-employment output.

Lời giải chi tiết

Higher government spending directly raises G , shifting AD rightward. Because the economy starts on the flat range of AS (substantial spare capacity, high unemployment), firms can expand output by re-employing idle resources without needing to raise prices significantly, so the rightward AD shift mostly raises **real output**, with only a small (or negligible) rise in the price level. By contrast, if the economy were already at full-employment output (on the vertical range of AS), the same rightward AD shift could not raise real output at all in the short run (real output is fixed at Y_f); instead, the extra spending would be reflected almost entirely as a rise in the **price level** (inflation), since resources are already fully employed.

Bài tập luyện tập

Data-response. The table shows changes in selected macroeconomic variables in an economy over one year.

Variable	Change over the year
Policy interest rate	Falls from 6% to 4%
Consumer confidence index	Rises from 95 to 115
Nominal GDP	Rises from \$600bn to \$660bn
Price index	Rises from 100 to 105
Population	Rises from 30m to 30.6m

(a) Explain, using the AD-AS model, why the fall in interest rates and the rise in consumer

confidence would be expected to shift the AD curve, and in which direction.
(b) Calculate real GDP in the second year and the real rate of economic growth over the year.
(c) Calculate real GDP per capita in each year, and comment on the change in living standards implied.

Lời giải chi tiết

(a) A fall in interest rates lowers the cost of borrowing (raising I) and reduces the incentive to save while boosting disposable income (raising C); a rise in consumer confidence directly encourages higher household spending (raising C). Since both C and I are components of $AD = C + I + G + (X - M)$, both changes would be expected to shift the whole AD curve **rightward**.

(b) Real GDP (Year 2) = $\frac{660}{105} \times 100 = \628.57bn (approx.). Real GDP (Year 1) = $\frac{600}{100} \times 100 = \600bn . Real growth = $\frac{628.57 - 600}{600} \times 100 \approx 4.76\%$.

(c) Real GDP per capita Year 1 = $\frac{600\text{bn}}{30\text{m}} = \$20,000$. Real GDP per capita Year 2 = $\frac{628.57\text{bn}}{30.6\text{m}} \approx \$20,542$. Real GDP per capita rose by roughly 2.7% ($= \$20,542 / \$20,000 - 1$), which is noticeably smaller than the 4.76% growth in total real GDP, because population growth of 2% absorbed part of the increase in output. Living standards, on this measure, did modestly improve, but by less than the headline real GDP growth figure alone would suggest.

Bài tập luyện tập

Explain why an economist evaluating a country's development might look at its Human Development Index (HDI) score **in addition to** its GDP per capita, giving two specific pieces of information HDI provides that GDP per capita alone does not.

Lời giải chi tiết

HDI combines income with two further dimensions not captured by GDP per capita alone: (1) **health**, measured via life expectancy at birth, which reflects nutrition, healthcare access and living conditions rather than income alone; (2) **education**, measured via mean and expected years of schooling, which reflects investment in human capital and future productive potential. Two countries with identical GDP per capita could have very different HDI scores if, for example, one channels income growth effectively into health and education systems while the other does not – information that a GDP per capita figure alone would completely miss.

Bài tập luyện tập

Which combination of policies would be classified as aiming primarily to raise **potential** growth rather than **actual** growth?

- | | |
|---|---|
| (A) A cut in the central bank's interest rate and a temporary boost to government spending | (C) A depreciation of the currency to boost export competitiveness |
| (B) Increased spending on education and vocational training, and tax incentives for business investment in new technology | (D) A short-term tax rebate paid directly to households to boost spending during a downturn |

Lời giải chi tiết

Potential growth requires an increase in the quantity or quality of factors of production or in technology – an outward shift of LRAS/the PPC. Spending on education and training raises human capital, and tax incentives for investment in new technology raise both physical capital and the pace of technological progress, so both directly expand productive capacity. The other three options are demand-side measures that shift AD and are more closely associated with **actual** growth (closing an existing output gap) rather than expanding the economy's underlying capacity. Correct answer: **(B)**.

Inflation, Unemployment, Money and the Business Cycle

Mục tiêu Unit: Đo lường lạm phát qua chỉ số giá tiêu dùng (CPI) có trọng số, cách xây dựng CPI từ khảo sát chi tiêu hộ gia đình và hạn chế của CPI; nguyên nhân lạm phát (do cầu kéo, do chi phí đẩy) minh họa bằng mô hình AD-AS; chi phí của lạm phát và giảm phát, phân biệt giảm phát “tốt” và “xấu”. Các loại thất nghiệp (cơ cấu, cơ cấu, chu kỳ, thời vụ) cùng chính sách tương ứng; phương pháp đo lường thất nghiệp (đếm số người hưởng trợ cấp và điều tra lực lượng lao động theo ILO) và hạn chế; chi phí thất nghiệp đối với cá nhân, nền kinh tế và xã hội. [A2] Đường cong Phillips ngắn hạn và dài hạn, vai trò của kỳ vọng. Chu kỳ kinh tế và bốn giai đoạn (bùng nổ, suy thoái, khủng hoảng, phục hồi). [A2] Chức năng của tiền, vai trò ngân hàng thương mại/ngân hàng trung ương, thuyết số lượng tiền tệ $MV = PY$, và cơ chế tạo tín dụng của ngân hàng thương mại.

8.1 Measuring inflation

8.1.1 Defining and measuring inflation

Inflation: a sustained rise in the general price level, measured by weighted CPI. **Demand-pull:** inflation caused by aggregate demand rising faster than aggregate supply. **Cost-push:** inflation caused by rising costs of production, shifting short-run aggregate supply to the left.

Ví dụ mẫu • Worked example – Weighted CPI

Food (weight 50%, +4%), housing (30%, +6%), transport (20%, -2%). Inflation = $2\% + 1.8\% - 0.4\% = 3.4\%$.

GIẢI THÍCH TIẾNG VIỆT

VN

Lạm phát là sự tăng liên tục của mức giá chung, đo bằng CPI có trọng số. **Lạm phát do cầu kéo** xảy ra khi tổng cầu tăng nhanh hơn tổng cung. **Lạm phát do chi phí đẩy** xảy ra khi chi phí sản xuất tăng, làm đường tổng cung ngắn hạn dịch sang trái. Ở ví dụ trên: $0.5 \times 4\% + 0.3 \times 6\% + 0.2 \times (-2\%) = 2\% + 1.8\% - 0.4\% = 3.4\%$.

8.1.2 How a consumer price index is actually built

Statistical agencies do not simply track the price of one or two goods – they must construct an index that represents the spending pattern of a typical household. This is done in four stages.

- **Step 1 – household expenditure survey:** a large sample of households records what they buy over a period (e.g. a family expenditure survey), revealing which goods and services take up the largest shares of a typical household's budget.
- **Step 2 – construct the basket:** a representative “basket” of several hundred commonly-purchased goods and services is selected (food, housing, transport, clothing, recreation, and so on), based on the survey.
- **Step 3 – assign expenditure weights:** each item in the basket is given a **weight** reflecting the proportion of total household spending it accounts for, so that categories on which households spend more (e.g. housing) influence the index far more than categories on which they spend little (e.g. stationery). Weights across the whole basket sum to 100 (or 1).
- **Step 4 – choose a base year and track prices:** a **base year** is chosen and given an index value of 100. Prices of every item in the basket are then collected at regular intervals (e.g. monthly), and a weighted average price index is calculated for each subsequent period relative to the base year.

GIẢI THÍCH TIẾNG VIỆT

VN

CPI được xây dựng qua bốn bước: (1) khảo sát chi tiêu hộ gia đình để biết mẫu hình tiêu dùng; (2) lập “rổ hàng hoá” đại diện; (3) gán **trọng số chi tiêu** cho từng mặt hàng theo tỷ trọng chi tiêu thực tế; (4) chọn **năm gốc** (chỉ số = 100) rồi theo dõi giá theo thời gian để tính chỉ số bình quân gia quyền.

Ví dụ mẫu · Worked example – Building a weighted price index from raw data

A household expenditure survey produces the following basket, weights and prices in the base year (Year 0) and one year later (Year 1). Calculate the price relative for each item, then the overall weighted price index for Year 1 (base year = 100), and the corresponding rate of inflation.

Item	Weight	Price Yr 0	Price Yr 1	Price relative = $\frac{P_1}{P_0} \times 100$	Weight $\times$ relative
Food	35	\$50	\$54	108.0	3,780
Housing	30	\$800	\$832	104.0	3,120
Transport	15	\$100	\$95	95.0	1,425
Clothing	10	\$40	\$42	105.0	1,050
Recreation	10	\$60	\$66	110.0	1,100
Total	100	–	–	–	10,475

Figure 8.1 Constructing a weighted consumer price index from raw price data across two years.

Each price relative is calculated as $\frac{\text{Price in Year 1}}{\text{Price in Year 0}} \times 100$ (e.g. food: $54/50 \times 100 = 108.0$). The overall weighted index is then the sum of (weight $\times$ price relative), divided by the sum of the weights:

$$\text{CPI (Yr 1)} = \frac{10,475}{100} = 104.75$$

Since the base year index is 100, the rate of inflation over the year is $104.75 - 100 = 4.75\%$.

GIẢI THÍCH TIẾNG VIỆT

VN

Với mỗi mặt hàng, **chỉ số giá tương đối** = $\frac{\text{giá năm 1}}{\text{giá năm 0}} \times 100$. Chỉ số CPI tổng hợp = $\frac{\sum (\text{trọng số} \times \text{chỉ số tương đối})}{\sum \text{trọng số}} = \frac{10,475}{100} = 104.75$, tức lạm phát năm đó là 4.75%.

8.1.3 Limitations of the CPI

- **Not representative of every household:** the basket reflects an *average* household's spending pattern, so it may poorly represent groups with very different spending habits (e.g. pensioners, students, vegetarians, or households in a different region).
- **Quality changes:** if a product's price rises but its quality also improves (e.g. a faster laptop), part of the price rise reflects genuinely more value, not pure inflation – CPI can overstate inflation if quality improvements are not properly adjusted for.
- **New goods:** newly-invented goods and services (e.g. streaming subscriptions, smartphones) are only added to the basket with a lag, so the index can be slow to reflect changing consumption patterns.
- **Substitution bias:** the basket's weights are normally fixed between revisions, but consumers actually switch away from goods whose relative price has risen towards cheaper substitutes – a fixed-weight index overstates the true rise in the cost of living because it ignores this substitution response.

GIẢI THÍCH TIẾNG VIỆT

VN

Hạn chế của CPI: (1) rổ hàng hoá chỉ đại diện cho hộ gia đình **trung bình**, không phản ánh đúng mọi hộ; (2) không điều chỉnh đầy đủ cho **thay đổi chất lượng** sản phẩm; (3) chậm cập nhật **hàng hoá mới**; (4) **sai lệch do thay thế** – người tiêu dùng chuyển sang hàng thay thế rẻ hơn nhưng trọng số cố định không phản ánh điều này, khiến CPI có xu hướng phóng đại mức tăng chi phí sinh hoạt thực tế.

8.2 Causes and types of inflation

8.2.1 Demand-pull inflation

Demand-pull inflation occurs when aggregate demand grows faster than the economy's ability to expand aggregate supply, so that "too much money is chasing too few goods." It is typically caused by rising consumer or business confidence, lower interest rates, an expansionary fiscal policy, a depreciating exchange rate (raising net exports), or rapid growth in a trading partner's economy. On an AD-AS diagram, demand-pull inflation is shown as a **rightward shift of the AD curve** along a given (upward-sloping) SRAS curve, raising the equilibrium price level – and, provided there is some spare capacity, also raising real output.

8.2.2 Cost-push inflation

Cost-push inflation occurs when the costs of production rise independently of demand conditions, forcing firms to charge higher prices at every level of output. Common causes include rising wages (e.g. due to trade union bargaining or minimum wage increases exceeding productivity growth), rising import prices (e.g. from a depreciating currency or a rise in world oil prices), rising indirect taxes, or a negative supply shock (e.g. a poor harvest or a natural disaster). On an AD-AS diagram, cost-push inflation is shown as a **leftward shift of the SRAS curve** along a given AD curve, raising the equilibrium price level while **lowering** real output – a combination sometimes called **stagflation** (stagnation plus inflation).

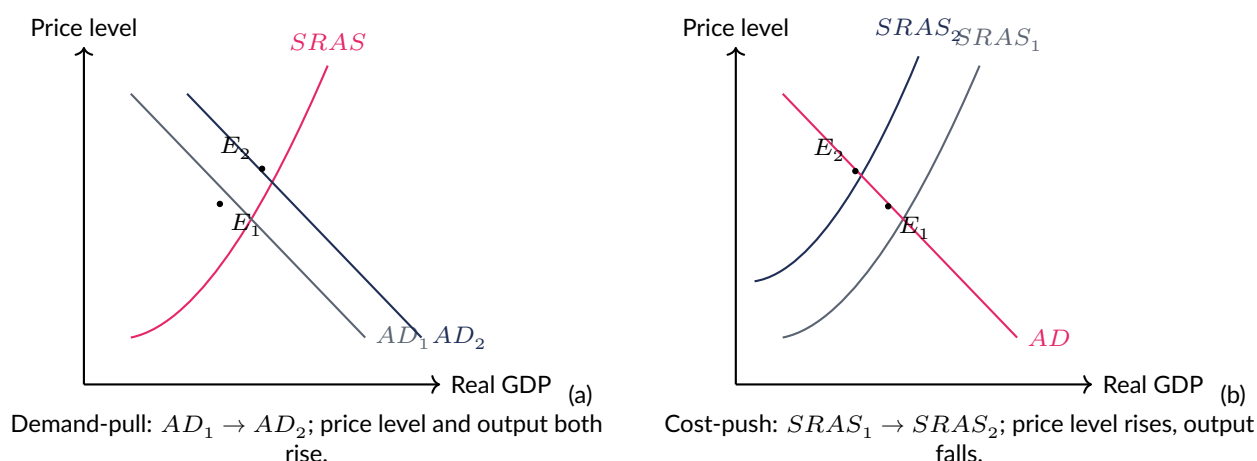


Figure 8.2 Demand-pull inflation (panel a: AD shifts right along SRAS) versus cost-push inflation (panel b: SRAS shifts left along AD). Only demand-pull inflation is accompanied by rising output; cost-push inflation combines rising prices with *falling* output (stagflation).

GIẢI THÍCH TIẾNG VIỆT

VN

Lạm phát do cầu kéo: tổng cầu tăng nhanh hơn khả năng mở rộng tổng cung, thể hiện bằng đường AD dịch sang phải – mức giá và sản lượng đều tăng. **Lạm phát do chi phí đẩy:** chi phí sản xuất tăng (lương, giá nhập khẩu, thuế gián thu, cú sốc cung tiêu cực), thể hiện bằng đường SRAS dịch sang trái – mức giá tăng nhưng sản lượng **giảm**, gọi là **đình lạm** (stagflation).

8.3 The costs of inflation and deflation

8.3.1 Costs of inflation

- **Menu costs:** the real resource cost to firms of physically changing price lists, labels, catalogues, vending machines and computer systems whenever prices need to be updated.
- **Shoe-leather costs:** the time and effort households and firms spend trying to minimise holdings of cash (which loses value under inflation) by making more frequent trips to the bank or switching between accounts – named after the shoe leather “worn out” by the extra trips.
- **Redistributive effects:** unanticipated inflation redistributes real income and wealth. **Borrowers gain and savers/lenders lose**, because the real value of a fixed nominal debt falls with inflation (the borrower repays in “cheaper” money) while the real return on savings is eroded. **Fixed-income earners** (e.g. pensioners on a fixed nominal pension) lose in real terms as their income fails to keep pace with rising prices.
- **Uncertainty and lower investment:** high or volatile inflation makes it harder for firms to forecast future costs, revenues and profitability, discouraging long-term investment and reducing potential growth.
- **International competitiveness:** if domestic inflation is higher than in trading-partner economies, domestically produced goods become relatively more expensive, making exports less competitive and imports relatively cheaper, which can worsen the current account (a fall in $X - M$).
- **Fiscal drag:** if income tax bands are not adjusted (“uprated”) in line with inflation, nominal incomes rising purely due to inflation push taxpayers into higher tax brackets even though their *real* income is unchanged, increasing their real tax burden.

GIẢI THÍCH TIẾNG VIỆT

VN

Chi phí của lạm phát: **chi phí thực đơn** (thay đổi bằng giá, nhãn mác); **chi phí giày da** (chi phí đi lại/giao dịch để giảm giữ tiền mặt); **hiệu ứng tái phân phối** – người đi vay có lợi, người tiết kiệm/cho vay thiệt, người có thu nhập cố định (lương hưu) bị thiệt hại thực tế; **bất ổn** làm giảm đầu tư dài hạn; **giảm sức cạnh tranh quốc tế** nếu lạm phát trong nước cao hơn đối tác thương mại; và **fiscal drag** (kéo thuế) khi bậc thuế không điều chỉnh theo lạm phát, khiến gánh nặng thuế thực tế tăng dù thu nhập thực không đổi.

8.3.2 Costs of deflation: “good” deflation versus “bad” deflation

Deflation is a sustained *fall* in the general price level (a negative rate of inflation). Whether deflation is harmful depends critically on *what is causing it*.

- **Postponed spending:** if consumers expect prices to keep falling, they may delay purchases (especially of durable goods) in anticipation of a better deal later, reducing current consumption and aggregate demand.
- **Rising real debt burden:** deflation raises the *real* value of any fixed nominal debt, since the money used to repay it is worth more in terms of goods and services – the opposite of inflation’s effect on borrowers. This can trigger defaults and financial instability (debt-deflation).
- **A signal of recession:** if deflation is driven by a collapse in aggregate demand, it is typically accompanied by falling output, rising unemployment and falling profits – deflation here is a symptom of a deeper demand-side downturn, not a benign development.

	“Good” deflation	“Bad” deflation
Cause	Falling costs of production or improving technology, shifting AS/SRAS to the right (e.g. cheaper inputs, productivity gains)	A collapse in aggregate demand, shifting AD to the left (e.g. falling confidence, tight monetary/fiscal policy)
Effect on output & jobs	Real output and employment rise alongside falling prices	Real output falls and unemployment rises alongside falling prices
Overall assessment	Consumers benefit from lower prices <i>without</i> a recession – generally welfare-improving	Falling prices accompany recession, rising real debt burdens and postponed spending – generally harmful

Figure 8.3 Contrasting supply-side (“good”) deflation with demand-side (“bad”) deflation.

GIẢI THÍCH TIẾNG VIỆT

VN

Giảm phát là mức giá chung giảm liên tục. **Giảm phát “tốt”** xuất phát từ chi phí sản xuất giảm hoặc công nghệ cải thiện (AS dịch phải) – sản lượng và việc làm vẫn tăng. **Giảm phát “xấu”** xuất phát từ tổng cầu sụt giảm (AD dịch trái) – đi kèm sản lượng giảm, thất nghiệp tăng, gánh nặng nợ thực tế tăng, và người tiêu dùng trì hoãn chi tiêu vì kỳ vọng giá còn giảm tiếp.

(!) **Lỗi thường gặp:** Students very often confuse a **fall in the rate of inflation (disinflation)** with a **fall in the price level itself (deflation)**. If inflation falls from 6% to 2%, prices are still *rising* – just more slowly – so the general price level is still higher than before: this is **disinflation**, not deflation. **Deflation** requires the inflation rate itself to become *negative*, so that the price level actually falls below its previous level. Always check whether a scenario describes a slower

rate of increase in prices (disinflation) or an actual *decrease* in the price level (deflation) before answering.

8.4 Unemployment

8.4.1 Types of unemployment and matching policy responses

Unemployment types: frictional, structural, cyclical/demand-deficient, seasonal.

- **Frictional unemployment:** short-term unemployment as workers move between jobs, search for work matching their skills, or wait to take up a new job already secured. *Policy:* improve job-search information services (job centres, online vacancy databases) to shorten the time it takes to match workers with suitable vacancies.
- **Structural unemployment:** longer-term unemployment caused by a mismatch between the skills workers have and the skills employers demand, often following the decline of an entire industry or region (e.g. automation replacing manual assembly-line jobs). *Policy:* government-funded retraining and reskilling programmes, along with relocation subsidies or incentives to attract new industries into declining regions.
- **Cyclical (demand-deficient) unemployment:** unemployment caused by a fall in aggregate demand during a recession, as firms need fewer workers to produce a lower level of output. *Policy:* demand-side stimulus – expansionary fiscal policy (higher G , lower taxes) or expansionary monetary policy (lower interest rates) to raise AD and restore output/employment.
- **Seasonal unemployment:** unemployment that recurs predictably at certain times of the year because demand for particular types of labour is highly seasonal (e.g. agricultural workers, ski instructors, seaside tourism staff). *Policy:* counter-seasonal income support (e.g. off-season benefit payments) or encouraging diversification into activities with a complementary season.

Type	Cause	Example	Policy response
Frictional	Time taken searching/matching between jobs	Graduate searching for a first job	Job-search information services
Structural	Skills mismatch after industry decline	Redundant coal-miner lacking IT skills	Retraining programmes
Cyclical	Fall in aggregate demand (recession)	Factory lay-offs in a downturn	Demand-side stimulus
Seasonal	Predictable seasonal swings in demand for labour	Ski instructor unemployed in summer	Counter-seasonal income support

Figure 8.4 The four main types of unemployment, with a typical example and matching policy response.

GIẢI THÍCH TIẾNG VIỆT

VN

Bốn loại thất nghiệp: **cọ xát** (thời gian tìm việc phù hợp – chính sách: dịch vụ thông tin tìm việc); **cơ cấu** (kỹ năng không còn phù hợp sau khi ngành suy giảm – chính sách: đào tạo lại); **chu kỳ** (do tổng cầu giảm trong suy thoái – chính sách: kích cầu); **thời vụ** (biến động theo mùa có thể dự đoán – chính sách: hỗ trợ thu nhập trái mùa).

8.4.2 Measuring unemployment

- **Claimant count:** counts the number of people actually claiming unemployment-related benefits. It is cheap and quick to compile but can **understate** true unemployment (some unemployed people are ineligible for, or choose not to claim, benefits) or be affected by changes in the eligibility rules for claiming benefits, making comparisons over time unreliable.
- **Labour force survey (ILO definition):** a large sample survey asking respondents whether they are (i) without work, (ii) available to start work within a short period, and (iii) have actively sought work in the recent past. All three conditions must be met to be classed as unemployed. It is internationally comparable and not affected by benefit rules, but is more costly to conduct and subject to sampling error.

Both measures share important limitations. **Discouraged workers** – those who have given up actively searching for work because they believe none is available – are not counted as unemployed under either definition (they are classed as **economically inactive**), even though they would take a job if one were offered, so both measures can **understate** the true level of labour market slack. Similarly, neither measure captures **underemployment**: workers who are employed but would like – and are available for – more hours than they currently work (e.g. part-time workers wanting a full-time job), so both measures can give a misleadingly rosy picture of the true state of the labour market.

GIẢI THÍCH TIẾNG VIỆT

VN

Hai phương pháp đo thất nghiệp: (1) **đếm số người hưởng trợ cấp thất nghiệp** – rẻ, nhanh nhưng bị ảnh hưởng bởi quy định trợ cấp và có thể đánh giá thấp; (2) **điều tra lực lượng lao động theo ILO** – đáng tin cậy hơn để so sánh quốc tế nhưng tốn kém hơn. Cả hai đều không tính **người lao động nản chí** (đã ngừng tìm việc) và không phản ánh **thiếu việc làm** (người muốn làm nhiều giờ hơn), nên có thể đánh giá thấp mức độ thực sự của vấn đề thất nghiệp.

8.4.3 Costs of unemployment

- **Individual costs:** lost current income for the unemployed worker and their family; **deskilling** – skills atrophy the longer a worker remains out of work, making re-employment progressively harder; negative effects on physical and mental **health and wellbeing**, and on future employability and lifetime earnings.
- **Economic (national) costs:** lost output – actual GDP falls below potential GDP (a negative output gap), so the economy fails to achieve growth it is capable of; **lower tax revenue** (less income tax and consumption tax collected) combined with **higher government spending** on unemployment and related benefits, worsening the government's **budget deficit** and, over time, the national debt.
- **Social costs:** higher unemployment is associated with rising **crime** rates, greater **income inequality** between those in and out of work, and wider social costs such as family breakdown and reduced social cohesion in badly-affected communities/regions.

GIẢI THÍCH TIẾNG VIỆT

VN

Chi phí thất nghiệp: (1) **cá nhân** – mất thu nhập, kỹ năng mai một, ảnh hưởng sức khỏe/tinh thần; (2) **kinh tế** – sản lượng thực tế thấp hơn tiềm năng, doanh thu thuế giảm và chi trợ cấp tăng làm thâm hụt ngân sách lớn hơn; (3) **xã hội** – tội phạm gia tăng, bất bình đẳng thu nhập, gắn kết cộng đồng suy giảm.

8.5 The Phillips curve

A2 Extension – the Phillips curve

[A2 extension] The original **short-run Phillips curve (SRPC)** plots an observed **inverse relationship** between the rate of inflation and the rate of unemployment: periods of low unemployment tend to coincide with high inflation (a tight labour market pushes up wages and prices), while periods of high unemployment tend to coincide with low inflation. This appeared to offer policymakers a stable short-run **trade-off**: accept a little more inflation in exchange for lower unemployment, or vice versa.

Monetarist economists, led by Milton Friedman, challenged this idea with the **expectations-augmented Phillips curve**. They argued the short-run trade-off only exists because *actual* inflation temporarily differs from *expected* inflation (workers and firms are initially fooled into thinking a rise in nominal wages/prices is a rise in *real* wages/prices). Once expectations catch up with actual inflation, unemployment returns to its original **natural rate of unemployment** (U_n) – the rate consistent with a stable, correctly-anticipated rate of inflation – but now at a permanently higher rate of inflation. This means the **long-run Phillips curve (LRPC)** is **vertical** at U_n : in the long run, expansionary demand policy can raise inflation but cannot permanently reduce unemployment below its natural rate.

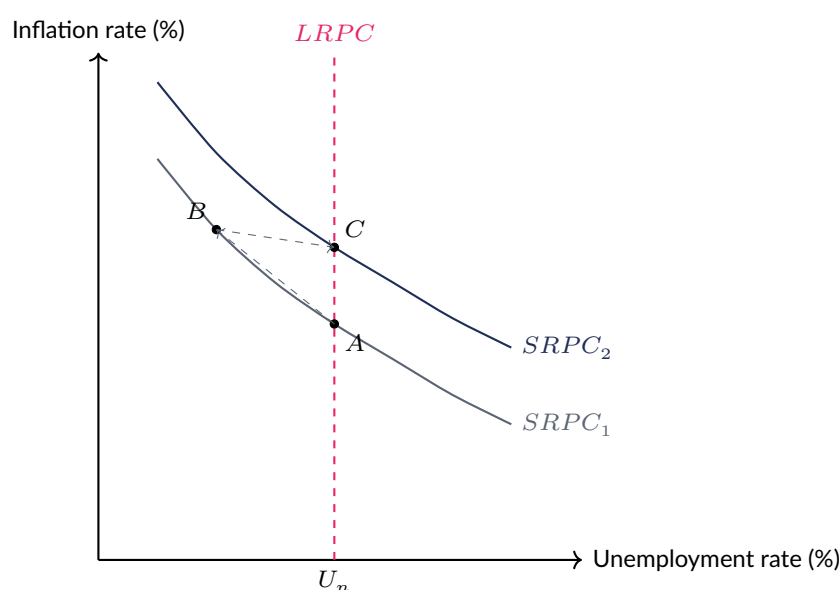


Figure 8.5 A: initial equilibrium at the natural rate U_n with actual = expected inflation. Expansionary policy moves the economy along $SRPC_1$ from A to B (lower unemployment, higher inflation). As expected inflation rises to match the new actual rate, $SRPC_1$ shifts up to $SRPC_2$ and unemployment returns to U_n at point C – but now at a permanently higher rate of inflation. Joining points such as A and C traces the vertical $LRPC$.

Whether expectations adjust in this way depends on how they are formed. Under **adaptive expectations**, workers and firms base their expected inflation mainly on *past* inflation, so they are slow to revise expectations and the economy can be kept temporarily below U_n for some time before expectations catch up. Under **rational expectations**, by contrast, workers and firms use *all available current information* (including announced government/central bank policy) to predict inflation *immediately* and correctly, so expectations adjust much faster – potentially eliminating even the short-run trade-off if a policy change is fully anticipated in advance.

GIẢI THÍCH TIẾNG VIỆT

VN

Đường Phillips ngắn hạn (SRPC) ban đầu cho thấy mối quan hệ **ngược biến** giữa lạm phát và

thất nghiệp – gợi ý một sự đánh đổi ngắn hạn. Trường phái tiền tệ (Friedman) cho rằng đánh đổi này chỉ tồn tại khi lạm phát *thực tế* khác với lạm phát *kỳ vọng*; khi kỳ vọng điều chỉnh kịp, thất nghiệp quay về **tỷ lệ thất nghiệp tự nhiên** U_n nhưng ở mức lạm phát cao hơn – do đó đường Phillips dài hạn (LRPC) **thẳng đứng** tại U_n : chính sách chỉ đánh đổi được trong ngắn hạn, không thể vĩnh viễn. **Kỳ vọng thích nghi** dựa vào lạm phát quá khứ (điều chỉnh chậm); **kỳ vọng hợp lý** dùng mọi thông tin hiện có để dự đoán ngay lập tức (điều chỉnh nhanh hơn, có thể xóa bỏ cả đánh đổi ngắn hạn nếu chính sách được dự đoán trước).

8.6 The business cycle

The **business cycle** (or trade cycle) describes the tendency of an economy's actual real GDP to fluctuate around its long-run growth trend, moving through four recurring phases: **boom**, **recession**, **slump/trough**, and **recovery**.

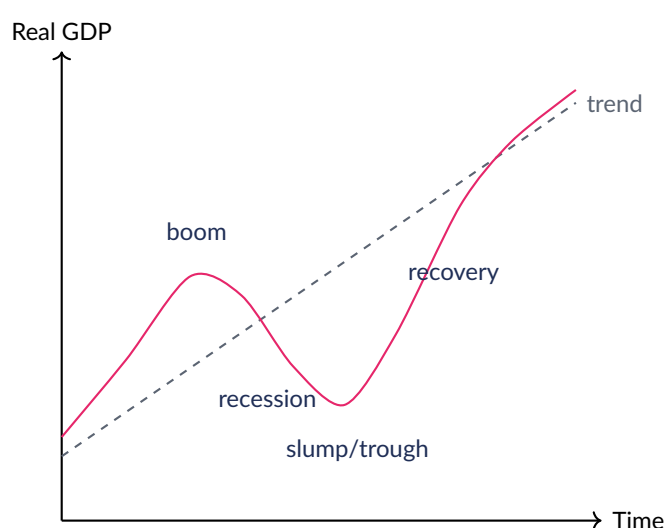


Figure 8.6 The business cycle: actual real GDP fluctuates around the long-run trend, passing through boom, recession, slump/trough and recovery.

- **Boom:** real GDP growth is rapid and above trend; consumer and business confidence are high; investment is high; unemployment is low (often below its natural rate); inflationary pressure builds as the economy approaches or exceeds full-employment capacity.
- **Recession:** real GDP growth slows sharply or turns negative (conventionally, two consecutive quarters of falling real GDP); confidence falls; investment and consumer spending fall; unemployment starts rising; inflationary pressure eases as demand weakens.
- **Slump/trough:** real GDP is at its lowest point relative to trend; unemployment is at its highest; spare capacity is at its greatest; confidence and investment are at their weakest, but the conditions for eventual recovery (e.g. very low interest rates, pent-up demand) begin to build.
- **Recovery:** real GDP growth turns positive again and accelerates back towards trend; confidence gradually improves; investment picks up; unemployment gradually falls as firms re-hire, moving the economy back towards a boom.

GIẢI THÍCH TIẾNG VIỆT

VN

Chu kỳ kinh tế có bốn giai đoạn: **bùng nổ** (tăng trưởng nhanh, niềm tin cao, đầu tư cao, thất nghiệp thấp, áp lực lạm phát tăng); **suy thoái** (tăng trưởng chậm lại/âm, niềm tin giảm, thất

nghiệp bắt đầu tăng); **khủng hoảng đáy** (sản lượng thấp nhất, thất nghiệp cao nhất); **phục hồi** (tăng trưởng dương trở lại, niềm tin và đầu tư cải thiện dần, thất nghiệp giảm dần).

8.7 Money and banking

8.7.1 Functions of money, commercial banks and the central bank

Khái niệm cốt lõi

[A2 extension] Money performs four functions: a **medium of exchange** (accepted in payment for goods/services, avoiding the need for a double coincidence of wants in barter); a **unit of account** (a common measure in which the value/prices of goods can be expressed and compared); a **store of value** (purchasing power can be held over time, provided inflation is low and stable); and a **standard of deferred payment** (debts and future obligations can be fixed and settled in monetary terms).

Commercial banks accept deposits from, and provide loans/credit to, households and firms, operate the payments system (cheques, cards, transfers), and thereby create most of the money supply in a modern economy (via credit creation, discussed below). The **central bank** issues the national currency, acts as banker to the government and to commercial banks, acts as **lender of last resort** to prevent bank failures from causing a systemic financial crisis, and implements monetary policy (setting the policy interest rate and/or controlling the growth of the money supply).

The **quantity theory of money** links the money supply to the price level via the equation of exchange: $MV = PY$, where M is the money supply, V is the velocity of circulation (the average number of times each unit of money is used in transactions per period), P is the price level, and Y is real output. Monetarists argue that, since V and Y are relatively stable in the short-to-medium run, changes in the money supply M feed through in roughly the same proportion into changes in the price level P – the basis of the monetarist view that “inflation is always and everywhere a monetary phenomenon.”

Ví dụ mẫu · Worked example – Quantity theory of money

$M = 200$, $V = 5$, $Y = 1,000$. Doubling M to 400: P goes from 1 to 2.

GIẢI THÍCH TIẾNG VIỆT

VN

Tiền có bốn chức năng: **phương tiện trao đổi**, **đơn vị hạch toán**, **phương tiện cất trữ giá trị**, và **tiêu chuẩn thanh toán trả chậm**. **Ngân hàng thương mại** nhận tiền gửi, cho vay, vận hành hệ thống thanh toán và tạo ra phần lớn cung tiền qua tạo tín dụng. **Ngân hàng trung ương** phát hành tiền, là ngân hàng của chính phủ và các ngân hàng thương mại, là **người cho vay cuối cùng**, và thực thi chính sách tiền tệ. **Thuyết số lượng tiền tệ**: $MV = PY$. Ở ví dụ trên, ban đầu $P = \frac{MV}{Y} = \frac{200 \times 5}{1,000} = 1$; khi M tăng gấp đôi lên 400 (với V, Y không đổi), $P = \frac{400 \times 5}{1,000} = 2$ – giá cả cũng tăng gấp đôi.

8.7.2 Credit creation by commercial banks

Commercial banks do not simply hold onto every deposit they receive; they are required (or choose) to keep only a fraction of deposits as **reserves** (liquid funds available to meet withdrawals), lending out the rest. Because a loan, once spent, is typically re-deposited elsewhere in the banking system and can itself be partly re-lent, the banking system as a whole can create a total quantity of new deposits that is a **multiple** of the original deposit – a process called **credit creation**.

The **credit (money) multiplier** = $\frac{1}{\text{reserve ratio}}$. The **maximum total new deposits** the banking system can create from an initial deposit = initial deposit $\times$ credit multiplier.

Ví dụ mẫu · Worked example – Credit creation

A bank receives an initial deposit of \$1,000. The required/chosen reserve ratio is 10%. Calculate the credit multiplier and the maximum total new deposits the banking system can create.

Round	New deposit (\$)	Reserve kept (10%) (\$)	New loan made (\$)
1	1,000.00	100.00	900.00
2	900.00	90.00	810.00
3	810.00	81.00	729.00
4	729.00	72.90	656.10
⋮	⋮	⋮	⋮
Total (all rounds)	10,000.00	1,000.00	9,000.00

Figure 8.7 Credit creation: each round's loan is re-deposited and partly re-lent, and the process converges to a total of \$10,000 in deposits.

Credit multiplier = $\frac{1}{\text{reserve ratio}} = \frac{1}{0.10} = 10$. Maximum total new deposits = \$1,000 $\times$ 10 = \$10,000. Of this, \$1,000 is the original deposit and \$10,000 – \$1,000 = \$9,000 represents genuinely **new credit (loans)** created by the banking system.

GIẢI THÍCH TIẾNG VIỆT

VN

Ngân hàng thương mại chỉ giữ lại một phần tiền gửi làm **dự trữ**, phần còn lại cho vay; khoản vay đó lại được gửi lại vào hệ thống ngân hàng và tiếp tục được cho vay một phần – tạo ra **số nhân tín dụng** = $\frac{1}{\text{tỷ lệ dự trữ}}$. Với tiền gửi ban đầu \$1.000 và tỷ lệ dự trữ 10%, số nhân = 10, tổng tiền gửi tối đa được tạo ra = $1.000 \times 10 = \$10.000$, trong đó \$9.000 là tín dụng (khoản vay) mới thực sự được tạo ra.

8.8 Practice question bank

Bài tập luyện tập

A weighted CPI basket has three categories: food (weight 40%, price change +3%), housing (weight 45%, price change +5%), and transport (weight 15%, price change –1%). Calculate the overall rate of inflation.

Lời giải chi tiết

$$0.40 \times 3\% + 0.45 \times 5\% + 0.15 \times (-1\%) = 1.2\% + 2.25\% - 0.15\% = 3.3\%.$$

Bài tập luyện tập

Data-response. A household expenditure survey produces the following data. Calculate the price relative for each item and the overall weighted price index for Year 1 (base year = 100), and state the rate of inflation.

Item	Weight	Price Yr 0	Price Yr 1
A	50	\$20	\$23
B	30	\$50	\$52
C	20	\$10	\$9

Lời giải chi tiết

Price relatives: $A = 23/20 \times 100 = 115.0$; $B = 52/50 \times 100 = 104.0$; $C = 9/10 \times 100 = 90.0$.

Weighted index = $\frac{50 \times 115 + 30 \times 104 + 20 \times 90}{100} = \frac{5,750 + 3,120 + 1,800}{100} = \frac{10,670}{100} = 106.7$.

Rate of inflation = $106.7 - 100 = 6.7\%$.

Bài tập luyện tập

Which of the following is **not** normally considered a limitation of the CPI as a measure of the cost of living?

- (A) It may not reflect the spending pattern of any individual household (C) It is updated too slowly to include genuinely new goods
- (B) It fails to adjust fully for improvements in the quality of goods (D) It always understates inflation because weights are updated every single day

Lời giải chi tiết

CPI weights are typically fixed between periodic revisions (often updated only every few years), not updated daily – so statement (D) is factually wrong and describes the opposite of the real limitation (substitution bias arises *because* weights are not updated in real time). (A), (B) and (C) are all genuine, recognised limitations of CPI. Correct answer: **(D)**.

Bài tập luyện tập

Classify each of the following as an example of **demand-pull** or **cost-push** inflation: (i) a sharp rise in world oil prices; (ii) a cut in the central bank's policy interest rate that boosts consumer borrowing and spending; (iii) a national minimum wage increase far exceeding productivity growth; (iv) a large tax cut that raises household disposable income.

Lời giải chi tiết

(i) Cost-push – a rise in a key imported input cost shifts SRAS left. (ii) Demand-pull – lower interest rates raise consumption and investment, shifting AD right. (iii) Cost-push – higher wage costs unmatched by productivity shift SRAS left. (iv) Demand-pull – higher disposable income raises consumption, shifting AD right.

Bài tập luyện tập

Using an AD-AS diagram, explain why cost-push inflation is often associated with **falling** real output, whereas demand-pull inflation is typically associated with **rising** real output.

Lời giải chi tiết

Demand-pull inflation is caused by a rightward shift of the AD curve along a given, upward-sloping SRAS curve; the new equilibrium lies further along the same SRAS curve, so both the price level *and* real output rise. Cost-push inflation is caused by a leftward shift of the SRAS curve itself along a given AD curve; the new equilibrium involves firms supplying less output at every price level, so the price level rises *but* real output falls – a combination of rising prices and falling output known as stagflation, which demand-pull inflation does not produce.

Bài tập luyện tập

Explain, using the concept of redistributive effects, why unanticipated inflation tends to benefit borrowers with fixed-rate nominal debt at the expense of savers and pensioners on a fixed nominal income.

Lời giải chi tiết

A fixed nominal debt (e.g. a fixed-rate loan) does not rise in money terms when prices rise, so its *real* value – what it is actually worth in terms of goods and services – falls as inflation erodes the purchasing power of money; the borrower therefore repays the loan in money that buys less than when it was borrowed, a real gain for the borrower. Savers holding money or fixed-interest assets suffer the mirror-image loss, as the real value of their savings/interest income falls. Pensioners or others on a fixed *nominal* income likewise see their real purchasing power fall as prices rise faster than their income, making them worse off in real terms even though their money income is unchanged.

Bài tập luyện tập

Explain what is meant by **fiscal drag**, and why it represents a real cost of inflation even when tax rates themselves are not changed.

Lời giải chi tiết

Fiscal drag occurs when income tax brackets/allowances are fixed in nominal terms and are not increased in line with inflation. As inflation pushes up nominal (money) wages – even if *real* wages are unchanged – more of a taxpayer's income is pulled into higher tax bands, or previously tax-exempt income becomes taxable. This raises the taxpayer's real tax burden and reduces real disposable income, purely as a side-effect of inflation, even though the government has not explicitly raised any tax rate.

Bài tập luyện tập

A country's CPI is: 2021 = 100; 2022 = 105; 2023 = 108; 2024 = 106. Calculate the rate of inflation in each of 2022, 2023 and 2024, and state whether the change between 2022 and 2023, and the change between 2023 and 2024, represent **disinflation** or **deflation**.

Lời giải chi tiết

Inflation 2022 = $(105 - 100)/100 = 5\%$. Inflation 2023 = $(108 - 105)/105 \approx 2.86\%$. Inflation 2024 = $(106 - 108)/108 \approx -1.85\%$. Between 2022 and 2023, the inflation *rate* fell (from 5% to 2.86%) but prices were still rising, so this is **disinflation**. Between 2023 and 2024, the price *level* actually fell (from 108 to 106), giving a negative inflation rate of -1.85% : this is **deflation**.

Bài tập luyện tập

Distinguish between “good” (supply-side) deflation and “bad” (demand-side) deflation, using the AD-AS model.

Lời giải chi tiết

“Good” deflation arises when falling costs of production or improving technology shift SRAS/AS to the *right*; the price level falls while real output and employment actually *rise* – consumers benefit from lower prices without any recession. “Bad” deflation arises when a fall in aggregate demand shifts AD to the *left*; the price level falls, but real output falls and unemployment rises alongside it, so falling prices here are a symptom of recession, worsened by a rising real debt burden and postponed consumer spending as households wait for prices to fall further.

Bài tập luyện tập

Match each type of unemployment to the policy most likely to reduce it: (i) frictional; (ii) structural; (iii) cyclical; (iv) seasonal. Policies: (a) expansionary fiscal/monetary policy; (b) retraining schemes; (c) improved job-search information services; (d) counter-seasonal income support.

Lời giải chi tiết

(i)–(c): frictional unemployment is reduced by better information services that match job-seekers to vacancies faster. (ii)–(b): structural unemployment, caused by a skills mismatch, is addressed with retraining. (iii)–(a): cyclical unemployment, caused by deficient demand, is addressed with demand-side stimulus. (iv)–(d): seasonal unemployment is addressed with income support timed to cover the predictable off-season.

Bài tập luyện tập

A skilled shipyard worker loses their job when the shipyard closes permanently, as demand has shifted to cheaper overseas producers; the worker’s welding skills are not in demand elsewhere in the local economy. Which type of unemployment does this best illustrate?

- | | |
|-----------------------------|---------------------------|
| (A) Frictional unemployment | (C) Cyclical unemployment |
| (B) Structural unemployment | (D) Seasonal unemployment |

Lời giải chi tiết

This describes a permanent decline of an entire industry leaving a worker with skills that no longer match local labour demand – the defining feature of **structural** unemployment, not a brief spell of job search (frictional), a demand-deficiency in a downturn affecting the whole economy (cyclical), or a predictable seasonal swing (seasonal). Correct answer: **(B)**.

Bài tập luyện tập

Explain two limitations of using the **claimant count** to measure the true level of unemployment in an economy.

Lời giải chi tiết

First, the claimant count only records people actually claiming unemployment-related benefits; some unemployed people are ineligible to claim (e.g. due to a partner's income or savings rules) or choose not to claim, so the true number of people out of work and wanting a job can be understated. Second, changes in government rules on who is eligible to claim, or how strictly eligibility is enforced, can cause the claimant count to rise or fall for reasons unrelated to genuine changes in the labour market, making comparisons over time or between countries with different benefit systems unreliable.

Bài tập luyện tập

Explain why a “discouraged worker” is not counted as unemployed under either the claimant count or the labour force survey (ILO) definition, and why this matters for interpreting official unemployment statistics.

Lời giải chi tiết

A discouraged worker has stopped actively searching for work because they believe no suitable job is available, even though they would accept one if offered. The claimant count only measures those receiving benefits, and the ILO/labour force survey definition requires having *actively sought* work recently – a discouraged worker fails this test and is instead classified as **economically inactive**, not unemployed. This matters because official unemployment figures can therefore **understate** the true amount of labour market slack, especially after a long or deep recession when discouragement is widespread.

Bài tập luyện tập

Outline the economic (national) costs of a sustained rise in cyclical unemployment for a government's public finances.

Lời giải chi tiết

Higher cyclical unemployment means actual output falls further below potential output, so the government collects **less tax revenue** (from income tax, as fewer people earn wages, and from indirect/consumption taxes, as spending falls) while simultaneously having to pay out **more in unemployment and related benefits**. Both effects push the government's budget further into deficit, and if sustained, add to the stock of national debt – illustrating why unemployment is costly not just to the individuals affected but to the sustainability of public finances as a whole.

Bài tập luyện tập

According to the expectations-augmented Phillips curve, what happens to unemployment in the long run if a government repeatedly tries to use expansionary demand-side policy to keep unemployment permanently below the natural rate?

- | | |
|---|--|
| (A) Unemployment falls permanently below the natural rate with no side effects | (C) Inflation falls to zero while unemployment stays permanently low |
| (B) Unemployment returns to the natural rate, but at a progressively higher rate of inflation | (D) The short-run and long-run Phillips curves become identical |

Lời giải chi tiết

Each attempt to hold unemployment below the natural rate U_n only works temporarily, while actual inflation exceeds what workers and firms *expect*. Once expectations catch up with the higher actual inflation rate, the short-run Phillips curve shifts upward and unemployment rises back to U_n – but now at a higher rate of inflation than before. Repeating this process again and again simply ratchets inflation higher each time, without achieving any *permanent* reduction in unemployment below U_n , since the long-run Phillips curve is vertical at the natural rate. Correct answer: **(B)**.

Bài tập luyện tập

Explain briefly the difference between **adaptive expectations** and **rational expectations**, and why this difference matters for how quickly the economy returns to the natural rate of unemployment after an unanticipated expansionary policy.

Lời giải chi tiết

Under adaptive expectations, workers and firms form their expectation of future inflation mainly by looking at *past* inflation rates, adjusting their expectations only gradually as new evidence accumulates; this means the economy can be kept below the natural rate of unemployment for a period of time before expectations fully catch up and unemployment returns to U_n . Under rational expectations, by contrast, workers and firms use *all* currently available information – including the government's announced policy intentions – to form their best possible forecast of inflation immediately. If a policy change is fully and correctly anticipated in advance, expectations (and wage/price-setting behaviour) adjust so quickly that unemployment may barely, if at all, fall below the natural rate even in the short run.

Bài tập luyện tập

Data-response. An economy records the following annual data over four years: Year 1: real GDP growth +4.2%, unemployment 3.8%, inflation 4.5%; Year 2: real GDP growth –1.5%, unemployment 6.5%, inflation 2.0%; Year 3: real GDP growth –2.8%, unemployment 8.9%, inflation 0.5%; Year 4: real GDP growth +1.1%, unemployment 8.2%, inflation 0.8%. Identify which phase of the business cycle each year most likely represents.

Lời giải chi tiết

Year 1 (strong positive growth, low unemployment, relatively high inflation) is most consistent with a **boom**. Year 2 (growth turns negative, unemployment rising sharply, inflation easing) is most consistent with the onset of a **recession**. Year 3 (growth still negative and unemployment at its highest of the four years, inflation very low) is most consistent with the **slump/trough**. Year 4 (growth turns positive again, unemployment beginning to fall slightly from its peak) is most consistent with the early stages of **recovery**.

Bài tập luyện tập

State two characteristics you would expect to observe in an economy's labour market and investment behaviour during the **boom** phase of the business cycle, and two characteristics you would expect during the **slump/trough** phase.

Lời giải chi tiết

Boom: unemployment is low (often below the natural rate) as firms compete to hire scarce workers; business investment is high, as strong confidence and capacity pressure encourage firms to expand. **Slump/trough:** unemployment is at its highest, as firms have cut back production to its lowest point; business investment is at its weakest, as low confidence and high spare capacity give firms little incentive to add further capital.

Bài tập luyện tập

Money supply $M = \$300\text{bn}$, velocity of circulation $V = 4$, real output $Y = \$1,200\text{bn}$. Using the quantity theory of money, calculate the price level P .

Lời giải chi tiết

$$MV = PY \Rightarrow P = \frac{MV}{Y} = \frac{300 \times 4}{1,200} = \frac{1,200}{1,200} = 1.$$

Bài tập luyện tập

Using the data in the previous question ($V = 4$, $Y = \$1,200\text{bn}$ constant), suppose the central bank increases the money supply from $\$300\text{bn}$ to $\$450\text{bn}$. According to the (strict) quantity theory of money, what happens to the price level, and by what percentage?

Lời giải chi tiết

New price level $P = \frac{MV}{Y} = \frac{450 \times 4}{1,200} = \frac{1,800}{1,200} = 1.5$. The price level rises from 1 to 1.5, a rise of 50% - exactly matching the 50% rise in the money supply ($300 \rightarrow 450$), since V and Y are held constant. This illustrates the monetarist claim that, if velocity and real output are stable, changes in the money supply feed through proportionally into the price level.

Bài tập luyện tập

A central bank estimates that velocity of circulation is $V = 6$ and real output is fixed at $Y = \$2,000\text{bn}$. If the current price level is $P = 1.2$, calculate the current money supply M .

Lời giải chi tiết

$$MV = PY \Rightarrow M = \frac{PY}{V} = \frac{1.2 \times 2,000}{6} = \frac{2,400}{6} = \$400\text{bn}.$$

Bài tập luyện tập

A commercial bank receives a new deposit of $\$5,000$. The reserve ratio is 20%. Calculate (i) the credit (money) multiplier, and (ii) the maximum total new deposits the banking system can create from this initial deposit.

Lời giải chi tiết

(i) Credit multiplier = $\frac{1}{\text{reserve ratio}} = \frac{1}{0.20} = 5$. (ii) Maximum total new deposits = $\$5,000 \times 5 = \$25,000$.

Bài tập luyện tập

Using your answer to the previous question, calculate the amount of genuinely **new credit (loans)** created by the banking system, over and above the original \$5,000 deposit. If the central bank raised the reserve ratio to 25%, what would happen to the maximum total deposits the banking system could create from the same initial \$5,000 deposit?

Lời giải chi tiết

New credit created = \$25,000 – \$5,000 = \$20,000. If the reserve ratio rose to 25%, the credit multiplier would fall to $1/0.25 = 4$, so the maximum total deposits creatable would fall to $\$5,000 \times 4 = \$20,000 - \$5,000$ less than before. This illustrates why raising the reserve (liquidity) ratio is a way for a central bank to tighten monetary conditions and slow the growth of the money supply.

Bài tập luyện tập

Which of the following best describes the role of a central bank as “lender of last resort”?

- | | |
|---|---|
| (A) The central bank refuses to lend to any commercial bank under any circumstances | (C) The central bank is the final commercial lender a household can approach after being refused by every commercial bank |
| (B) The central bank provides emergency funds to solvent commercial banks facing a short-term liquidity crisis, to prevent a wider banking crisis | (D) The central bank sets the reserve ratio at exactly zero for all banks |

Lời giải chi tiết

As lender of last resort, the central bank stands ready to lend to fundamentally sound commercial banks that face a temporary shortage of liquid funds (e.g. due to a sudden surge in withdrawals), preventing an otherwise solvent bank from failing and triggering a loss of confidence that could spread through the whole banking system. It is not a source of everyday retail lending to households, and does not imply refusing all lending or setting reserve ratios to zero. Correct answer: **(B)**.

Bài tập luyện tập

Identify which function of money is being described in each case: (i) a shopkeeper prices every item on the shelf in dollars so customers can compare value across products; (ii) a worker accepts their monthly salary in cash and immediately uses it to buy groceries; (iii) a household keeps some of its wealth in a bank savings account rather than spending it all immediately; (iv) two firms agree that a loan will be repaid, with interest, in fixed monthly instalments over the next three years.

Lời giải chi tiết

(i) Unit of account – money provides a common measure for comparing the value of different goods. (ii) Medium of exchange – money is used directly to purchase goods and services. (iii) Store of value – money holds purchasing power over time for future use. (iv) Standard of deferred payment – money is used to fix the value of a debt to be settled in the future.

Bài tập luyện tập

Essay outline. “Discuss whether unemployment or inflation is the more serious macroeconomic problem for a government to tackle.” Outline a balanced answer, covering both sides and a reasoned conclusion.

Lời giải chi tiết

Define both: unemployment – people of working age willing and able to work but without a job; inflation – a sustained rise in the general price level.

Case for unemployment being more serious: imposes direct, often severe costs on the individuals affected (lost income, deskilling, health/wellbeing effects) that can persist for years (hysteresis); represents a clear loss of potential output that can never be recovered; worsens public finances directly (lower tax revenue, higher benefit spending); associated with wider social costs (crime, inequality, social unrest) that can be severe, especially if concentrated in particular regions or age groups (e.g. youth unemployment).

Case for inflation being more serious: even moderate inflation imposes economy-wide costs (menu costs, shoe-leather costs, redistribution from savers/fixed-income earners to borrowers, fiscal drag) that affect *almost everyone*, not just one group; high or volatile inflation creates uncertainty that discourages investment and can damage long-run growth; if domestic inflation persistently exceeds that of trading partners, international competitiveness and the current account can deteriorate; very high (hyper-)inflation can undermine confidence in money itself and cause severe economic and social breakdown.

Evaluation/conclusion: which problem is “worse” depends on the *scale and duration* of each – a short, mild recession may be less damaging than persistent double-digit or hyperinflation, while a deep, prolonged, structural unemployment crisis (with hysteresis effects) may be more damaging than brief, moderate inflation. It also depends on *who bears the cost*: unemployment costs are concentrated on a smaller group very severely, while inflation costs are spread more thinly across the whole population. In practice, most governments treat both as serious and use a policy mix (the Phillips curve reminds us that reducing one in the short run can, at least temporarily, worsen the other), aiming to keep both within an acceptable range rather than eliminating either problem entirely.

Bài tập luyện tập

Essay outline. “Evaluate the view that deflation is always harmful to an economy.” Outline a balanced answer.

Lời giải chi tiết

Define: deflation is a sustained fall in the general price level (negative inflation).

Case that deflation is harmful: usually associated with weak or falling aggregate demand (“bad” deflation), bringing falling output and rising unemployment; raises the real burden of any fixed nominal debt, risking defaults and financial instability (debt-deflation); can cause consumers to postpone spending in anticipation of further price falls, deepening any downturn; can signal or reinforce a recession.

Case that deflation need not always be harmful: “good” deflation caused by falling production costs or rising productivity/technology (a rightward shift of AS) allows prices to fall *while* output and employment continue to rise, raising real living standards without recession; consumers directly benefit from lower prices for a given nominal income.

Evaluation/conclusion: the key distinguishing factor is the *cause* of deflation – whether it originates from the supply side (AS shifting right, generally benign) or the demand side (AD

shifting left, generally harmful) – so the blanket claim that deflation is “always” harmful is an overstatement; a full evaluation must identify the source of falling prices, and consider its duration, before concluding whether it is damaging or beneficial to a particular economy.

Fiscal and Monetary Policy

Mục tiêu Unit: Chính sách tài khoá: ngân sách thâm hụt/thặng dư, cơ chế ổn định tự động (automatic stabilisers) và chính sách tài khoá chủ động (discretionary); phân biệt **thâm hụt ngân sách** (một năm) với **nợ công** (tích lũy nhiều năm) và tranh luận về “chèn lấn đầu tư” (crowding out). **[A2]** Số nhân chi tiêu (the multiplier) và minh hoạ bằng mô hình đường 45 độ (Keynesian cross); nguyên lý gia tốc đầu tư (the accelerator) gắn mức đầu tư ròng với *tốc độ thay đổi* của thu nhập quốc dân, chứ không phải mức thu nhập; tương tác số nhân–gia tốc khuếch đại chu kỳ kinh doanh. Chính sách tiền tệ: lãi suất chính sách của ngân hàng trung ương, cơ chế truyền dẫn tiền tệ đầy đủ (lãi suất thị trường – tỷ giá – tiêu dùng/đầu tư/xuất khẩu ròng – AD – giá cả/sản lượng), và nới lỏng định lượng (QE). Chính sách trọng cung theo thị trường (bãi bỏ quy định, tư nhân hoá, ưu đãi thuế, giảm quyền lực công đoàn) và theo hướng can thiệp (giáo dục – đào tạo, hạ tầng, trợ cấp R&D, chính sách công nghiệp mục tiêu), cùng vấn đề độ trễ thời gian của chính sách trọng cung. Xung đột và đánh đổi giữa bốn mục tiêu kinh tế vĩ mô chính: tăng trưởng, việc làm, lạm phát, cán cân thanh toán.

9.1 Fiscal policy fundamentals

9.1.1 Automatic stabilisers and discretionary fiscal policy

Fiscal policy uses government spending (G) and taxation (T) to influence aggregate demand (AD) and, through it, the level of output, employment and prices in the economy. A government runs a **budget deficit** when $G > T$ in a given period (spending exceeds revenue) and a **budget surplus** when $T > G$; a **balanced budget** occurs when $G = T$.

Automatic stabilisers are changes in G and T that occur *automatically* as national income changes, without any new decision by the government, and which act to smooth out fluctuations in the business cycle.

- In a **boom**, rising incomes automatically raise tax revenue (progressive income tax, VAT on higher spending) and reduce welfare/unemployment-benefit payments (fewer people are out of work), which drains some of the extra spending power out of the economy and dampens the boom.
- In a **recession**, falling incomes automatically reduce tax revenue and raise welfare/unemployment-benefit payments, which injects extra spending power back into the economy and cushions the fall in AD .

Discretionary fiscal policy, by contrast, is a deliberate, one-off decision by the government to change tax rates or spending levels in order to influence AD – for example, a Budget announcement cutting income tax rates, or a new programme of infrastructure spending, undertaken specifically to stimulate (or restrain) the economy.

GIẢI THÍCH TIẾNG VIỆT

VN

Cơ chế ổn định tự động là những thay đổi trong G và T diễn ra *tự động* theo chu kỳ kinh tế mà không cần quyết định mới của chính phủ: khi kinh tế tăng trưởng nóng, thuế thu được tăng và trợ cấp thất nghiệp giảm, giúp hãm bớt đà tăng; khi suy thoái, thuế thu giảm và trợ cấp tăng, giúp bù đắp một phần sự sụt giảm AD . **Chính sách tài khoá chủ động** là quyết định có chủ đích

của chính phủ nhằm thay đổi thuế suất hoặc chi tiêu để tác động đến AD, ví dụ một đợt cắt giảm thuế thu nhập hoặc chương trình đầu tư hạ tầng mới.

9.1.2 Budget deficit versus national debt

Students frequently confuse a budget deficit with the national debt, but the two concepts describe different things and operate on different time horizons.

Budget deficit vs national debt

A **budget deficit** is a *flow* concept: the shortfall between government spending and government revenue *during a single year* ($G > T$ in that year), which must be financed by government borrowing during that year. The **national debt** is a *stock* concept: the total accumulated amount the government owes at a given point in time, built up from the sum of all past budget deficits (net of any past surpluses, which reduce the debt).

If a government runs a deficit every year, each year's new borrowing adds to the existing stock of debt, so the national debt keeps rising year after year – even if the size of the annual deficit itself is shrinking, as long as it remains positive. The national debt only falls when the government manages to run an actual budget **surplus** (using the surplus to repay some of the outstanding debt).

Year	Budget balance (\$bn)	National debt, end of year (\$bn)	Comments
Start of Year 1	–	500	Opening stock of debt
Year 1	–30 (deficit)	530	Debt rises by the deficit
Year 2	–25 (deficit)	555	Deficit shrinking, but debt still rises
Year 3	–20 (deficit)	575	Deficit shrinking further, debt still rises
Year 4	+10 (surplus)	565	Only a surplus makes debt fall

Figure 9.1 A shrinking annual deficit still adds to the national debt in Years 1–3; the national debt only falls in Year 4, once the budget moves into surplus.

As the national debt grows, the government must pay **debt interest** on the outstanding stock each year. This interest bill tends to grow over time – both because the stock of debt itself is larger, and because a government with a poor fiscal reputation, or one borrowing during a period of rising global interest rates, may have to pay a higher interest rate on new and refinanced debt. A growing debt-interest burden can crowd out room in the budget for other priorities (health, education, infrastructure), may eventually require future tax rises or spending cuts to stabilise the debt, and in a severe case can raise investors' concerns about the government's ability to repay, pushing borrowing costs higher still – a self-reinforcing risk sometimes described as a **debt spiral**.

GIẢI THÍCH TIẾNG VIỆT

VN

Thâm hụt ngân sách là chỉ tiêu dòng – phần thiếu hụt giữa chi tiêu và thu ngân sách trong một năm ($G > T$). **Nợ công** là chỉ tiêu tồn kho – tổng số tiền chính phủ còn nợ tại một thời điểm, tích lũy từ tất cả các khoản thâm hụt trong quá khứ (trừ đi các khoản thặng dư). Nếu chính phủ thâm hụt liên tục, nợ công sẽ tiếp tục **tăng** dù mức thâm hụt hằng năm có thu hẹp; nợ công chỉ **giảm** khi ngân sách đạt thặng dư thực sự. Nợ công tăng kéo theo chi phí trả lãi tăng, có thể lấn át không gian ngân sách cho các ưu tiên khác và buộc chính phủ phải tăng thuế/cắt giảm chi tiêu trong tương lai.

9.1.3 Crowding out: does deficit-financed borrowing reduce private investment?

[A2 extension] An important debate concerns whether government borrowing to finance a budget deficit undermines the very stimulus that expansionary fiscal policy is intended to provide. The **crowding-out** argument holds that when the government borrows heavily (issuing more bonds) to fund a deficit, it increases the demand for loanable funds in financial markets; if the supply of savings does not rise to match, this bids up interest rates. Higher interest rates then discourage private-sector investment and interest-sensitive consumption, at least partially *offsetting* the expansionary effect of the higher government spending – in the most extreme (monetarist) version of the argument, private investment could fall by (almost) as much as government spending rises, leaving little or no net effect on *AD*.

This argument should, however, be evaluated rather than accepted automatically. Crowding out is most likely to be significant when the economy is already close to full employment (so that resources genuinely have to be bid away from private use) and when the central bank does not accommodate the extra borrowing. In a recession with substantial spare capacity and low interest rates – as in a deflationary gap – the extra government spending mainly draws on *idle* resources and unused savings, and interest rates need not rise much, if at all; many economists argue that in such a demand-deficient recession, government borrowing can instead “crowd in” private investment, by raising business confidence and expected future demand for firms’ output.

GIẢI THÍCH TIẾNG VIỆT

VN

[A2 extension] Tranh luận “chèn lấn đầu tư” (crowding out) cho rằng khi chính phủ vay nợ nhiều để tài trợ thâm hụt, cầu vay vốn tăng có thể đẩy lãi suất lên, làm giảm đầu tư tư nhân và tiêu dùng nhạy cảm với lãi suất, từ đó triệt tiêu một phần hiệu ứng kích thích của chính sách tài khoá. Tuy nhiên, hiệu ứng này rõ rệt nhất khi nền kinh tế đã gần toàn dụng; trong suy thoái với nhiều nguồn lực nhàn rỗi và lãi suất thấp, chi tiêu chính phủ tăng thêm ít gây áp lực lên lãi suất và thậm chí có thể “kéo vào” (crowd in) đầu tư tư nhân nhờ tăng niềm tin kinh doanh.

9.2 The multiplier [A2 extension]

9.2.1 The multiplier formula

A2 Extension – the multiplier

[A2 extension] An initial injection into the circular flow (a rise in *I*, *G* or *X*) generates further rounds of spending as the extra income is re-spent by households and firms, so that the eventual rise in national income is *larger* than the initial injection itself – the multiplier effect.

$$k = \frac{1}{MPW} = \frac{1}{MPS + MPT + MPM} = \frac{1}{1 - MPC} \quad \Delta Y = k \times \Delta(\text{injection})$$

Ví dụ mẫu · Worked example – The multiplier

$MPC = 0.5$, $MPS = 0.2$, $MPT = 0.2$, $MPM = 0.1$. Government spending rises by \$30bn.
 $MPW = 0.5$, $k = 2$, $\Delta Y = \$60\text{bn}$.

GIẢI THÍCH TIẾNG VIỆT

VN

$MPW = MPS + MPT + MPM = 0.2 + 0.2 + 0.1 = 0.5$. Số nhân $k = 1/MPW = 1/0.5 = 2$. Thu nhập quốc dân tăng thêm $\Delta Y = k \times \Delta G = 2 \times 30 = \60 tỷ – gấp đôi khoản chi tiêu chính phủ tăng thêm ban đầu, vì phần thu nhập tăng thêm được chi tiêu lại qua nhiều vòng.

9.2.2 Illustrating the multiplier: the Keynesian cross

The multiplier process can be shown graphically using a **45-degree-line (Keynesian cross) diagram**. The horizontal axis measures real national income Y ; the vertical axis measures planned aggregate expenditure AE . The 45-degree line plots every point where $AE = Y$ – that is, every point of *potential* equilibrium, since national income is in equilibrium only where planned spending exactly equals income/output. The upward-sloping AE line (with a slope equal to $1 - MPW$, i.e. the proportion of extra income re-spent domestically) shows planned spending at each level of income; equilibrium national income is found where the AE line crosses the 45-degree line.

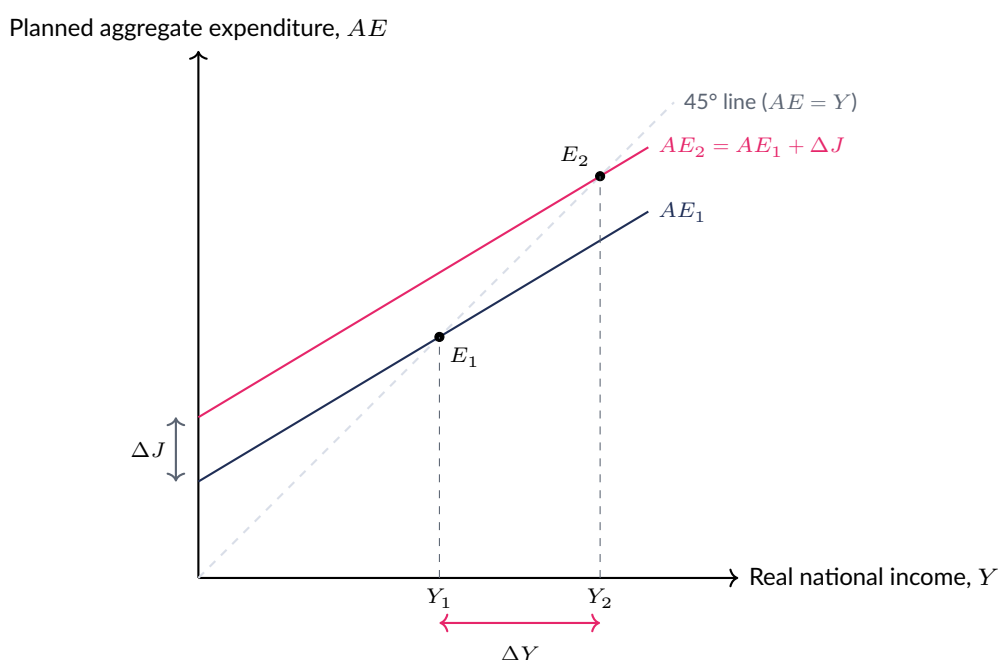


Figure 9.2 The Keynesian cross. Equilibrium income is initially Y_1 , where AE_1 crosses the 45-degree line at E_1 . An injection of $\Delta J = \$40\text{bn}$ shifts planned expenditure up in parallel to AE_2 ; the new equilibrium E_2 is at Y_2 , where $\Delta Y = \$100\text{bn}$ – much larger than ΔJ itself, since $k = \Delta Y / \Delta J = 2.5$ (matching the worked example below).

The diagram makes the multiplier process visually intuitive: because the AE line is *flatter* than the 45-degree line (some of any extra income leaks out as MPW), the vertical shift of the AE line (ΔJ) always translates into a *larger* horizontal movement along the 45-degree line (ΔY) once the new equilibrium is reached, since the extra spending keeps generating further rounds of induced spending until income has risen by enough to restore $AE = Y$.

GIẢI THÍCH TIẾNG VIỆT

VN

Sơ đồ đường 45 độ minh họa trực quan quá trình số nhân: vì đường AE thoải hơn đường 45 độ (một phần thu nhập tăng thêm bị rò rỉ ra dưới dạng MPW), một khoản bơm vào ΔJ (dịch chuyển đường AE lên song song) luôn tạo ra một mức tăng thu nhập cân bằng ΔY **lớn hơn** chính khoản bơm vào đó, do chi tiêu tăng thêm tiếp tục tạo ra các vòng chi tiêu tiếp theo cho đến khi đạt cân bằng mới.

9.2.3 A second worked example

Ví dụ mẫu · Worked example – The multiplier (second example)

$MPC = 0.6$, $MPS = 0.1$, $MPT = 0.2$, $MPM = 0.1$. Private investment rises by $\$40\text{bn}$. Calculate MPW , the multiplier k , and the resulting change in national income ΔY .

$MPW = MPS + MPT + MPM = 0.1 + 0.2 + 0.1 = 0.5 - 0.1 = 0.4$ (equivalently, $MPW =$

$$1 - MPC = 1 - 0.6 = 0.4). k = 1/0.4 = 2.5. \Delta Y = k \times \Delta I = 2.5 \times 40 = \$100\text{bn}.$$

GIẢI THÍCH TIẾNG VIỆT

VN

$MPW = 1 - MPC = 1 - 0.6 = 0.4$, số nhân $k = 1/0.4 = 2.5$. Đầu tư tăng thêm $\Delta I = \$40$ tỷ tạo ra mức tăng thu nhập quốc dân $\Delta Y = 2.5 \times 40 = \100 tỷ – đúng bằng các con số minh hoạ trong Hình 9.2 ở trên.

9.3 The accelerator [A2 extension]**9.3.1 The accelerator principle**

[A2 extension] While the multiplier explains how a change in an injection generates an amplified change in national income, the **accelerator principle** explains how changes in national income, in turn, affect the level of **net investment**. Crucially, the accelerator links investment not to the *level* of national income/output, but to its **rate of change**.

A2 Extension – the accelerator principle

Firms hold a stock of capital (machinery, equipment, buildings) roughly in proportion to the level of output they need to produce – described by a (roughly fixed) **capital–output ratio**, v . If output is to grow, firms need to add to their capital stock; the required **net investment** in any period is:

$$\text{Net investment} = v \times \Delta Y$$

where ΔY is the change in output/national income during that period (in addition to this, firms also undertake **replacement investment** to replace worn-out capital, giving *gross investment* = net investment + replacement investment).

Because required net investment depends on ΔY rather than on Y itself, even a **slowdown in the rate of growth** of national income (a smaller, but still positive, ΔY) – not an absolute fall in output – can cause net investment to **fall**. Investment can therefore be far more volatile than output itself over the business cycle.

GIẢI THÍCH TIẾNG VIỆT

VN

[A2 extension] Nguyên lý gia tốc đầu tư (accelerator) cho rằng mức **đầu tư ròng** cần thiết phụ thuộc vào **tốc độ thay đổi** của thu nhập quốc dân (ΔY), chứ không phải mức thu nhập (Y). Với tỷ lệ vốn/sản lượng v tương đối cố định, đầu tư ròng cần thiết $= v \times \Delta Y$. Do đó, chỉ cần tốc độ tăng trưởng thu nhập **chậm lại** (dù ΔY vẫn dương, thu nhập vẫn đang tăng) cũng có thể khiến đầu tư ròng **giảm** – khiến đầu tư biến động mạnh hơn nhiều so với bản thân sản lượng trong chu kỳ kinh doanh.

9.3.2 Worked example: investment when growth decelerates**Ví dụ mẫu · Worked example – The accelerator**

An economy has a fixed capital–output ratio of $v = 4$ (i.e. \$4 of extra capital is required to sustain each \$1 rise in annual output). National income over five years is: Year 1 = \$200bn; Year 2 = \$210bn; Year 3 = \$222bn; Year 4 = \$230bn; Year 5 = \$236bn. Calculate ΔY and the required net investment for each year from Year 2 onward, and comment on the trend in investment.

Year	National income, Y (\$bn)	ΔY (\$bn)	Required net investment, $v\Delta Y$ (\$bn)
1	200	–	–
2	210	10	40
3	222	12	48
4	230	8	32
5	236	6	24

Figure 9.3 Required net investment ($v = 4$) rises from Year 2 to Year 3 as growth accelerates (ΔY : 10 → 12), then **falls** in Years 4 and 5 as growth decelerates (ΔY : 12 → 8 → 6) – even though national income itself keeps rising every single year.

GIẢI THÍCH TIẾNG VIỆT

VN

Với $v = 4$: đầu tư ròng cần thiết = $4 \times \Delta Y$. Từ năm 2 sang năm 3, tăng trưởng tăng tốc (ΔY từ 10 lên 12 tỷ) nên đầu tư tăng từ 40 lên 48 tỷ. Nhưng từ năm 3 sang năm 5, tốc độ tăng trưởng **chậm lại** dần (ΔY : 12 → 8 → 6) khiến đầu tư ròng **giảm liên tục** (48 → 32 → 24 tỷ) – dù thu nhập quốc dân Y vẫn tăng đều đặn suốt cả 5 năm (200 → 210 → 222 → 230 → 236). Đây chính là minh họa then chốt của nguyên lý gia tốc.

9.4 The multiplier--accelerator interaction [A2 extension]

[A2 extension] The multiplier and the accelerator do not operate in isolation; together, they can **amplify the swings of the business cycle**. During an upswing, rising national income (perhaps initially triggered by a rise in exports, government spending or business confidence) raises required net investment via the accelerator; this extra investment is itself an injection into the circular flow, which the multiplier then magnifies into a further, larger rise in national income – which, via the accelerator, triggers still more investment, and so on. This mutually reinforcing process can turn a modest initial stimulus into a substantial boom. The same interaction works powerfully in reverse: once the *rate of growth* of national income starts to slow (even before output actually falls), the accelerator causes net investment to fall; this fall in investment is a fall in an injection, which the multiplier then magnifies into a larger fall in national income, further reducing ΔY and triggering yet more cuts in investment. This combined multiplier–accelerator mechanism is one of the key theoretical explanations for why real-world economies experience pronounced cyclical swings between boom and slump, rather than growing smoothly along a stable trend.

(!) **Lỗi thường gặp:** The multiplier and the accelerator are two of the most commonly confused concepts at A2. The **multiplier** explains why a change in an injection produces an *even larger* change in the **level** of national income ($\Delta Y = k \times \Delta J$) – it links a change in spending to an amplified change in income. The **accelerator** explains why the **rate of change** of national income determines the level of net investment (Investment = $v \times \Delta Y$) – it links a change in income to a (potentially amplified) change in investment. A useful way to keep them apart: the multiplier runs from *injection* → *income*; the accelerator runs from *change in income* → *investment*. Do not describe a fall in investment caused by *slower growth* (still positive ΔY) as “the multiplier in reverse” – that confuses the two mechanisms; it is the accelerator at work.

9.5 Monetary policy

9.5.1 Interest rates and the transmission mechanism

Monetary policy uses changes in interest rates (and the money supply) to influence AD . A central bank's **policy interest rate** (sometimes called the base rate or bank rate) is the rate at which it lends to, or accepts deposits from, commercial banks, and strongly influences the whole structure of interest rates charged and paid throughout the economy.

A **higher** policy interest rate raises the cost of borrowing for households and firms (and raises the return on saving), which tends to **reduce** consumption (C) and investment (I). A higher domestic interest rate, relative to interest rates abroad, also tends to attract inflows of foreign financial capital seeking a higher return, which raises demand for the domestic currency and causes it to **appreciate**; a stronger currency makes exports more expensive for foreign buyers and imports cheaper for domestic buyers, tending to **reduce** net exports ($X - M$). Since C , I and $(X - M)$ all fall, the whole of AD shifts to the left. A **lower** policy interest rate works through exactly the same channels in reverse, raising C , I and $(X - M)$ (via a weaker/depreciating currency) and shifting AD to the right.

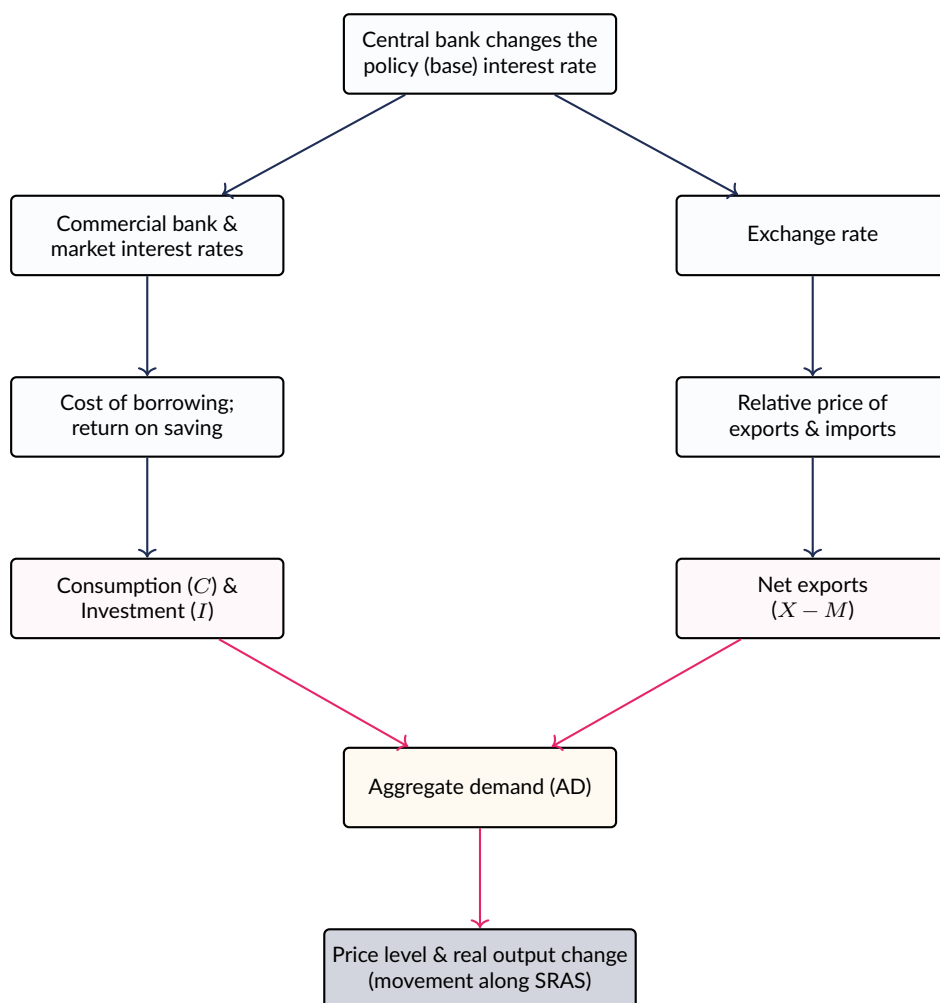


Figure 9.4 The monetary policy transmission mechanism. A change in the policy rate passes through market interest rates and the exchange rate, into borrowing costs and relative trade prices, into C , I and $(X - M)$, into AD , and finally into the price level and real output.

Each link in this chain in turn: (1) the policy rate directly moves the interest rates that commercial banks charge borrowers and pay savers; (2) this changes the cost of borrowing (mortgages, loans, credit) and the reward for saving; (3) a change in the policy rate, relative to rates abroad, also moves the exchange rate via international capital flows; (4) the changed exchange rate alters the relative price of exports and imports; (5) changed borrowing costs alter planned C and I , while the changed relative price of trade alters net exports; (6) since C , I and $(X - M)$ are all components of $AD = C + I + G + (X - M)$, AD itself shifts; (7) finally, the shift in AD moves the economy along the (short-run) aggregate supply curve, changing the equilibrium price level and level of real output.

GIẢI THÍCH TIẾNG VIỆT

VN

Chính sách tiền tệ dùng lãi suất để tác động đến AD. Lãi suất chính sách **cao hơn** làm tăng chi

phí vay, giảm C và I ; đồng thời thu hút dòng vốn nước ngoài khiến đồng nội tệ **lên giá**, làm giảm xuất khẩu ròng ($X - M$) – tất cả khiến AD dịch trái. Lãi suất **thấp hơn** có tác động ngược lại. Cơ chế truyền dẫn đầy đủ (Hình 9.4): lãi suất chính sách → lãi suất thị trường → chi phí vay/tỷ giá → C, I , xuất khẩu ròng → AD → mức giá và sản lượng thực.

9.5.2 Quantitative easing

Quantitative easing (QE) is an unconventional monetary policy tool used when the policy interest rate is already very close to zero (the “zero lower bound”), so that further conventional interest-rate cuts are no longer possible or effective. Under QE, the central bank creates new money electronically and uses it to purchase financial assets – typically government bonds, and sometimes corporate bonds – from commercial banks and other financial institutions. This directly injects new money/reserves into the banking system, lowers longer-term interest rates (by raising demand for, and hence the price of, the bonds purchased), and raises the prices of other financial assets, encouraging banks to lend more and households/firms to spend and invest more, thereby stimulating AD even when the policy rate itself cannot be cut any further.

GIẢI THÍCH TIẾNG VIỆT

VN

Nới lỏng định lượng (QE) là công cụ phi truyền thống được dùng khi lãi suất chính sách đã gần bằng 0 và không thể giảm thêm. Ngân hàng trung ương tạo tiền mới để mua tài sản tài chính (chủ yếu trái phiếu chính phủ) từ ngân hàng thương mại, qua đó bơm thanh khoản, hạ lãi suất dài hạn, tăng giá tài sản tài chính, khuyến khích cho vay và chi tiêu – kích thích AD khi công cụ lãi suất thông thường đã cạn kiệt dư địa.

9.6 Supply-side policy

Supply-side policy aims to raise the economy's **productive capacity** – shifting long-run aggregate supply (LRAS) and the production possibility curve outward – rather than managing the level of demand directly.

9.6.1 Market-based supply-side policies

Market-based supply-side policies aim to remove obstacles to the free operation of markets and strengthen private-sector incentives to work, save, invest and take risks.

- **Deregulation:** removing unnecessary rules and barriers to entry that restrict competition (e.g. liberalising entry into telecommunications or domestic airline markets), so new firms can enter, competition intensifies, and efficiency and innovation improve.
- **Privatisation:** transferring state-owned enterprises (e.g. a national airline, a state telecoms monopoly, state-owned utilities) into private ownership, on the argument that private owners, facing the discipline of profit and competition, have a stronger incentive to cut costs and innovate than state managers.
- **Tax incentives:** cutting income tax rates (to strengthen incentives to work and take on extra hours or promotion) and corporate tax rates (to strengthen incentives to invest and to attract inward investment), and cutting capital gains tax to encourage risk-taking and entrepreneurship.
- **Reducing trade union/labour market power:** policies such as restricting closed-shop union agreements, weakening statutory minimum-wage floors, or reducing the generosity or duration of unemployment benefits, intended to make labour markets more flexible and increase the incentive to accept available jobs, thereby reducing structural and real-wage unemployment.

GIẢI THÍCH TIẾNG VIỆT

VN

Chính sách trọng cung **theo thị trường**: bãi bỏ quy định (deregulation) để tăng cạnh tranh; tư nhân hoá doanh nghiệp nhà nước; ưu đãi thuế (giảm thuế thu nhập, thuế doanh nghiệp) để tăng động lực làm việc/đầu tư; giảm quyền lực công đoàn và độ hào phóng của trợ cấp thất nghiệp để thị trường lao động linh hoạt hơn.

9.6.2 Interventionist supply-side policies

Interventionist supply-side policies instead rely on direct government spending or intervention to raise productive capacity, often in areas where private markets are judged likely to under-provide.

- **Education and training investment**: government spending on schools, vocational training and apprenticeship schemes to raise the skills, productivity and employability of the workforce (raising **human capital**).
- **Infrastructure spending**: government investment in roads, ports, railways, power grids and broadband networks, which lowers firms' transport, logistics and communication costs and improves the business environment economy-wide.
- **R&D subsidies**: grants, tax credits, or direct public funding for research institutions and private-sector research and development, addressing the tendency of private firms to under-invest in research whose benefits (knowledge spillovers) cannot be fully captured by the firm that pays for it.
- **Targeted industrial policy**: government support for specific strategic or infant industries (e.g. subsidies, state investment banks, sector-specific tax breaks) intended to help build competitive advantage in industries considered important for future growth.

GIẢI THÍCH TIẾNG VIỆT

VN

Chính sách trọng cung **theo hướng can thiệp**: đầu tư giáo dục – đào tạo để nâng vốn con người; chi tiêu hạ tầng (đường sá, cảng, mạng lưới internet); trợ cấp nghiên cứu & phát triển (R&D) để khắc phục tình trạng khu vực tư nhân đầu tư dưới mức tối ưu cho nghiên cứu; và chính sách công nghiệp mục tiêu hỗ trợ các ngành chiến lược/còn non trẻ.

9.6.3 Evaluation: the time-lag problem

A crucial limitation of supply-side policy is the **time lag** before it takes effect. Building new infrastructure, training a more skilled workforce, or seeing the benefits of R&D investment feed through into higher productivity typically takes several years, sometimes decades – LRAS shifts outward only gradually. Demand-side policy (fiscal or monetary), by contrast, can influence *AD* relatively quickly, sometimes within months. This means supply-side policy is generally a poor tool for closing a short-run output gap or responding to a sudden recession; it is better understood as a longer-term **complement** to demand management (raising the economy's sustainable long-run growth rate and helping to contain inflationary pressure as the economy expands) rather than a short-term **substitute** for fiscal and monetary policy when rapid stabilisation of output or employment is required.

GIẢI THÍCH TIẾNG VIỆT

VN

Hạn chế lớn của chính sách trọng cung là **độ trễ thời gian**: xây hạ tầng, đào tạo lao động, hay đầu tư R&D thường mất nhiều năm mới phát huy tác dụng lên LRAS, trong khi chính sách tổng cầu có thể tác động nhanh hơn nhiều. Do đó, chính sách trọng cung phù hợp hơn như một công cụ **bổ sung dài hạn**, chứ không thể **thay thế** chính sách tổng cầu khi cần ổn định sản lượng/việc làm nhanh trong ngắn hạn.

9.7 Policy conflicts and trade-offs

Governments generally pursue four main macroeconomic objectives simultaneously: **satisfactory economic growth**, **low unemployment**, **low and stable inflation**, and **balance of payments equilibrium** (a sustainable current account position). In practice, policies aimed at one objective often worsen another, forcing governments to prioritise.

- **Expansionary policy to reduce unemployment** (fiscal or monetary) raises AD and, as firms move up the (Keynesian) AS curve, can generate **demand-pull inflation**, especially once the economy nears full employment. Rising incomes also tend to raise spending on imports (a higher marginal propensity to import), and if the resulting inflation makes domestically produced goods less competitive, exports may also suffer – worsening the **current account** of the balance of payments.
- **Contractionary policy to curb inflation** (higher interest rates, higher taxes, lower government spending) reduces AD , which can raise **unemployment** (as firms produce and hire less) and slow the rate of **economic growth** – the classic short-run cost of disinflation.

Objective pursued	Policy typically used	Objective(s) commonly worsened
Reduce unemployment / raise growth	Expansionary fiscal and/or monetary policy	Inflation may rise (demand-pull); current account may worsen (import surge, weaker competitiveness)
Reduce inflation	Contractionary fiscal and/or monetary policy	Unemployment may rise; economic growth may slow
Improve the current account	Deflationary demand policy, or a weaker exchange rate	Domestic growth/employment may suffer; a weaker currency can also raise import prices and add to inflation

Figure 9.5 Typical short-run conflicts between the four main macroeconomic objectives.

Because a single policy instrument (e.g. the interest rate) cannot simultaneously fix every objective, governments and central banks must often **prioritise** – for example, accepting somewhat higher inflation in order to protect jobs during a downturn, or accepting slower growth and higher unemployment for a period in order to bring inflation back under control. Supply-side policy is often presented as a longer-term way of easing these trade-offs (raising sustainable growth and employment without adding to inflation, since it expands $LRAS$ rather than just AD), but – as already noted – it works only slowly, so it cannot resolve urgent, short-run conflicts between objectives.

GIẢI THÍCH TIẾNG VIỆT

VN

Chính phủ thường theo đuổi đồng thời bốn mục tiêu vĩ mô: tăng trưởng, việc làm cao, lạm phát thấp & ổn định, và cân bằng cán cân thanh toán. Chính sách mở rộng để giảm thất nghiệp có thể gây lạm phát cầu kéo và làm xấu đi cán cân vãng lai (do nhập khẩu tăng, năng lực cạnh tranh giảm); chính sách thắt chặt để kiềm chế lạm phát có thể làm tăng thất nghiệp và chậm tăng trưởng. Vì một công cụ chính sách khó giải quyết đồng thời mọi mục tiêu, chính phủ thường phải **ưu tiên** giữa các mục tiêu, còn chính sách trọng cung chỉ giúp giảm bớt đánh đổi này trong **dài hạn**.

9.8 Practice question bank

Bài tập luyện tập

An economy has $MPC = 0.5$, $MPS = 0.2$, $MPT = 0.2$, $MPM = 0.1$. Government spending on infrastructure rises by \$45bn. Calculate MPW , the multiplier k , and the resulting change in national income ΔY .

Lời giải chi tiết

$MPW = MPS + MPT + MPM = 0.2 + 0.2 + 0.1 = 0.5$. $k = 1/MPW = 1/0.5 = 2$.
 $\Delta Y = k \times \Delta G = 2 \times 45 = \90bn .

Bài tập luyện tập

An economy's $MPC = 0.75$ (and this is the only leakage information given, so $MPW = 1 - MPC$). Government spending rises by \$80bn. Calculate the multiplier and the resulting change in national income.

Lời giải chi tiết

$MPW = 1 - MPC = 1 - 0.75 = 0.25$. $k = 1/0.25 = 4$. $\Delta Y = k \times \Delta G = 4 \times 80 = \320bn .

Bài tập luyện tập

A \$25bn rise in private investment leads to a \$125bn rise in national income. Calculate the multiplier and the marginal propensity to withdraw (MPW) implied by this result.

Lời giải chi tiết

$k = \Delta Y / \Delta I = 125/25 = 5$. Since $k = 1/MPW$, $MPW = 1/k = 1/5 = 0.2$.

Bài tập luyện tập

The multiplier in an economy is estimated at 2.5. Policymakers wish to raise national income by \$300bn to close a deflationary (recessionary) gap. Calculate the increase in injections (e.g. government spending) required to achieve this.

Lời giải chi tiết

$\Delta Y = k \times \Delta J \Rightarrow \Delta J = \Delta Y / k = 300/2.5 = \120bn .

Bài tập luyện tập

An economy has $MPS = 0.15$, $MPT = 0.25$, $MPM = 0.10$. Government spending rises by \$45bn. Calculate MPW , the multiplier, and the resulting change in national income.

Lời giải chi tiết

$MPW = 0.15 + 0.25 + 0.10 = 0.5$. $k = 1/0.5 = 2$. $\Delta Y = 2 \times 45 = \90bn .

Bài tập luyện tập

A firm's capital-output ratio (accelerator coefficient) is $v = 3$. Output rises from \$200m in Year 1 to \$230m in Year 2, \$255m in Year 3, and \$265m in Year 4. Calculate the required net investment in Years 2, 3 and 4, and comment on the trend.

Lời giải chi tiết

ΔY : Year 2 = $230 - 200 = 30$; Year 3 = $255 - 230 = 25$; Year 4 = $265 - 255 = 10$. Required net investment = $v\Delta Y$: Year 2 = $3 \times 30 = \$90\text{m}$; Year 3 = $3 \times 25 = \$75\text{m}$; Year 4 = $3 \times 10 = \$30\text{m}$. Although output rises every year ($200 \rightarrow 230 \rightarrow 255 \rightarrow 265$), the *rate* of growth is slowing (ΔY : 30, 25, 10), so required investment **falls** continuously ($90 \rightarrow 75 \rightarrow 30$) – a direct illustration of the accelerator principle.

Bài tập luyện tập

An economy has accelerator coefficient $v = 5$. National income is \$1,000bn in Year 1, \$1,040bn in Year 2, \$1,090bn in Year 3, and \$1,100bn in Year 4. Calculate ΔY and required net investment for Years 2–4, and explain what happens to investment between Year 3 and Year 4.

Lời giải chi tiết

ΔY : Year 2 = 40; Year 3 = 50; Year 4 = 10. Investment = $v\Delta Y$: Year 2 = $5 \times 40 = \$200\text{bn}$; Year 3 = $5 \times 50 = \$250\text{bn}$; Year 4 = $5 \times 10 = \$50\text{bn}$. Between Year 3 and Year 4, ΔY collapses from \$50bn to \$10bn (growth decelerates sharply), so required investment falls sharply from \$250bn to \$50bn – even though national income itself is still rising (from \$1,090bn to \$1,100bn).

Bài tập luyện tập

Explain why the accelerator principle implies that a slowdown in the *rate* of economic growth – rather than an absolute fall in output – can cause a fall in net investment. Use an example in your answer.

Lời giải chi tiết

Required net investment depends on the *change* in output (ΔY), not on the level of output itself, because firms only need to add to their capital stock when output needs to grow, in proportion to the fixed capital-output ratio v (Investment = $v \times \Delta Y$). If output growth decelerates – for example, ΔY falling from \$50bn to \$10bn per year, even though output is still rising each year – then $v \times \Delta Y$ falls correspondingly, so required net investment falls, even though output itself never actually declines. Only when ΔY turns negative (output actually falls) would this be described instead as a fall caused by an absolute contraction; the accelerator shows that investment can fall well *before* that point is reached, simply because growth is decelerating.

Bài tập luyện tập

Using the concepts of the multiplier and the accelerator together, explain why relatively small changes in the *rate* of economic growth can generate much larger swings in the business cycle (booms and slumps).

Lời giải chi tiết

A rise in national income raises required net investment via the accelerator (Investment = $v \times \Delta Y$); this extra investment is itself an injection, which the multiplier then magnifies into a further, larger rise in income ($\Delta Y = k \times \Delta J$) – which in turn triggers still more accelerator-induced investment, reinforcing the upswing. The same interaction operates powerfully in reverse: once the *rate of growth* of income slows (even before output falls), the accelerator reduces investment; the multiplier then magnifies this fall in an injection into a larger fall in income, which further reduces ΔY and triggers yet more cuts in investment. This mutually reinforcing multiplier–accelerator interaction is a key theoretical explanation for why economies tend to experience pronounced cyclical swings rather than smooth, stable growth.

Bài tập luyện tập

Which of the following is an example of an **automatic fiscal stabiliser**, as opposed to discretionary fiscal policy?

- (A) A government announces a new five-year infrastructure spending programme (C) A finance minister announces a cut in the rate of corporation tax in the annual Budget
- (B) Unemployment benefit payments rise automatically as a recession increases the number of people out of work (D) A government introduces a new subsidy scheme for renewable energy R&D

Lời giải chi tiết

Automatic stabilisers change without any new policy decision, purely as a result of the state of the economy. As a recession raises unemployment, benefit payments rise automatically under existing rules – no new decision is required. The other three options are all one-off, deliberate policy decisions (discretionary fiscal policy). Correct answer: **(B)**.

Bài tập luyện tập

A government starts the year with a national debt of \$500bn. During the year, it runs a budget deficit of \$35bn. Calculate the national debt at the end of the year, and explain the difference between the concepts of “budget deficit” and “national debt” illustrated by this example.

Lời giải chi tiết

End-of-year national debt = $500 + 35 = \$535\text{bn}$. The budget deficit (\$35bn) is a *flow* – the shortfall between spending and revenue *during this one year* – while the national debt (\$535bn) is a *stock* – the total accumulated amount owed at a point in time, which rises by exactly the amount of that year’s deficit (assuming no other debt-affecting factors).

Bài tập luyện tập

Using Figure 9.1 (or the data: annual deficits of \$30bn, \$25bn and \$20bn in Years 1–3, followed by a \$10bn surplus in Year 4), explain why the national debt continues to **rise** in Years 1–3 despite the annual deficit shrinking each year, and why it only **falls** in Year 4.

Lời giải chi tiết

As long as the government still runs a deficit (spending exceeds revenue), it must borrow additional funds during that year, and this new borrowing adds to the existing stock of national debt – so the debt keeps rising in Years 1–3, even though the size of the annual addition is getting smaller (\$30bn, then \$25bn, then \$20bn). The national debt only falls once the government achieves an actual budget **surplus** (Year 4), because a surplus means revenue exceeds spending, allowing the government to use the excess to repay part of the existing debt rather than add to it.

Bài tập luyện tập

Explain, using an appropriate example, how a persistently rising national debt could lead to a growing burden of debt-interest payments, and why this might constrain future fiscal policy.

Lời giải chi tiết

Each year's new borrowing adds to the total stock of national debt, so the amount of debt on which interest must be paid keeps growing. If, in addition, investors demand a higher interest rate to keep lending to a heavily indebted government (reflecting perceived higher risk), the interest *rate* paid on debt may also rise, compounding the effect. As the debt-interest bill grows, it absorbs a larger share of total government spending, leaving less room in the budget for other priorities such as healthcare, education or infrastructure, and may eventually force the government to raise taxes, cut other spending, or borrow even more just to cover the interest – a potential “debt spiral” that constrains the government's freedom to use discretionary fiscal policy in future.

Bài tập luyện tập

Evaluate the argument that expansionary fiscal policy, financed by government borrowing, will be less effective at raising national income than the simple multiplier model suggests, because of “crowding out.”

Lời giải chi tiết

The crowding-out argument holds that government borrowing to finance extra spending raises the demand for loanable funds, pushing up interest rates; higher interest rates then discourage private investment and interest-sensitive consumption, offsetting some (or, in the extreme monetarist case, potentially all) of the expansionary effect of higher G . This is a valid concern when the economy is already near full employment and the central bank does not accommodate the extra borrowing, since resources genuinely have to be bid away from private uses. However, in a recession with substantial spare capacity and low interest rates, the extra government spending mainly draws on idle resources and unused savings; interest rates need not rise significantly, and higher business confidence from the fiscal stimulus could even “crowd in” additional private investment. Overall, the strength of crowding out depends heavily on how close the economy is to full employment and on the central bank's response, so it should be evaluated case-by-case rather than assumed to always fully offset fiscal stimulus.

Bài tập luyện tập

Which of the following correctly describes the order of the monetary policy transmission mechanism following a **cut** in the central bank's policy interest rate?

- (A) AD rises → market interest rates fall → C and I rise → price level and output rise
- (B) Market interest rates fall → borrowing costs fall and the currency depreciates → C , I and net exports rise → AD rises → price level and output rise
- (C) The exchange rate appreciates → net exports fall → AD falls → price level and output fall
- (D) Price level falls → AD rises → market interest rates fall → C and I rise

Lời giải chi tiết

A policy rate cut first feeds through to market interest rates, which lowers borrowing costs (raising C and I) and, via reduced capital inflows, causes the currency to **depreciate** (raising net exports); these changes raise AD , which then raises the price level and (below full employment) real output. Correct answer: (B).

Bài tập luyện tập

The central bank raises its policy interest rate. Using the transmission mechanism, explain the likely chain of effects on the exchange rate, net exports, and aggregate demand.

Lời giải chi tiết

A higher domestic policy interest rate makes domestic financial assets more attractive to foreign investors seeking a higher return, raising demand for the domestic currency and causing it to **appreciate**. A stronger currency makes domestically produced exports more expensive for foreign buyers and imports cheaper for domestic buyers, so net exports ($X - M$) tend to **fall**. Since net exports are a component of $AD = C + I + G + (X - M)$ (alongside the direct fall in C and I from higher borrowing costs), AD shifts to the **left**, reducing the equilibrium price level and (below full employment) real output.

Bài tập luyện tập

Explain what quantitative easing (QE) is, and why a central bank might resort to QE rather than simply cutting its policy interest rate further.

Lời giải chi tiết

QE is an unconventional monetary policy tool in which the central bank creates new money and uses it to purchase financial assets (typically government bonds) from commercial banks and other institutions, injecting new money/reserves into the financial system, lowering longer-term interest rates and raising asset prices to encourage lending, spending and investment. A central bank turns to QE when its policy interest rate is already close to zero (the “zero lower bound”), so that further conventional rate cuts are no longer possible or would have little additional effect – QE provides an alternative channel for stimulating AD once this constraint is reached.

Bài tập luyện tập

Classify each of the following supply-side policies as **market-based** or **interventionist**: (a) privatising a state-owned telecommunications company; (b) government funding for a new national fibre-broadband network; (c) cutting the top marginal rate of income tax; (d) a government subsidy scheme for private-sector R&D into renewable energy; (e) reducing the generos-

ity and duration of unemployment benefits.

Lời giải chi tiết

(a) Market-based (privatisation). (b) Interventionist (direct government infrastructure spending). (c) Market-based (tax incentive). (d) Interventionist (R&D subsidy). (e) Market-based (reducing labour-market/benefit generosity to strengthen work incentives).

Bài tập luyện tập

A government wants to raise its economy's long-run productive capacity, but is particularly concerned that private firms will systematically under-invest in a new technology with large spillover benefits to the wider economy (e.g. basic scientific research). Which broad type of supply-side policy – market-based or interventionist – is most appropriate here, and why?

Lời giải chi tiết

An **interventionist** approach (e.g. direct public funding or R&D subsidies/tax credits) is most appropriate. Because the benefits of basic research often spill over to firms and society beyond the firm that funds it, an individual private firm cannot capture the full return on its investment, so left to the free market, research of this kind tends to be under-provided relative to the socially optimal level. Direct government funding or subsidy corrects this market failure in a way that simply removing regulation or cutting taxes (market-based tools) would not reliably achieve on its own.

Bài tập luyện tập

Explain why supply-side policies are generally considered a poor tool for closing a short-run deflationary (recessionary) output gap, even though they may be very effective in the long run.

Lời giải chi tiết

Supply-side policies work by raising the economy's productive capacity (shifting LRAS outward) through mechanisms such as improved education, new infrastructure, or R&D – all of which take years, sometimes decades, to feed through into higher productivity and output. A deflationary gap, by contrast, is a shortfall of current AD relative to the economy's *existing* productive capacity, which can typically be closed much faster using demand-side (fiscal or monetary) policy. Because of this time lag, supply-side policy cannot provide the rapid stabilisation needed to close a short-run gap, and is better used as a long-term complement to, rather than a substitute for, demand management.

Bài tập luyện tập

A central bank cuts interest rates sharply to reduce unemployment. Explain two ways in which this expansionary monetary policy could conflict with the government's other macroeconomic objectives.

Lời giải chi tiết

First, lower interest rates raise AD (via higher C and I); as the economy moves along the upward-sloping part of aggregate supply, this can generate **demand-pull inflation**, conflict-

ing with the objective of low and stable inflation. Second, a rate cut tends to cause the exchange rate to **depreciate** and stimulates domestic incomes; a weaker currency raises import prices (adding further to inflation) while rising incomes tend to raise spending on imports, both of which can worsen the **current account** of the balance of payments – conflicting with the balance-of-payments objective.

Bài tập luyện tập

A government raises interest rates and cuts public spending to bring down high inflation. Discuss the likely conflict with the objectives of economic growth and low unemployment.

Lời giải chi tiết

Higher interest rates raise borrowing costs and reduce planned C and I , while lower government spending directly removes an injection from the circular flow; together these reduce AD . As firms respond to lower demand by cutting output and, in turn, employment, **unemployment tends to rise** and the rate of **economic growth tends to slow** (or output may even fall). This illustrates the classic short-run trade-off between disinflation and the objectives of growth and low unemployment: bringing inflation down typically comes at the cost of higher unemployment and weaker growth, at least in the short run, until lower inflation itself potentially restores confidence and competitiveness.

Bài tập luyện tập

Using Figure 9.5 (the table of objective conflicts), explain why governments often cannot achieve all four main macroeconomic objectives – growth, low unemployment, low inflation, and balance of payments equilibrium – simultaneously.

Lời giải chi tiết

As Figure 9.5 shows, the demand-side policies used to pursue one objective typically have side effects on the others: expansionary policy aimed at reducing unemployment or boosting growth tends to raise inflation and can worsen the current account (via higher import spending and reduced competitiveness), while contractionary policy aimed at reducing inflation tends to raise unemployment and slow growth. Because a single policy instrument moves AD in one direction only, it cannot simultaneously push some objectives up and others down as required; governments must therefore weigh the relative importance of each objective and often accept some deterioration in one (e.g. slightly higher inflation) in order to protect progress on another (e.g. lower unemployment) – particularly in the short run, before supply-side policy (which works more slowly) can ease these trade-offs.

Bài tập luyện tập

An economy has $MPC = 0.6$ and an accelerator coefficient $v = 2$. Government investment spending rises by \$50bn. (a) Calculate the resulting change in national income using the multiplier. (b) Using your answer to (a) and the accelerator principle, calculate the induced net investment this rise in national income would itself generate.

Lời giải chi tiết

- (a) $MPW = 1 - MPC = 1 - 0.6 = 0.4$, so $k = 1/0.4 = 2.5$. $\Delta Y = k \times \Delta G = 2.5 \times 50 = \125bn .
(b) Induced net investment (accelerator) $= v \times \Delta Y = 2 \times 125 = \250bn . This illustrates the multiplier-accelerator interaction: the initial \$50bn injection is magnified by the multiplier into a \$125bn rise in income, which in turn (via the accelerator) could induce a further \$250bn of new investment, itself a fresh injection that the multiplier would then magnify again.

Bài tập luyện tập

Essay outline. “Evaluate whether fiscal policy or monetary policy is more effective at closing a deflationary (recessionary) gap.” Sketch a balanced essay-style answer.

Lời giải chi tiết

A strong answer would cover: (1) **Speed and time lags** – monetary policy decisions can often be made and implemented faster (e.g. a central bank rate cut), while fiscal policy may face longer decision (legislative) and implementation lags for new spending programmes, though tax changes can act quickly. (2) **Size of the multiplier** – government spending increases (especially on investment/infrastructure) may have a larger, more direct multiplier effect on AD than a rate cut, whose effect depends on how responsive C and I actually are to lower interest rates (interest-rate sensitivity, business/consumer confidence). (3) **Effectiveness near the zero lower bound** – if interest rates are already very low, conventional monetary policy loses traction and QE (or fiscal policy) may be needed instead. (4) **Crowding out** – expansionary fiscal policy financed by borrowing may raise interest rates and partially crowd out private investment, though this is less likely with substantial spare capacity in a deep recession. (5) **Political and institutional factors** – fiscal policy changes typically require legislative approval and can be politically difficult to reverse (making discretionary fiscal policy less flexible), whereas independent central banks can adjust interest rates more nimbly and predictably. A balanced conclusion should note that in practice governments typically use *both* tools together, and that relative effectiveness depends on the depth of the recession, the state of interest rates, and the credibility/independence of each policy actor.

Bài tập luyện tập

Essay outline. “Discuss the extent to which supply-side policies alone can enable a government to achieve low unemployment and low inflation simultaneously, without demand-side management.” Sketch a balanced essay-style answer.

Lời giải chi tiết

A strong answer would cover: (1) **The theoretical case for supply-side policy** – by shifting LRAS outward (via education/training, infrastructure, R&D, or market-based reforms improving labour/product market efficiency), an economy can sustain higher output and lower structural unemployment *without* generating extra inflationary pressure, since actual output growth is matched by growth in potential output – unlike demand-side expansion, which risks demand-pull inflation once spare capacity is used up. (2) **The time-lag problem** – supply-side policies take years to raise LRAS meaningfully, so they cannot address unemployment or inflation that arises from short-run demand shocks (e.g. a sudden recession or an oil-price shock) in a timely way. (3) **Limits of specific measures** – market-based reforms (e.g. weakening union power) may reduce unemployment but could be judged to worsen income distribution or job security; interventionist measures (e.g. industrial policy) may fail if poorly targeted or if gov-

ernment lacks the information to “pick winners.” (4) **Demand-side shocks still require demand-side tools** – a sudden collapse in AD (e.g. a financial crisis) raises cyclical unemployment that supply-side policy alone cannot quickly reverse; fiscal/monetary policy remains necessary to stabilise AD in the short run. A balanced conclusion should argue that supply-side policy is a valuable long-run complement – potentially easing the unemployment–inflation trade-off over time – but cannot, by itself, replace demand management in responding to short-run economic fluctuations.

International Trade, Exchange Rates and the Balance of Payments

Mục tiêu Unit: Lợi thế tuyệt đối và lợi thế so sánh; định luật lợi thế so sánh dựa trên chi phí cơ hội thấp nhất và các giả định/hạn chế của mô hình đơn giản. Tỷ lệ trao đổi thương mại (terms of trade): công thức tính, nguyên nhân thay đổi, và mối quan hệ với cán cân vãng lai. Bảo hộ mậu dịch: các công cụ (thuế quan, hạn ngạch, trợ cấp, cấm vận), lập luận ủng hộ/phản đối, và phân tích tổn thất phúc lợi từ thuế quan bằng đồ thị cung-cầu. Các khối thương mại (khu vực mậu dịch tự do, liên minh thuế quan, thị trường chung) và vai trò của Tổ chức Thương mại Thế giới (WTO); hiệu ứng tạo lập thương mại và chuyển hướng thương mại. [A2] Các chế độ tỷ giá hối đoái: thả nổi, cố định, thả nổi có quản lý – cách xác định tỷ giá, nhu cầu dự trữ ngoại hối, và tác động đến lạm phát nhập khẩu, quyền tự chủ chính sách. Cán cân thanh toán: cán cân vãng lai và cán cân vốn/tài chính, phân loại giao dịch; điều kiện Marshall-Lerner và hiệu ứng đường cong chữ J. [A2] Các chính sách điều chỉnh thâm hụt cán cân thanh toán: chính sách giảm chi tiêu (expenditure-reducing) và chính sách chuyển hướng chi tiêu (expenditure-switching).

10.1 Absolute and comparative advantage

10.1.1 The case for specialisation and trade

International trade allows countries to consume combinations of goods and services beyond what they could produce on their own, by specialising in producing what they are relatively good at and exchanging the surplus with other countries. The theoretical foundation for this gain from trade rests on the distinction between **absolute** and **comparative** advantage.

A country has an **absolute advantage** in producing a good if it can produce *more output* of that good than another country, using the *same quantity of resources* (e.g. the same one worker-day).

Ví dụ mẫu • Worked example – Absolute advantage

A worker in Country X can produce 10 cars *or* 20 bicycles per day. A worker in Country Y can produce 6 cars *or* 8 bicycles per day. Country X can produce more of *both* goods than Country Y with the same one worker-day of resources, so Country X has an absolute advantage in **both** cars and bicycles.

GIẢI THÍCH TIẾNG VIỆT

VN

Lợi thế tuyệt đối: một quốc gia sản xuất được *nhiều hơn* một loại hàng hoá so với quốc gia khác, sử dụng *cùng một lượng nguồn lực*. Trong ví dụ trên, Quốc gia X sản xuất được nhiều xe hơi hơn (10 so với 6) và nhiều xe đạp hơn (20 so với 8) Quốc gia Y với cùng một ngày công lao động, nên X có lợi thế tuyệt đối ở **cả hai** mặt hàng.

However, as the classical economist David Ricardo showed, absolute advantage is *not* what determines whether trade is mutually beneficial, nor which good each country should specialise in. What matters is comparative advantage.

A2 Extension – comparative advantage

[A2 extension] The **law of comparative advantage**: a country should specialise in the good with the **lowest opportunity cost**, i.e. the good it can produce by giving up the *least* of the other good, even if it has no absolute advantage in either good. Mutually beneficial trade is possible between two countries whenever their opportunity-cost ratios differ, because each country can then obtain the other good more cheaply through trade than by producing it domestically.

Ví dụ mẫu · Worked example – Comparative advantage

Country A: 60 Cloth or 30 Wine per worker-day. Country B: 40 Cloth or 40 Wine. Opp cost of 1 Cloth: A = 0.5 Wine, B = 1 Wine. A has CA in Cloth; B has CA in Wine.

GIẢI THÍCH TIẾNG VIỆT

VN

Chi phí cơ hội của 1 đơn vị Vải ở A = $30/60 = 0.5$ Rượu; ở B = $40/40 = 1$ Rượu. Vì A có chi phí cơ hội sản xuất Vải thấp hơn nên A có **lợi thế so sánh** về Vải; ngược lại B có chi phí cơ hội sản xuất Rượu thấp hơn (1 Vải so với 2 Vải của A) nên B có lợi thế so sánh về Rượu. Mỗi nước nên chuyên môn hoá vào mặt hàng mình có chi phí cơ hội thấp hơn, dù không nhất thiết có lợi thế tuyệt đối.

10.1.2 Absolute advantage in both goods does not rule out comparative advantage

Return to the Country X / Country Y example above, where X had an absolute advantage in *both* cars and bicycles. Comparative advantage is still determined purely by opportunity costs:

$$\text{Opp. cost of 1 car, X} = \frac{20}{10} = 2 \text{ bicycles} \quad \text{Opp. cost of 1 car, Y} = \frac{8}{6} \approx 1.33 \text{ bicycles}$$

$$\text{Opp. cost of 1 bicycle, X} = \frac{10}{20} = 0.5 \text{ cars} \quad \text{Opp. cost of 1 bicycle, Y} = \frac{6}{8} = 0.75 \text{ cars}$$

Because Y's opportunity cost of a car (1.33 bicycles) is *lower* than X's (2 bicycles), Y has a **comparative advantage in cars** – despite having an absolute disadvantage in producing cars. X, in turn, has the lower opportunity cost of a bicycle (0.5 cars versus Y's 0.75 cars), giving X a comparative advantage in bicycles. Mutually beneficial trade is therefore still possible: Y should specialise in cars and X in bicycles, even though X is absolutely more productive at making both goods.

GIẢI THÍCH TIẾNG VIỆT

VN

Dù Quốc gia X có lợi thế tuyệt đối ở cả hai mặt hàng, lợi thế so sánh vẫn được xác định theo chi phí cơ hội thấp nhất. Y có chi phí cơ hội sản xuất xe hơi thấp hơn (1.33 xe đạp so với 2 xe đạp của X) nên Y có **lợi thế so sánh** về xe hơi dù không có lợi thế tuyệt đối. Đây là điểm mấu chốt của định luật lợi thế so sánh: một quốc gia yếu hơn tuyệt đối ở mọi mặt hàng vẫn luôn có lợi thế so sánh ở ít nhất một mặt hàng, và thương mại vẫn có lợi cho cả hai bên.

10.1.3 A second worked example**Ví dụ mẫu · Worked example – Comparative advantage (second example)**

Country P: 50 Rice or 100 Cotton per worker-day. Country Q: 80 Rice or 80 Cotton per worker-day. Determine which country has a comparative advantage in which good.

$$\text{Opp. cost of 1 Rice, P} = \frac{100}{50} = 2 \text{ Cotton} \quad \text{Opp. cost of 1 Rice, Q} = \frac{80}{80} = 1 \text{ Cotton}$$

$$\text{Opp. cost of 1 Cotton, P} = \frac{50}{100} = 0.5 \text{ Rice} \quad \text{Opp. cost of 1 Cotton, Q} = \frac{80}{80} = 1 \text{ Rice}$$

Q has the lower opportunity cost of Rice (1 Cotton vs P's 2 Cotton), so **Q has a comparative advantage in Rice**. P has the lower opportunity cost of Cotton (0.5 Rice vs Q's 1 Rice), so **P has a comparative advantage in Cotton**. P should specialise in Cotton and Q in Rice, then trade.

GIẢI THÍCH TIẾNG VIỆT

VN

Q có chi phí cơ hội sản xuất Gạo thấp hơn (1 Bông so với 2 Bông của P) nên Q có lợi thế so sánh về Gạo; P có chi phí cơ hội sản xuất Bông thấp hơn (0.5 Gạo so với 1 Gạo của Q) nên P có lợi thế so sánh về Bông. P nên chuyên môn hoá Bông, Q nên chuyên môn hoá Gạo, sau đó trao đổi với nhau.

For trade between P and Q to benefit *both* countries, the international terms on which Rice and Cotton are exchanged must lie *between* the two countries' domestic opportunity-cost ratios – here, between 1 Rice = 1 Cotton (Q's domestic ratio) and 1 Rice = 2 Cotton (P's domestic ratio). At any exchange ratio strictly between these two limits (for example, 1 Rice = 1.5 Cotton), both P and Q can obtain the good they do not produce more cheaply through trade than by producing it themselves.

10.1.4 Assumptions and limitations of the simple model

The simple comparative-advantage model rests on several restrictive assumptions, which limit its real-world applicability:

- **Constant opportunity costs:** the model assumes a constant trade-off between the two goods (a straight-line production possibility curve), whereas in reality opportunity costs typically *increase* as a country specialises further (factors of production are not equally suited to every use).
- **No transport costs:** moving goods between countries is assumed to be costless, when in reality freight, insurance and time costs can offset or even eliminate the theoretical gains from specialisation.
- **Factors of production are immobile between countries:** labour and capital are assumed to move freely *within* a country to the specialised industry, but not to move *between* countries at all – in reality some (though not perfect) international factor mobility exists.
- **Only two countries and two goods:** real-world trade involves many countries and goods simultaneously, with more complex patterns of specialisation.
- **Free trade with no barriers:** the model ignores tariffs, quotas and other protectionist measures that can distort the pattern of trade predicted by comparative advantage.
- **Ignores non-price factors:** the model focuses purely on cost/price, ignoring product quality, branding, reliability of supply and other non-price factors that also influence real-world trade patterns.

GIẢI THÍCH TIẾNG VIỆT

VN

Giả định/hạn chế của mô hình lợi thế so sánh đơn giản: chi phí cơ hội không đổi (thực tế thường tăng dần); bỏ qua chi phí vận chuyển; giả định yếu tố sản xuất không di chuyển được giữa các quốc gia (dù di chuyển tự do trong nước); chỉ xét hai quốc gia/hai hàng hoá; giả định thương mại hoàn toàn tự do (không thuế quan, hạn ngạch); và bỏ qua các yếu tố phi giá cả như chất lượng, thương hiệu, độ tin cậy của nguồn cung.

10.2 Terms of trade

10.2.1 Defining and measuring the terms of trade

The **terms of trade (ToT)** measure the rate at which a country's exports exchange for its imports, using an index number:

$$\text{ToT} = \frac{\text{index of export prices}}{\text{index of import prices}} \times 100$$

A **rise** in the ToT index means the terms of trade have **improved**: each unit of exports now buys *more* units of imports than before. A **fall** in the index means the terms of trade have **worsened**: each unit of exports now buys *fewer* imports than before.

Ví dụ mẫu · Worked example – Calculating the terms of trade

In Year 1, a country's export price index = 100 and import price index = 100, so $\text{ToT} = \frac{100}{100} \times 100 = 100$. In Year 2, the export price index rises to 120 while the import price index stays at 100. Calculate the ToT in Year 2 and interpret the change.

$$\text{ToT (Year 2)} = \frac{120}{100} \times 100 = 120$$

The terms of trade have risen from 100 to 120, a rise of 20% – the terms of trade have **improved**: for a given quantity of exports sold, this country can now purchase 20% more imports than it could in Year 1, because export prices have risen relative to import prices.

GIẢI THÍCH TIẾNG VIỆT

VN

Chỉ số ToT tăng từ 100 lên 120 (tăng 20%) nghĩa là tỷ lệ trao đổi thương mại đã **cải thiện**: với cùng một lượng hàng xuất khẩu, quốc gia này giờ mua được nhiều hơn 20% lượng hàng nhập khẩu so với Năm 1, vì giá xuất khẩu tăng nhanh hơn giá nhập khẩu.

10.2.2 Causes of changes in the terms of trade

- **Relative inflation rates:** if domestic inflation runs higher than inflation in trading-partner countries, export prices rise faster than import prices, pushing the ToT index up (an improvement, in index terms).
- **Exchange rate movements:** [A2 extension] an appreciation of the domestic currency raises the foreign-currency price of exports and lowers the domestic-currency price of imports, tending to raise (improve) the ToT index; a depreciation has the opposite effect, lowering the ToT index.
- **Relative productivity growth:** faster productivity growth in export industries lowers unit production costs, which can allow firms to hold down or reduce export prices to remain competitive – this can actually *lower* the ToT index even as the country's underlying competitiveness and export volumes improve.

10.2.3 The terms of trade and the current account: a rise is not automatically “good”

It is tempting to assume that a rise (improvement) in the terms of trade is always beneficial, since each unit of exports buys more imports. However, whether an improvement is actually good for the economy depends on *why* it occurred:

- If the ToT rises because of **stronger world demand** for the country's exports (a genuine improvement in the price consumers abroad are willing to pay), this is unambiguously beneficial: export revenue rises for a given volume of exports sold.
- If the ToT rises mainly because **rising domestic costs** (e.g. cost-push inflation, rising wages) are

forcing exporters to charge higher prices, this can *reduce* the price-competitiveness of exports abroad. Export volumes may then fall as foreign buyers switch to cheaper substitutes, and the current account balance can actually **worsen** even as the ToT index rises, if the fall in export volume outweighs the rise in export price.

This means the effect of a ToT change on the current account depends on the price elasticity of demand for exports and imports, in a manner closely related to the Marshall–Lerner condition discussed later in this chapter.

GIẢI THÍCH TIẾNG VIỆT

VN

Nguyên nhân thay đổi ToT: lạm phát tương đối, biến động tỷ giá, và tăng trưởng năng suất tương đối. ToT tăng **không phải lúc nào cũng tốt**: nếu do nhu cầu thế giới tăng thì có lợi; nhưng nếu do chi phí trong nước tăng (lạm phát chi phí đẩy) buộc giá xuất khẩu tăng, hàng xuất khẩu có thể mất tính cạnh tranh, khối lượng xuất khẩu giảm, khiến cán cân vãng lai xấu đi dù chỉ số ToT tăng.

(!) Lỗi thường gặp: Do not confuse a **rise** in the terms-of-trade index with a rise in the *value* of exports, or automatically treat a rise as “good news.” A rise in ToT (export prices rising relative to import prices) only raises export revenue and benefits the current account if export *volumes* do not fall by a proportionately larger amount. Always check whether the change in the ToT stems from stronger demand for exports (favourable) or from rising domestic costs of production (potentially unfavourable for competitiveness) before evaluating its overall effect on the economy.

10.3 Protectionism

10.3.1 Tools and arguments

Protectionism tools: tariffs, quotas, subsidies, embargoes. Arguments for/against:

- **For:** protects infant industries until they achieve economies of scale; protects domestic jobs from lower-cost foreign competition in the short run; raises government revenue (tariffs); can be used against dumping (foreign firms selling below cost) or to correct a current account deficit; protects strategic industries (e.g. food, defence, energy) from over-reliance on imports.
- **Against:** raises prices for domestic consumers and reduces choice; invites retaliation from trading partners, risking a damaging trade war; protects inefficient domestic firms from competition, reducing the incentive to innovate and cut costs; creates deadweight (welfare) losses to the economy as a whole; contradicts the principle of comparative advantage, so global (and often domestic) output and living standards are lower than under free trade.

GIẢI THÍCH TIẾNG VIỆT

VN

Công cụ bảo hộ mậu dịch: thuế quan, hạn ngạch, trợ cấp, cấm vận. Lập luận ủng hộ: bảo vệ ngành công nghiệp non trẻ, bảo vệ việc làm trong nước, tăng thu ngân sách, chống bán phá giá, bảo vệ ngành chiến lược. Lập luận phản đối: giá cao hơn cho người tiêu dùng, nguy cơ trả đũa thương mại, bảo vệ doanh nghiệp kém hiệu quả, gây tổn thất phúc lợi (deadweight loss), và đi ngược nguyên tắc lợi thế so sánh khiến sản lượng toàn cầu thấp hơn.

10.3.2 The welfare effects of a tariff: a diagrammatic analysis

[A2 extension] Figure 10.1 shows the standard analysis of a tariff imposed by a small, price-taking country that faces a given world price P_w (world supply is assumed perfectly elastic at P_w). Before

the tariff, domestic consumers buy Q_{d1} at price P_w , of which domestic firms supply only Q_{s1} ; the gap $(Q_{d1} - Q_{s1})$ is met by imports. A tariff of t per unit raises the domestic price to $P_w + t$. Domestic consumption falls to Q_{d2} , domestic production rises to Q_{s2} , and imports shrink to $(Q_{d2} - Q_{s2})$.

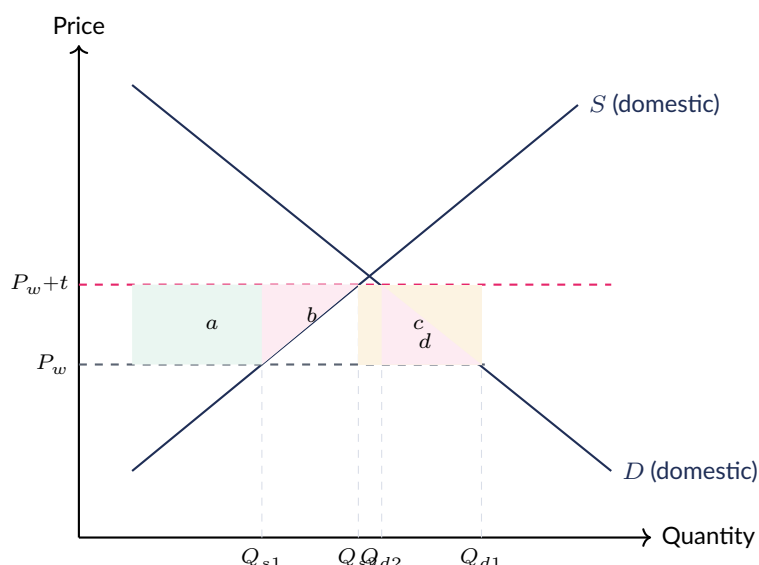


Figure 10.1 A tariff raises the domestic price from P_w to $P_w + t$: area a is the transfer from consumers to producers (producer surplus gain), b and d are deadweight (welfare) losses – production and consumption distortions respectively – and c is government tariff revenue.

Ví dụ mẫu · Worked example – Tariff welfare effects

Domestic demand: $Q_d = 500 - 5P$. Domestic supply: $Q_s = 50 + 5P$. World price $P_w = \$20$ per unit (small country, world supply perfectly elastic). A tariff of $t = \$10$ per unit is imposed, raising the domestic price to $\$30$. Calculate the change in consumer surplus, producer surplus, government revenue and deadweight loss.

Before tariff ($P = \$20$): $Q_{d1} = 500 - 100 = 400$; $Q_{s1} = 50 + 100 = 150$; imports = 250.

After tariff ($P = \$30$): $Q_{d2} = 500 - 150 = 350$; $Q_{s2} = 50 + 150 = 200$; imports = 150.

$$\text{Consumer surplus loss} = \frac{1}{2}(Q_{d1} + Q_{d2}) \times t = \frac{1}{2}(400 + 350) \times 10 = \$3,750$$

$$\text{Producer surplus gain} = \frac{1}{2}(Q_{s1} + Q_{s2}) \times t = \frac{1}{2}(150 + 200) \times 10 = \$1,750$$

$$\text{Government tariff revenue} = (Q_{d2} - Q_{s2}) \times t = 150 \times 10 = \$1,500$$

$$\text{Deadweight loss} = 3,750 - 1,750 - 1,500 = \$500$$

The \$500 deadweight loss splits into a **production distortion** (area b) of $\frac{1}{2}(Q_{s2} - Q_{s1}) \times t = \frac{1}{2}(50)(10) = \250 – the cost of domestic firms producing units 150–200 less efficiently than the world price – and a **consumption distortion** (area d) of $\frac{1}{2}(Q_{d1} - Q_{d2}) \times t = \frac{1}{2}(50)(10) = \250 – the loss from consumers being priced out of units 350–400 that they valued above the world price.

GIẢI THÍCH TIẾNG VIỆT

VN

Trước thuế quan ($P = \$20$): tiêu dùng trong nước = 400, sản xuất trong nước = 150, nhập khẩu = 250. Sau thuế quan \$10 ($P = \30): tiêu dùng = 350, sản xuất = 200, nhập khẩu = 150. Thặng dư tiêu dùng mất = \$3,750; thặng dư sản xuất tăng = \$1,750; doanh thu thuế quan của chính phủ = \$1,500; tổn thất phúc lợi ròng (deadweight loss) = \$500, gồm méo mó sản xuất \$250 và méo mó tiêu dùng \$250.

10.4 Trading blocs and the World Trade Organization

10.4.1 Levels of regional integration

Countries often pursue trade liberalisation with a group of neighbouring or partner countries before (or instead of) full global free trade, forming a **trading bloc**. These arrangements come in increasing degrees of integration:

Arrangement	Definition	Example-style illustration
Free trade area (FTA)	Member countries remove tariffs and quotas on trade <i>between</i> themselves, but each member keeps its own independent tariffs on trade with non-member countries.	A group of countries agreeing to trade cars and electronics tariff-free with each other while each still sets its own tariff on imports from outside the bloc.
Customs union	An FTA plus a common external tariff applied by all members to imports from non-member countries.	The same group of countries additionally agreeing to charge an identical tariff rate on steel imported from any country outside the bloc.
Common market	A customs union plus free movement of factors of production (labour and capital) between member countries, alongside free movement of goods and services.	Workers and firms from any member country being free to live, work and invest in any other member country without restriction.

Table 10.1 Trading blocs in increasing order of economic integration.

GIẢI THÍCH TIẾNG VIỆT

VN Ba mức độ hội nhập kinh tế khu vực, từ thấp đến cao: **khu vực mậu dịch tự do (FTA)** – xoá bỏ thuế quan nội khối nhưng mỗi nước vẫn giữ thuế quan riêng với bên ngoài; **liên minh thuế quan** – FTA cộng thêm thuế quan chung áp dụng cho hàng nhập khẩu từ ngoài khối; **thị trường chung** – liên minh thuế quan cộng thêm tự do di chuyển lao động và vốn giữa các nước thành viên.

10.4.2 The role of the World Trade Organization

The **World Trade Organization (WTO)** is the principal international institution overseeing global trade. Its core functions are to promote **multilateral trade liberalisation** by negotiating rounds of tariff and non-tariff barrier reductions among its member countries, to set and monitor global trading rules that all members agree to follow, and to provide a formal **dispute settlement** mechanism through which member countries can resolve trade disagreements (e.g. allegations of illegal dumping or subsidies) without resorting to unilateral retaliation.

10.4.3 Trade creation versus trade diversion

When a country joins a customs union, the resulting change in trade patterns can be welfare-improving or welfare-reducing, depending on where the newly-imported goods now come from:

- **Trade creation** occurs when the removal of internal tariffs shifts consumption away from a relatively high-cost *domestic* producer towards a lower-cost producer *within* the customs union. This raises overall efficiency and welfare, since production shifts towards the genuinely lowest-cost source.

- **Trade diversion** occurs when the common external tariff shifts a country's import source away from a lower-cost producer *outside* the union towards a higher-cost producer *inside* the union (which now enjoys tariff-free access), purely because of the tariff structure rather than genuine cost efficiency. This *reduces* overall efficiency and welfare compared with unrestricted free trade.

GIẢI THÍCH TIẾNG VIỆT

VN

WTO thúc đẩy tự do hoá thương mại đa phương và cung cấp cơ chế giải quyết tranh chấp thương mại giữa các quốc gia thành viên. Khi gia nhập liên minh thuế quan: **tạo lập thương mại** (trade creation) xảy ra khi tiêu dùng chuyển từ nhà sản xuất trong nước chi phí cao sang nhà sản xuất chi phí thấp hơn *trong khối* – có lợi cho phúc lợi; **chuyển hướng thương mại** (trade diversion) xảy ra khi nguồn nhập khẩu chuyển từ nước ngoài khối chi phí thấp sang nước trong khối chi phí cao hơn chỉ vì thuế quan chung – gây hại cho phúc lợi.

10.5 Exchange rate systems

10.5.1 The floating exchange rate

[A2 extension] Under a **floating exchange rate** system, the value of a currency is determined purely by the market forces of demand for and supply of that currency, with no central bank intervention.

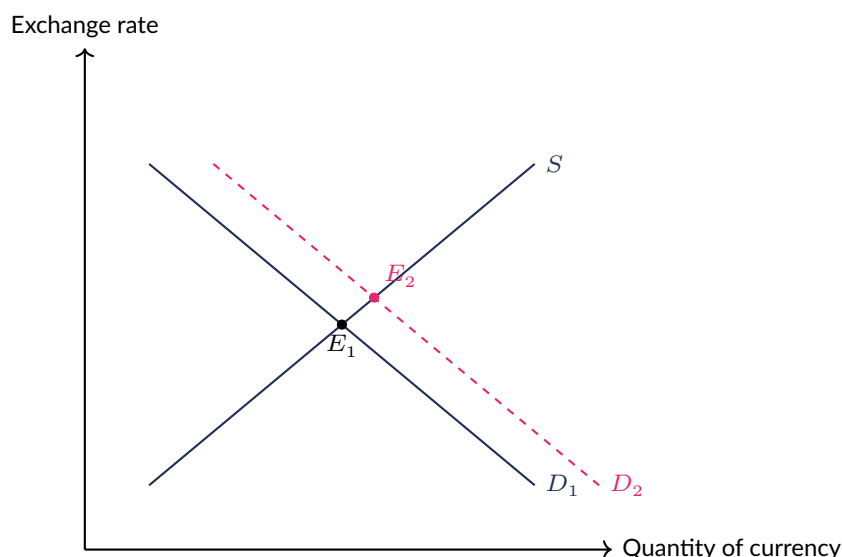


Figure 10.2 Higher exports or capital inflows shift demand for the currency from D_1 to D_2 , raising the equilibrium exchange rate from E_1 to E_2 – an appreciation.

Ví dụ mẫu · Worked example – Exchange rate change

\$1 = 24,000 to \$1 = 25,200. $\% \Delta = 5\%$. Local currency depreciated.

GIẢI THÍCH TIẾNG VIỆT

VN

Cần nhiều hơn đơn vị nội tệ (25.200 thay vì 24.000) để đổi lấy 1 đô-la Mỹ, nghĩa là nội tệ đã **mất giá (depreciate)** 5%; ngoại tệ (đô-la) tăng giá tương ứng. Nếu tỷ giá thay đổi theo chiều ngược lại (cần ít nội tệ hơn để đổi 1 đô-la), nội tệ sẽ **lên giá (appreciate)**.

(!) Lỗi thường gặp: A very common exam error is reversing the direction of appreciation/depreciation when the exchange rate is quoted as “units of domestic currency per unit of foreign currency” (e.g. VND per USD), as in the example above. If it now takes *more* domestic currency

to buy one unit of foreign currency, the domestic currency has **depreciated** (weakened) – not appreciated. Always check first which currency is being expressed “per unit” of the other before deciding whether a numerical rise in the quoted rate is an appreciation or a depreciation.

10.5.2 Comparing exchange rate systems

Besides a pure float, a country may fix its currency to another currency (or basket) at a set rate, or adopt a managed float in which the market largely sets the rate but the central bank intervenes occasionally to influence it.

Criterion	Fixed	Floating	Managed float
How rate is determined	Set and maintained by the government/central bank at a chosen level	Purely by market demand and supply, with no intervention	Mainly by market forces, with occasional central bank intervention
Reserves/intervention needed	Large foreign exchange reserves required to defend the fixed rate	None required in principle	Moderate reserves needed for occasional intervention
Effect on import inflation	Stable, predictable import prices (no exchange-rate pass-through)	Import prices fluctuate as the rate moves; depreciation raises import prices	Import-price volatility reduced but not eliminated
Effect on policy autonomy	Monetary policy tied to defending the fixed rate; little independent autonomy	Full monetary policy independence, since the rate absorbs external shocks	Some policy independence retained, though intervention can constrain it
Effect on trade/business certainty	High certainty for exporters/importers on future costs and revenues	Lower certainty; firms face exchange rate risk and may need to hedge	Intermediate certainty; smoother rate movements than a pure float

Table 10.2 Fixed, floating and managed float exchange rate systems compared.

A **fixed** exchange rate gives businesses certainty and can act as a discipline against inflationary domestic policy, but requires large reserves to defend and sacrifices independent monetary policy (interest rates must be set to maintain the peg, not to manage domestic inflation or unemployment), and can become misaligned with underlying economic fundamentals, risking a costly speculative attack. A **floating** rate frees up monetary policy for domestic objectives and automatically helps absorb external shocks (e.g. a terms-of-trade shock is partly cushioned by a currency movement), but exposes firms engaged in trade to exchange-rate risk and can be volatile, particularly for economies dependent on volatile capital flows. A **managed float** attempts to capture some of the flexibility of floating while smoothing out the most disruptive short-term swings through occasional, targeted intervention, at the cost of needing to hold at least some reserves and of some loss of transparency about the “true” market rate.

GIẢI THÍCH TIẾNG VIỆT

VN

Chế độ **cố định**: chắc chắn cho doanh nghiệp, nhưng cần dự trữ ngoại hối lớn và mất quyền tự chủ chính sách tiền tệ. Chế độ **thả nổi**: tự chủ chính sách tiền tệ hoàn toàn, tự động hấp thụ cú sốc bên ngoài, nhưng biến động và rủi ro tỷ giá cao hơn cho doanh nghiệp xuất nhập khẩu. Chế độ **thả nổi có quản lý**: kết hợp giữa hai chế độ trên – thị trường quyết định phần lớn nhưng ngân hàng trung ương can thiệp khi cần để làm dịu biến động mạnh.

10.6 The balance of payments

10.6.1 Structure of the balance of payments

The **balance of payments** is a record of all financial transactions between a country's residents and the rest of the world over a given period. Its two main components are:

- **Current account:** records trade in goods (visible trade) and services (invisible trade), plus primary income (e.g. interest, profit and dividends earned on foreign investments) and secondary income (e.g. remittances, foreign aid, other transfers).
- **Capital/financial account:** records cross-border transactions in *assets* – the capital account covers items like transfers of fixed assets and debt forgiveness; the financial account covers foreign direct investment (FDI), portfolio investment (shares and bonds) and changes in official reserve assets.

Ví dụ mẫu · Worked example – Classifying balance of payments transactions

Classify each of the following transactions into the correct balance of payments component:

1. A domestic car manufacturer exports \$50m of vehicles to a foreign buyer.
2. A resident receives \$2m in dividend income from shares held in a foreign company.
3. A multinational company builds a new \$300m factory in the country (foreign direct investment).
4. Migrant workers abroad send \$15m in remittances back to family in the home country.
5. The central bank sells \$100m of foreign currency reserves to support the domestic currency.
6. A domestic firm buys \$40m of foreign government bonds (portfolio investment).

Transaction	Classification
(1) Vehicle exports	Current account – trade in goods (credit)
(2) Foreign dividend income	Current account – primary income (credit)
(3) Foreign direct investment inflow	Financial account – FDI (credit)
(4) Remittances received	Current account – secondary income (credit)
(5) Sale of foreign reserves	Financial account – change in reserve assets
(6) Purchase of foreign bonds	Financial account – portfolio investment (debit, capital outflow)

Table 10.3 Classifying six diverse transactions into balance of payments components.

GIẢI THÍCH TIẾNG VIỆT

VN

Cán cân thanh toán gồm **cán cân vãng lai** (hàng hoá, dịch vụ, thu nhập sơ cấp, thu nhập thứ cấp) và **cán cân vốn/tài chính** (đầu tư trực tiếp FDI, đầu tư gián tiếp, dự trữ ngoại hối). Ví dụ phân loại: xuất khẩu ô tô và cổ tức nhận từ nước ngoài thuộc cán cân vãng lai; FDI, kiều hối vào (thực ra kiều hối thuộc vãng lai – thu nhập thứ cấp), bán dự trữ ngoại hối, và mua trái phiếu nước ngoài đều thuộc cán cân vốn/tài chính (trừ kiều hối).

10.6.2 The Marshall–Lerner condition

[A2 extension] A depreciation (or devaluation) of the currency makes exports cheaper in foreign-currency terms and imports more expensive in domestic-currency terms. Whether this actually *improves* the current account balance depends on how responsive export and import volumes are to these price changes.

The **Marshall–Lerner condition** states that a depreciation will improve the current account balance only if the sum of the price elasticities of demand for exports and imports (in absolute value) exceeds 1:

$$|PED_x| + |PED_m| > 1$$

If the condition is **not** satisfied (the sum is less than 1), demand for exports and imports is too price-inelastic, and a depreciation will actually **worsen** the current account balance in the short run, because the adverse effect of higher import prices on the import bill (with import volumes barely falling) outweighs any gain from higher export volumes.

Ví dụ mẫu · Worked example – Testing the Marshall–Lerner condition

A country's price elasticity of demand for exports is $PED_x = -0.7$; its price elasticity of demand for imports is $PED_m = -0.5$. The currency then depreciates by 10%. Does the Marshall–Lerner condition hold, and what is the expected direction of the current account balance?

$$|PED_x| + |PED_m| = 0.7 + 0.5 = 1.2 > 1$$

Since the sum exceeds 1, the Marshall–Lerner condition is **satisfied**: export and import volumes are collectively responsive enough to price changes that the 10% depreciation is expected to **improve** the current account balance – export volumes rise enough, and import volumes fall enough, that the net effect on the trade balance (measured in domestic currency) is positive, once time has passed for quantities to adjust.

GIẢI THÍCH TIẾNG VIỆT

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Tổng độ co giãn theo giá của xuất khẩu và nhập khẩu $= 0.7 + 0.5 = 1.2 > 1$, nên điều kiện Marshall–Lerner **được thỏa mãn**: phá giá/giảm giá tiền tệ được kỳ vọng sẽ **cải thiện** cán cân vãng lai về lâu dài, vì khối lượng xuất khẩu và nhập khẩu đủ nhạy cảm với thay đổi giá.

10.6.3 The J-curve effect

Even when the Marshall–Lerner condition holds and a depreciation will eventually improve the current account, the balance often **worsens immediately** after the depreciation before it starts to improve – a time path known as the **J-curve**.

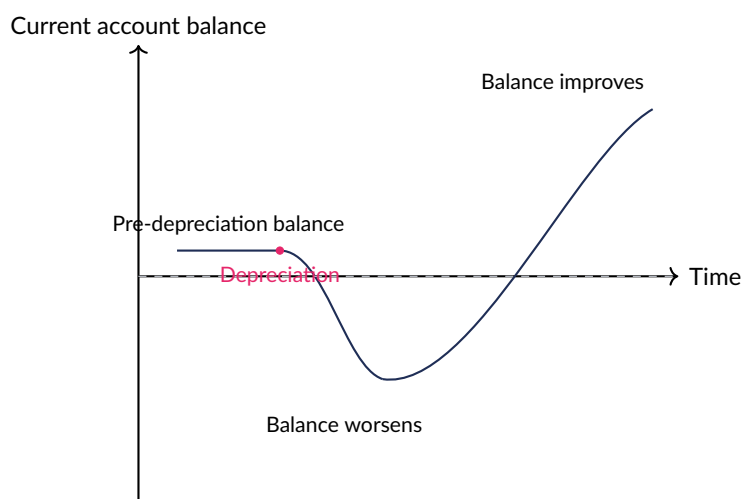


Figure 10.3 The J-curve: the current account balance initially worsens following a depreciation, before improving beyond its original level once quantities have time to adjust.

The J-curve occurs because, in the short run, the *volumes* of exports and imports are relatively fixed – many trade transactions are governed by contracts agreed *before* the depreciation, and it takes time for consumers and firms to find, switch to and adjust to new suppliers. Immediately after a depreciation, the same (roughly unchanged) volume of imports now costs more in domestic-currency terms, while the same volume of exports earns only slightly more, so the trade balance (measured in domestic currency) can *worsen* at first, even if the Marshall–Lerner condition will ultimately be satisfied. Only once sufficient time has passed for export and import volumes to fully respond to the new relative prices does the balance turn around and improve, tracing out the characteristic “J” shape.

GIẢI THÍCH TIẾNG VIỆT

VN

Hiệu ứng đường cong chữ J: ngay sau khi phá giá, cán cân vãng lai thường **xấu đi trước** do khối lượng xuất/nhập khẩu trong ngắn hạn còn cố định (hợp đồng đã ký trước đó, người tiêu dùng/doanh nghiệp cần thời gian để chuyển đổi nhà cung cấp), nên cùng một khối lượng nhập khẩu giờ tốn nhiều nội tệ hơn. Chỉ sau khi khối lượng xuất/nhập khẩu kịp điều chỉnh theo giá tương đối mới, cán cân vãng lai mới **cải thiện**, tạo thành hình chữ J.

10.7 Correcting a balance of payments deficit

10.7.1 Expenditure-reducing versus expenditure-switching policies

[A2 extension] A country running a persistent current account deficit has two broad categories of policy available to try to correct it.

Expenditure-reducing policies: contractionary fiscal policy (higher taxes, lower government spending) or contractionary monetary policy (higher interest rates) reduce total domestic spending, including spending on imports, directly narrowing the deficit. The cost is slower economic growth and higher unemployment, since the same policies that cut import spending also cut spending on domestically produced goods and services.

Expenditure-switching policies: a devaluation/depreciation of the currency, or protectionist measures such as tariffs, aim to switch domestic and foreign demand *away from* (now relatively more expensive) imports and *towards* (now relatively cheaper, or protected) domestic output, without necessarily reducing total spending. A depreciation's effectiveness depends on the **Marshall–Lerner condition** holding (export and import volumes being sufficiently price-elastic) and is subject to a J-curve delay before the improvement materialises; a tariff distorts resource allocation and invites retaliation, as discussed earlier in this chapter.

In practice, the two approaches involve a trade-off. Expenditure-reducing policies are relatively reliable and quick to implement (particularly monetary policy) but directly sacrifice domestic output and employment, which can be a heavy short-run cost, especially if the economy is already close to a recession. Expenditure-switching policies avoid deliberately depressing domestic demand, but a depreciation may fail to work quickly (or at all) if the Marshall–Lerner condition does not hold, if the J-curve delay is long, or if the country's exporters lack the spare capacity to expand output in response to improved competitiveness; while tariffs risk retaliation, higher domestic prices, and efficiency losses of the kind analysed in Figure 10.1. A durable correction to a persistent deficit therefore often combines both approaches – some restraint on domestic demand growth alongside measures (or market-driven exchange rate adjustment) that improve underlying price competitiveness – together with longer-run supply-side policies to raise the productivity and competitiveness of domestic export industries.

GIẢI THÍCH TIẾNG VIỆT

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Chính sách **giảm chi tiêu** (expenditure-reducing): thắt chặt tài khoá/tiền tệ để giảm tổng chi tiêu trong nước (bao gồm nhập khẩu), nhưng phải đánh đổi bằng tăng trưởng chậm hơn và thất nghiệp cao hơn. Chính sách **chuyển hướng chi tiêu** (expenditure-switching): phá giá/giảm giá tiền tệ hoặc thuế quan để chuyển nhu cầu từ hàng nhập khẩu sang hàng nội địa, nhưng hiệu quả của phá giá phụ thuộc vào điều kiện Marshall–Lerner và có độ trễ do hiệu ứng đường cong chữ J. Trong thực tế, việc điều chỉnh thâm hụt cán cân vãng lai bền vững thường cần kết hợp cả hai nhóm chính sách.

10.8 Practice question bank**Bài tập luyện tập**

A worker in Country M produces 8 tonnes of steel or 16 tonnes of grain per day. A worker in Country N produces 5 tonnes of steel or 5 tonnes of grain per day. Which country has an absolute advantage, and in which good(s)?

Lời giải chi tiết

Country M produces more steel ($8 > 5$) and more grain ($16 > 5$) than Country N using the same one worker-day of resources, so **Country M has an absolute advantage in both goods**.

Bài tập luyện tập

Using the data in the previous question (Country M: 8 steel or 16 grain; Country N: 5 steel or 5 grain), calculate the opportunity cost of 1 tonne of steel in each country, and state which country has a comparative advantage in steel.

Lời giải chi tiết

Opportunity cost of 1 steel, $M = 16/8 = 2$ grain. Opportunity cost of 1 steel, $N = 5/5 = 1$ grain. Country N has the **lower** opportunity cost of steel (1 grain vs M's 2 grain), so **Country N has a comparative advantage in steel** – despite having an absolute disadvantage in both goods. Country M, correspondingly, has a comparative advantage in grain.

Bài tập luyện tập

Country R can produce 30 Tea or 90 Coffee per worker-day. Country S can produce 70 Tea or 70 Coffee per worker-day. Calculate each country's opportunity cost of Tea and of Coffee, and state the pattern of specialisation that comparative advantage predicts.

Lời giải chi tiết

Opp. cost of 1 Tea: $R = 90/30 = 3$ Coffee; $S = 70/70 = 1$ Coffee. Opp. cost of 1 Coffee: $R = 30/90 = 0.33$ Tea; $S = 70/70 = 1$ Tea. S has the lower opportunity cost of Tea, so **S has a comparative advantage in Tea**; R has the lower opportunity cost of Coffee, so **R has a comparative advantage in Coffee**. R should specialise in Coffee and S in Tea.

Bài tập luyện tập

Which of the following is an assumption (or limitation) of the simple comparative advantage model?

- (A) Opportunity costs rise as a country specialises further
(B) Factors of production can move freely between countries
(C) Transport costs between countries are zero
(D) Trade is always subject to tariffs and quotas

Lời giải chi tiết

The simple model assumes **constant** (not rising) opportunity costs, assumes factors of production are *immobile* between countries, and assumes *free* trade with no tariffs/quotas. The correct assumption listed is that transport costs are assumed to be zero. Correct answer: (C).

Bài tập luyện tập

Data-response. Country A: 45 Cloth or 90 Rice per worker-day. Country B: 60 Cloth or 60 Rice per worker-day. (a) Calculate each country's opportunity cost of Cloth and of Rice. (b) State which country should specialise in which good. (c) State the range within which the international terms of trade (Rice per unit of Cloth) must lie for trade to benefit both countries.

Lời giải chi tiết

- (a) Opp. cost of 1 Cloth: $A = 90/45 = 2$ Rice; $B = 60/60 = 1$ Rice. Opp. cost of 1 Rice: $A = 45/90 = 0.5$ Cloth; $B = 60/60 = 1$ Cloth.
(b) B has the lower opportunity cost of Cloth (1 Rice vs A's 2 Rice), so **B specialises in Cloth**; A has the lower opportunity cost of Rice (0.5 Cloth vs B's 1 Cloth), so **A specialises in Rice**.
(c) The terms of trade (Rice per Cloth) must lie strictly between the two domestic ratios, i.e. between 1 Rice = 1 Cloth (B's ratio) and 1 Rice = 2 Cloth (A's ratio), for both countries to gain from trading.

Bài tập luyện tập

A country's export price index rises from 100 to 108 over one year, while its import price index rises from 100 to 120 over the same period. Calculate the terms of trade in the second year and state whether the terms of trade have improved or worsened.

Lời giải chi tiết

$\text{ToT} = \frac{108}{120} \times 100 = 90$. Since the ToT index has fallen from 100 to 90, the terms of trade have **worsened**: each unit of exports now buys fewer imports than before, because import prices have risen faster than export prices.

Bài tập luyện tập

A country's export price index is 132 and its import price index is 110. Calculate its terms of trade index, and explain in one sentence what a ToT index above 100 signifies.

Lời giải chi tiết

$\text{ToT} = \frac{132}{110} \times 100 = 120$. A ToT index above 100 means export prices have risen relative to import prices since the base period, so each unit of exports now buys *more* imports than in the base period (the terms of trade have improved relative to the base year).

Bài tập luyện tập

Explain why a rise in a country's terms of trade caused mainly by rising domestic wage costs might not actually benefit its current account balance.

Lời giải chi tiết

If the ToT rises because rising domestic costs (e.g. wages) are forcing exporters to raise prices, rather than because of stronger foreign demand, exports become less price-competitive relative to substitutes from other countries. Foreign buyers may switch away from now-more-expensive exports, causing export *volumes* to fall. If this fall in volume is large enough (i.e. demand for exports is sufficiently price-elastic), total export revenue – and hence the current account balance – can actually **worsen**, even though the ToT index itself has risen.

Bài tập luyện tập

A small country faces domestic demand $Q_d = 400 - 4P$ and domestic supply $Q_s = 40 + 4P$ for a good, with a world price of $P_w = \$15$. Calculate domestic consumption, domestic production and the volume of imports at the free-trade world price.

Lời giải chi tiết

$Q_d = 400 - 4(15) = 400 - 60 = 340$. $Q_s = 40 + 4(15) = 40 + 60 = 100$. Imports = $Q_d - Q_s = 340 - 100 = 240$ units.

Bài tập luyện tập

Using the data in the previous question ($Q_d = 400 - 4P$, $Q_s = 40 + 4P$, $P_w = \$15$), suppose a tariff of $t = \$5$ per unit is imposed, raising the domestic price to \$20. Calculate the new domestic consumption, domestic production, and the new volume of imports.

Lời giải chi tiết

$Q_d = 400 - 4(20) = 400 - 80 = 320$. $Q_s = 40 + 4(20) = 40 + 80 = 120$. Imports = $320 - 120 = 200$ units (down from 240 units before the tariff).

Bài tập luyện tập

Continuing the previous two questions ($Q_{d1} = 340$, $Q_{s1} = 100$ before the \$5 tariff; $Q_{d2} = 320$, $Q_{s2} = 120$ after), calculate: (a) the loss of consumer surplus, (b) the gain in producer surplus, (c) government tariff revenue, and (d) the total deadweight loss.

Lời giải chi tiết

- (a) CS loss = $\frac{1}{2}(Q_{d1} + Q_{d2}) \times t = \frac{1}{2}(340 + 320) \times 5 = \frac{1}{2}(660)(5) = \$1,650$.
(b) PS gain = $\frac{1}{2}(Q_{s1} + Q_{s2}) \times t = \frac{1}{2}(100 + 120) \times 5 = \frac{1}{2}(220)(5) = \550 .
(c) Government revenue = $(Q_{d2} - Q_{s2}) \times t = (320 - 120) \times 5 = 200 \times 5 = \$1,000$.
(d) Deadweight loss = $1,650 - 550 - 1,000 = \$100$.

Bài tập luyện tập

Which area in a standard tariff diagram represents the deadweight loss arising because domestic consumers are priced out of units they valued more highly than the world price?

- (A) The producer surplus gain (transfer from consumers to producers) (C) The consumption distortion loss
(B) Government tariff revenue (D) The production distortion loss

Lời giải chi tiết

The consumption distortion loss (area *d* in Figure 10.1) arises specifically from the fall in domestic consumption caused by the higher tariff-inclusive price – consumers who valued those units above the world price are priced out of the market, and this value is lost to no one (a pure deadweight loss). Correct answer: (C).

Bài tập luyện tập

A group of neighbouring countries agrees to remove all tariffs on trade with each other, but each country continues to set its own independent tariff rates on imports from all other (non-member) countries. What type of trading bloc is this?

- (A) Free trade area (C) Common market
(B) Customs union (D) Monetary union

Lời giải chi tiết

Removing internal tariffs while each member retains its own external tariff schedule is the defining feature of a **free trade area**. If the members also adopted a common external tariff, it would become a customs union; adding free movement of labour and capital would make it a common market. Correct answer: (A).

Bài tập luyện tập

After joining a customs union, Country Z now imports sugar tariff-free from a partner country whose production cost is higher than that of a low-cost non-member country (which now faces the union's common external tariff). Is this an example of trade creation or trade diversion, and why?

Lời giải chi tiết

This is **trade diversion**. Country Z's import source has shifted away from a genuinely lower-cost producer (the non-member country, now facing the tariff) towards a higher-cost producer (the partner country, now tariff-free) purely because of the customs union's tariff structure, not because of underlying efficiency. This reduces overall economic welfare compared with unrestricted free trade, even though it may still benefit Country Z's partner-country producers.

Bài tập luyện tập

A country's exchange rate moves from \$1 = 15,600 units of domestic currency to \$1 = 14,300 units of domestic currency. Calculate the percentage change in the exchange rate and state whether the domestic currency has appreciated or depreciated.

Lời giải chi tiết

$\% \Delta = \frac{14,300 - 15,600}{15,600} \times 100 \approx -8.3\%$. Fewer units of domestic currency are now needed to buy \$1, so the domestic currency has **appreciated** by approximately 8.3%.

Bài tập luyện tập

For each of the following, state whether the domestic currency has appreciated or depreciated: (a) \$1 = 20,000 rises to \$1 = 21,500; (b) £1 = \$1.30 rises to £1 = \$1.42 (quoted as USD per GBP, from the UK's perspective).

Lời giải chi tiết

(a) More domestic currency (21,500 vs 20,000) is now needed to buy \$1, so the domestic currency has **depreciated**.
(b) Each pound now buys more US dollars (\$1.42 vs \$1.30), so, from the UK's perspective, the pound has **appreciated**.

Bài tập luyện tập

Which of the following is a disadvantage of a purely floating exchange rate system, compared with a fixed exchange rate system?

- | | |
|--|---|
| (A) It requires the central bank to hold large foreign exchange reserves | (C) It exposes importing and exporting firms to greater exchange-rate uncertainty |
| (B) It removes the country's ability to set interest rates independently | (D) It commits the government to a specific numerical exchange-rate target |

Lời giải chi tiết

A fixed rate (not a floating rate) requires large reserves and removes independent interest-rate policy; a floating rate, by contrast, is determined purely by market forces, which can create more exchange-rate volatility and uncertainty for firms engaged in international trade. Correct answer: (C).

Bài tập luyện tập

Data-response. Classify each of the following six transactions into the correct balance of payments component (current account – specifying goods, services, primary or secondary income – or capital/financial account): (i) a software company exports \$20m of cloud-computing services; (ii) a resident receives a \$5m inheritance from a relative abroad; (iii) a foreign firm buys a 15% equity stake in a domestic company; (iv) the government receives \$10m in foreign aid grants; (v) a domestic bank's overseas branch repatriates \$8m in profit; (vi) the central bank purchases \$50m of foreign currency reserves.

Lời giải chi tiết

(i) Current account – trade in services (credit). (ii) Current account – secondary income (credit). (iii) Financial account – portfolio/equity investment (credit, inflow). (iv) Current account – secondary income (credit). (v) Current account – primary income (credit). (vi) Financial account – change in official reserve assets.

Bài tập luyện tập

A country has $PED_x = -0.3$ and $PED_m = -0.4$. Does the Marshall–Lerner condition hold? What is the expected short-run to long-run effect of a depreciation on this country's current account balance?

Lời giải chi tiết

$|PED_x| + |PED_m| = 0.3 + 0.4 = 0.7 < 1$. The Marshall–Lerner condition is **not** satisfied: demand for exports and imports is too price-inelastic. A depreciation is therefore expected to **worsen** the current account balance, since the higher domestic-currency cost of a barely-reduced volume of imports outweighs the small rise in export volumes and revenue.

Bài tập luyện tập

A country's price elasticity of demand for exports is -0.9 and for imports is -0.6 . State whether the Marshall–Lerner condition holds, and explain why the current account might still worsen *immediately* after a depreciation despite your answer.

Lời giải chi tiết

$|PED_x| + |PED_m| = 0.9 + 0.6 = 1.5 > 1$, so the Marshall–Lerner condition **is** satisfied, meaning the depreciation should improve the current account once volumes fully adjust. However, in the very short run many export and import volumes are fixed by pre-existing contracts, and consumers/firms need time to switch suppliers, so the balance can initially **worsen** (the same import volume now costs more) before quantities adjust and the balance improves – the **J-curve effect**.

Bài tập luyện tập

Explain, in terms of contracts and time lags, why the current account balance often follows a “J-curve” pattern after a depreciation, even when the Marshall–Lerner condition is ultimately satisfied.

Lời giải chi tiết

Immediately after a depreciation, the physical volumes of exports and imports are largely fixed by contracts agreed before the exchange rate change, and it takes time for consumers and firms to find and switch to new suppliers in response to the new relative prices. In this short window, the (roughly unchanged) volume of imports simply costs more in domestic-currency terms, while export revenue rises only slightly, so the trade balance can **worsen** at first. Only once sufficient time has passed for import and export volumes to fully respond to the new relative prices does the balance turn around and improve beyond its original level, tracing out a J-shaped time path.

Bài tập luyện tập

Classify each of the following as an example of an **expenditure-reducing** policy or an **expenditure-switching** policy used to correct a current account deficit: (a) raising the central bank’s policy interest rate; (b) imposing a tariff on imported steel; (c) cutting government spending on public infrastructure; (d) allowing/engineering a depreciation of the currency.

Lời giải chi tiết

(a) Expenditure-reducing (higher interest rates cut domestic spending, including on imports).
(b) Expenditure-switching (a tariff switches demand from imports towards domestic substitutes).
(c) Expenditure-reducing (lower government spending cuts total domestic demand).
(d) Expenditure-switching (depreciation switches demand towards relatively cheaper domestic output, subject to the Marshall–Lerner condition).

Bài tập luyện tập

Essay outline. “Evaluate whether a country should use protectionist policies to correct a persistent current account deficit.” Outline the key arguments a full answer should cover.

Lời giải chi tiết

A strong answer should: (1) explain how tariffs/quotas could reduce a deficit – by raising the price (or restricting the quantity) of imports, switching domestic demand towards home-produced substitutes, directly narrowing the trade gap; (2) analyse the **costs**, using the tariff-welfare diagram – higher prices and lost consumer surplus for domestic buyers, deadweight (production and consumption distortion) losses, protection of inefficient domestic firms from competition, and the risk of retaliation from trading partners (a damaging trade war that could reduce, not increase, net exports); (3) compare protectionism against **alternative** corrective policies – expenditure-reducing policies (contractionary fiscal/monetary policy, at the cost of growth and employment) and depreciation/devaluation (expenditure-switching, but dependent on the Marshall–Lerner condition holding and subject to J-curve delays); (4) reach a **reasoned judgement**, e.g. that protectionism may offer short-run relief for a specific, targeted problem (such as proven dumping) but is unlikely to be a sound long-run solution to a persistent, economy-wide deficit, since it invites retaliation, raises domestic costs, and does not

address underlying causes of poor competitiveness (e.g. low productivity, an overvalued exchange rate, or excessive domestic demand) – supply-side policies to raise the competitiveness of domestic export industries are likely to offer a more durable long-run remedy.

Bài tập luyện tập

Essay outline. “Evaluate the view that a depreciation of the exchange rate will automatically improve a country’s current account position.” Outline the key arguments a full answer should cover.

Lời giải chi tiết

A strong answer should: (1) explain the basic mechanism – depreciation makes exports cheaper in foreign-currency terms and imports more expensive in domestic-currency terms, which *should* raise export volumes and reduce import volumes; (2) introduce the **Marshall-Lerner condition** as the key qualifying condition – improvement requires $|PED_x| + |PED_m| > 1$; if demand for exports and imports is too price-inelastic (e.g. due to a lack of close substitutes, or reliance on essential imported inputs), a depreciation can actually **worsen** the current account; (3) discuss the **J-curve** – even when the condition holds, contracts fixed in the short run and the time needed for consumers/firms to switch suppliers mean the balance may worsen *before* it improves; (4) note other qualifications – a depreciation raises import prices and can fuel domestic (imported) inflation, which may erode the initial price competitiveness gain over time; export supply constraints (lack of spare capacity) can also prevent export volumes from rising as much as theory predicts; (5) reach a **reasoned judgement** that depreciation is not an automatic or guaranteed fix – its success depends on elasticities, time horizons and the domestic economy’s capacity to respond, so it is best evaluated as one tool among several (alongside expenditure-reducing policies and supply-side competitiveness measures) rather than a certain solution on its own.

Bài tập luyện tập

Country F: 25 Wheat or 100 Wool per worker-day. Country G: 40 Wheat or 40 Wool per worker-day. (a) Calculate the opportunity cost of Wheat and Wool in each country. (b) State the pattern of specialisation predicted by comparative advantage.

Lời giải chi tiết

(a) Opp. cost of 1 Wheat: $F = 100/25 = 4$ Wool; $G = 40/40 = 1$ Wool. Opp. cost of 1 Wool: $F = 25/100 = 0.25$ Wheat; $G = 40/40 = 1$ Wheat.
(b) G has the much lower opportunity cost of Wheat (1 Wool vs F’s 4 Wool), so **G specialises in Wheat**; F has the lower opportunity cost of Wool (0.25 Wheat vs G’s 1 Wheat), so **F specialises in Wool**.

Bài tập luyện tập

A country’s export price index falls from 115 to 100 while its import price index stays constant at 100. Calculate the new terms of trade index and explain what this means for how many imports a fixed quantity of exports can now purchase.

Lời giải chi tiết

New ToT = $\frac{100}{100} \times 100 = 100$, down from $\frac{115}{100} \times 100 = 115$ previously – a fall of about 13%. The terms of trade have **worsened**: a given quantity of exports now buys fewer imports than before, because export prices have fallen relative to import prices.

Bài tập luyện tập

A small country's domestic demand and supply for a good are $Q_d = 600 - 6P$ and $Q_s = 60 + 6P$. The world price is $P_w = \$25$, and a \$5 tariff is imposed. Calculate the government's tariff revenue after the tariff is imposed.

Lời giải chi tiết

At $P = \$30$ (after tariff): $Q_d = 600 - 180 = 420$; $Q_s = 60 + 180 = 240$. Imports = $420 - 240 = 180$ units. Government tariff revenue = $180 \times 5 = \$900$.

Bài tập luyện tập

Which of the following would be classified as an **expenditure-switching**, rather than expenditure-reducing, policy to correct a current account deficit?

- | | |
|---|---|
| (A) Raising the rate of value-added tax (VAT) to reduce consumer spending | (C) A managed depreciation of the domestic currency |
| (B) Cutting government spending on public sector wages | (D) Raising the central bank's policy interest rate |

Lời giải chi tiết

Raising VAT, cutting government spending and raising interest rates all work by reducing *total* domestic spending (expenditure-reducing). A managed depreciation instead switches demand from (now relatively more expensive) imports towards (now relatively cheaper) domestic output, without necessarily reducing total spending – this is expenditure-switching. Correct answer: (C).

Ôn tập nhanh: Xuyên suốt 10 chương của cuốn sách, hãy luôn ghi nhớ: Unit 1 – đường giới hạn khả năng sản xuất (PPC) và chi phí cơ hội là nền tảng của mọi lựa chọn kinh tế; Unit 2 – các công thức co giãn (PED, PES, YED, XED) đo mức độ phản ứng của lượng cầu/cung trước thay đổi giá, thu nhập, hoặc giá hàng liên quan; Unit 3 – cân bằng thị trường tại giao điểm cung-cầu, cùng thặng dư tiêu dùng và thặng dư sản xuất; Unit 4 – quy tắc chi phí biên MC cắt đáy các đường chi phí bình quân (AC, AVC) tại điểm tối thiểu của chúng; Unit 5 – quy tắc tối đa hoá lợi nhuận $MR = MC$ áp dụng cho mọi cấu trúc thị trường; Unit 6 – phân tích gánh nặng thuế (tax incidence) theo độ co giãn tương đối, cùng các đồ thị thất bại thị trường (ngoại ứng, hàng hoá công); Unit 7 – tổng cầu $AD = C + I + G + (X - M)$ và đường AS dài hạn thẳng đứng ở sản lượng tiềm năng; Unit 8 – cách đo CPI (lạm phát) và phân loại các dạng thất nghiệp (cơ cấu, chu kỳ, cộ xát, theo mùa); Unit 9 – số nhân chi tiêu $k = 1/MPW$ khuếch đại tác động của một thay đổi trong bơm vào/rút ra; và Unit 10 – lợi thế so sánh (chuyên môn hoá theo chi phí cơ hội thấp nhất) cùng chiều hướng lên giá/xuống giá của tỷ giá hối đoái (cần phân biệt rõ đơn vị nào được yết giá theo đơn vị nào).

Đồng hành cùng 8020 English

Cảm ơn bạn đã học cùng bộ giáo trình quốc tế 8020. **Điểm thật · Thầy thật · Kết quả thật** — nhiều học viên chỉ cần 1–2 khoá để đạt kết quả mong muốn.

Chương trình đào tạo tại 8020 English

IELTS Academic/General · SAT · PTE · Duolingo · TOEFL | AP (College Board) · IB Diploma · Cambridge IGCSE / A-Level | sẵn học bổng du học.

Vì sao chọn 8020 English?

- **100% giáo viên** đạt tối thiểu 8.0 IELTS hoặc 1500 SAT — đội ngũ Giáo sư · Tiến sĩ · Thạc sĩ tốt nghiệp trường top đầu thế giới (Carnegie Mellon — #1 Hoa Kỳ về Khoa học Máy tính).
- **Kèm 1–1** mọi độ tuổi; lớp sĩ số nhỏ 2–5 bạn (đa số dưới 10 bạn/lớp).
- Lộ trình cá nhân hoá, theo sát tiến độ từng học viên; lớp OFFLINE tại TP.HCM & ONLINE toàn quốc.

Bảng vàng học viên

AP 5/5 — Calculus AB/BC
SAT 1590 / 1570 / 1550

AP 4–5 — Biology, Chemistry
IELTS 8.0–9.0

IB 90/100 — Economics
Duolingo 110 · PTE 90

Cảm nhận học viên & phụ huynh

"Bạn đã cải thiện được tư duy Writing — kỹ năng từng là nỗi sợ lớn nhất — và cuối cùng đã đậu vào trường top như mong muốn. Thái độ học tập cực kỳ nghiêm túc; ngay cả khi nằm viện vẫn cố gắng học đều đặn."

— Phan Thị Thanh Hằng • IELTS Overall 8.5

"Cần tất cả kỹ năng trên 7.5 để xét vào trường top 1 Anh Quốc về Y học (chương trình UKFPO của NHS) — và đã đạt mục tiêu sau khi học Writing 1-1."

— Trần Hoàng Bảo Ngọc • IELTS Overall 8.0 (Writing 6.0 → 7.5)

"Gia đình và bé xin cảm ơn thầy cô đã giúp con có hành trang chín chu khi qua Mỹ. Đạt điểm 5 môn Giải tích trong thời gian ngắn là quá mãn nguyện."

— Phụ huynh • AP Calculus BC 5/5

"Em cảm ơn thầy đã luôn đồng hành. Nhờ thầy, em học vững hơn rất nhiều dù thời gian ôn không dài."

— Học viên • AP Calculus AB 4

KẾT QUẢ HỌC VIÊN

FEEDBACK PHỤ HUYNH & HỌC VIÊN AP



Phụ huynh • AP Calculus BC: 5

"Gia đình cảm ơn thầy cô đã giúp con có hành trang chín chu khi qua Mỹ. Đạt điểm 5 môn Giải tích trong thời gian ngắn là quá mãn nguyện."



Phụ huynh • AP Calculus BC

"Mẹ con xin gửi lời cảm ơn chân thành tới thầy và cả nhóm. Thời gian ôn rất ngắn nhưng con nhận được rất nhiều sự hỗ trợ."



Học viên • AP Calculus AB: 4 • Statistics: 3

"Em cảm ơn thầy Steven đã luôn đồng hành. Nhờ thầy, em học vững hơn rất nhiều dù thời gian không dài."

Feedback phụ huynh & học viên AP — nhiều môn đạt điểm 4 & 5

Điểm thi thật của học viên

KẾT QUẢ HỌC VIÊN
ĐIỂM SỐ AP

8020 ENGLISH

AP Biology: 4 · AP Chemistry: 4

AP Calculus AB: 5

AP Calculus BC: 5

AP Chemistry: 5

Bảng điểm AP thật của học viên – nhiều môn đạt điểm 4 & 5

Bảng điểm AP thật — Calculus AB/BC 5/5 · Biology & Chemistry 4-5 (College Board)

KẾT QUẢ HỌC VIÊN
ĐIỂM SỐ PTE

8020 ENGLISH

Em báo điểm nha c

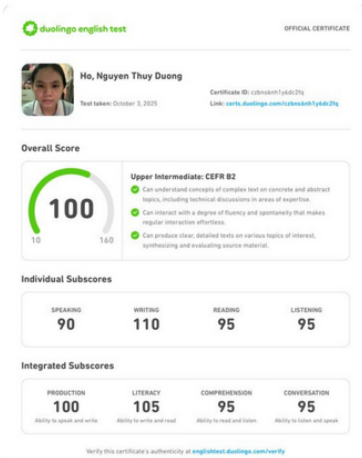
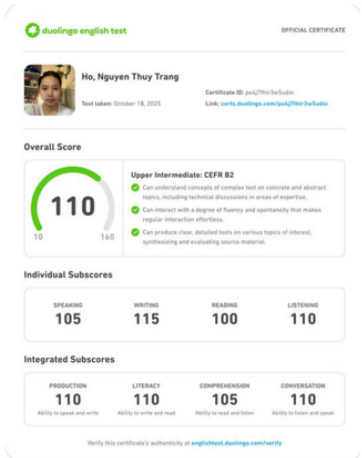
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Bảng điểm PTE thật của học viên

Học viên 8020 – PTE Academic 90

KẾT QUẢ HỌC VIÊN

ĐIỂM SỐ DUOLINGO





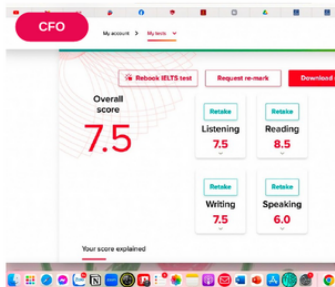
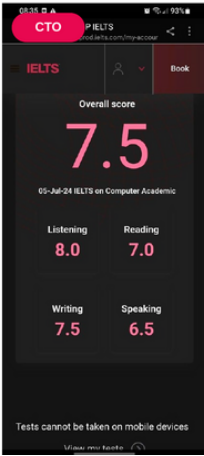
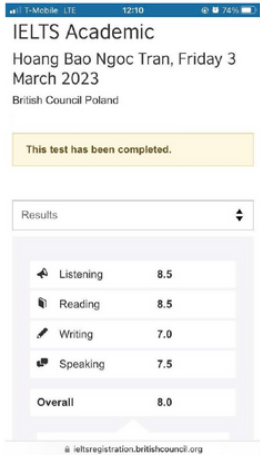
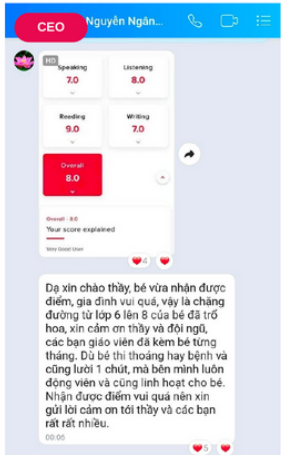
Duolingo English Test – 110 & 100

Học viên 8020 – Duolingo English Test 110 & 100

KẾT QUẢ HỌC VIÊN

THÀNH TÍCH HỌC VIÊN

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Học viên 8020 – IELTS 8.0 / 7.5 / 8.5 (báo điểm thật)

**8020 ENGLISH – CHƯƠNG TRÌNH QUỐC TẾ**

Test đầu vào & tư vấn lộ trình MIỄN PHÍ

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