H2 Economics (9570)

Theme 2.1 & 2.2 — Crash-Course Lecture Notes

Price Mechanism, Demand & Supply, Elasticities, Government Intervention, Firms & Decisions

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Theme 2.1: Price Mechanism and its Applications

Crash-Course Overview

Theme 2.1 answers the three fundamental questions every economy faces: **what to produce**, **how to produce**, and **for whom to produce**. In a free market, the **price mechanism** solves all three automatically through the interaction of buyers (demand) and sellers (supply).

- **2.1.1** — The price mechanism itself: signalling, incentive, and rationing functions
- **2.1.2** — Demand and supply analysis: equilibrium, shifts, elasticities, consumer/producer surplus
- **2.1.3** — Government intervention: taxes, subsidies, price controls, quotas

HCI Tutorials focus heavily on applying these concepts to TYS questions, particularly combining shifts with elasticity analysis.

Syllabus Learning Outcomes (SEAB 9570)

Code	Outcome	Priority
2.1.1(a)	Price mechanism: signalling, incentive, rationing functions	High
2.1.2(a)	Market demand as summation of individual demand	Medium
2.1.2(b)	Market supply as summation of individual supply	Medium
2.1.2(c)	Price changes → movement along D/S curve	High
2.1.2(d)	Non-price determinants → shifts in D/S curve	High
2.1.2(e)	Equilibrium determined by D & S interaction	High
2.1.2(f)	Changes in D/S affect P, Q, consumer expenditure, producer revenue, CS, PS	High
2.1.2(g)	Outcomes affected by PED, YED, XED, PES	High
2.1.3(a)	Government intervention: taxes, subsidies, price controls, quotas	High
2.1.3(b)	Effects on equilibrium P, Q, expenditure, revenue, CS, PS	High
2.1.3(c)	Impact affected by PED and PES	High

2.1.1: Price Mechanism and its Functions

Definition Price Mechanism

The system in a market economy where the forces of demand and supply determine prices, which in turn allocate scarce resources among competing uses.

The price mechanism performs three key functions:

Signalling Function

Prices act as signals to both consumers and producers about scarcity.

- A **rising price** signals to consumers that the good is relatively scarcer (reduce consumption) and to producers that there is profit opportunity (increase production)
- A **falling price** signals abundance to consumers and falling profitability to producers

Example COE Prices in Singapore

When Certificate of Entitlement (COE) prices rise, it signals to car buyers that vehicle ownership is becoming more expensive due to limited supply, and signals to car manufacturers that demand is strong.

Incentive Function

Price changes create incentives for economic agents to change their behaviour.

- Higher prices create an **incentive** for producers to increase output (profit motive)
- Higher prices create an incentive for consumers to reduce consumption or switch to substitutes
- Lower prices incentivise consumers to buy more and producers to produce less

Rationing Function

When a good is scarce, the price mechanism rations it to those who are willing and able to pay the market price.

- Those who value the good most (highest willingness to pay) get it
- Those unwilling or unable to pay are rationed out of the market

Warning Common Trap

Students often confuse the signalling and incentive functions. Remember: signalling is about **information transfer** (prices communicate scarcity), while incentive is about **behavioural response** (prices motivate action). The rationing function is the **outcome** — who actually gets the good.

2.1.2: Demand and Supply Analysis

Demand

Definition Demand

The quantity of a good or service that consumers are willing and able to purchase at each possible price over a given period of time, *ceteris paribus*.

Law of Demand: As price falls, quantity demanded rises (inverse relationship), due to:

1. **Income effect:** Lower price → higher real purchasing power → buy more
2. **Substitution effect:** Lower price → good relatively cheaper than substitutes → switch to this good

Movement along the demand curve occurs only when the **price of the good itself changes**. This is a **change in quantity demanded**.

Shift of the demand curve occurs when a **non-price determinant** changes. This is a **change in demand**.

Definition Non-Price Determinants of Demand

Factors that shift the demand curve (mnemonic: **PIECES**):

- **P**rice of related goods (substitutes & complements) — via XED
- **I**ncome of consumers — via YED
- **E**xpectations (future prices, income)
- **C**hanges in taste/preferences (advertising, trends)
- **E**xternal conditions (weather, seasons, demographics)
- **S**easonal factors

Warning Critical Distinction

A change in price of the good itself causes a **movement along** the curve. A change in anything else affecting demand causes a **shift** of the curve. This distinction is tested in almost every case study and essay.

Supply

Definition Supply

The quantity of a good or service that producers are willing and able to offer for sale at each possible price over a given period of time, *ceteris paribus*.

Law of Supply: As price rises, quantity supplied rises (positive relationship), because:

- Higher prices cover the rising marginal cost of production
- Profit motive incentivises firms to produce more

Non-price determinants of supply (mnemonic: **SPENT**):

- **S**ubsidies and taxes — lower subsidies / higher taxes → supply falls
- **P**rices of other goods (substitutes in production, joint supply)
- **E**xternal conditions (technology, weather, natural disasters)
- **N**umber of sellers
- **T**echnology improvements — lower costs → supply rises

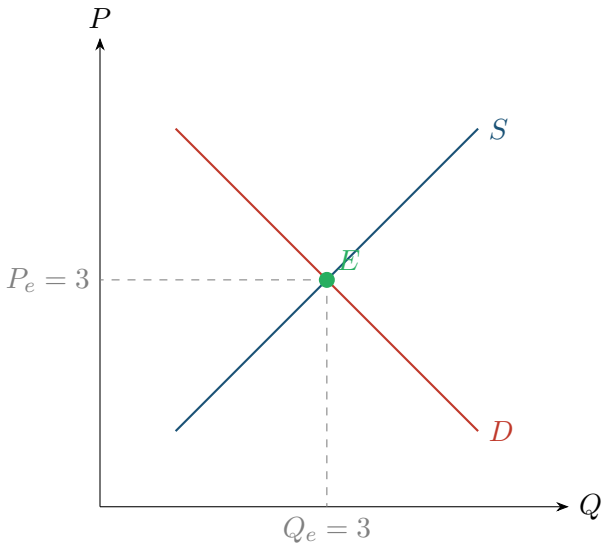
Market Equilibrium

Definition Market Equilibrium

The price at which quantity demanded equals quantity supplied. At this price, there is no shortage or surplus.

Adjustment process:

- **Shortage (excess demand):** Qd > Qs → upward pressure on price → consumers reduce Qd, producers increase Qs → new equilibrium
- **Surplus (excess supply):** Qs > Qd → downward pressure on price → consumers increase Qd, producers reduce Qs → new equilibrium



Consumer Surplus and Producer Surplus

Definition Consumer Surplus (CS)

The difference between what consumers are willing to pay (the demand price) and what they actually pay (the market price). Measures consumer welfare from trade.

Definition Producer Surplus (PS)

The difference between what producers receive (the market price) and the minimum price they are willing to accept (the supply price). Measures producer welfare from trade.

Definition Total Social Surplus

CS + PS. Under perfect competition, total social surplus is maximised at equilibrium — this is allocative efficiency.

Elasticities

Price Elasticity of Demand (PED)

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

- $|\text{PED}| > 1$: Price elastic — Qd responds strongly to price changes
- $|\text{PED}| < 1$: Price inelastic — Qd responds weakly to price changes
- $|\text{PED}| = 1$: Unit elastic
- $|\text{PED}| = 0$: Perfectly inelastic
- $|\text{PED}| = \infty$: Perfectly elastic

Determinants of PED:

1. Availability and closeness of substitutes (most important factor)
2. Degree of necessity
3. Proportion of income spent on the good
4. Time period (longer time → more elastic)

PED and Total Revenue:

- $|\text{PED}| > 1$: Price ↑ → TR ↓ (raise price, lose too many sales)
- $|\text{PED}| < 1$: Price ↑ → TR ↑ (raise price, sales don't fall much)
- $|\text{PED}| = 1$: TR unchanged

Exam Tip PED and TR — Classic 10-mark Question Type

In HCI Tutorial 2.1 Q2 (TYS 2023), you are asked to explain the different impacts on vegetable prices from bad weather vs fall in incomes. The key distinction: bad weather → supply shift. Fall in income → demand shift. Both use PED/YED to explain the **extent** of price change. One diagram per case, clearly labelled with price inelastic demand.

Income Elasticity of Demand (YED)

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

- YED > 0: Normal good
  - $0 <$ YED < 1: Income inelastic (necessities — rice, vegetables, bus transport)
  - YED > 1: Income elastic (luxuries — travel, branded goods, cars)
- YED < 0: Inferior good (demand falls as income rises — instant noodles, public transport for high-income groups)

Cross Elasticity of Demand (XED)

$$\text{XED} = \frac{\%\Delta Q_d(\text{Good A})}{\%\Delta P(\text{Good B})}$$

- XED > 0: Substitutes (tea and coffee)
- XED < 0: Complements (cars and petrol)
- XED $= 0$: Unrelated goods

Magnitude matters: Higher absolute XED → closer the relationship. High positive XED means very close substitutes; high negative XED means strong complements.

Price Elasticity of Supply (PES)

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

- PES > 1: Elastic supply (firms can easily increase output)
- PES < 1: Inelastic supply (capacity constraints, time lag)
- PES $= 0$: Perfectly inelastic (fixed supply — land, seats in a concert)

Determinants of PES:

1. Availability of spare capacity
2. Ease of storing inventory
3. Time period (longer → more elastic — Marshall's three periods)
4. Mobility of factors of production
5. Complexity of production process

Key application: PES determines the extent of price change when demand shifts. When PES is inelastic, a demand shift causes larger price changes and smaller quantity changes.

2.1.3: Government Intervention in Markets

Governments intervene when the free market produces inefficient or inequitable outcomes. The four main intervention methods tested in Theme 2.1:

Taxes (Indirect/Excise)

Definition Indirect Tax

A tax levied on the production or sale of goods (e.g., GST, excise duties on petrol, alcohol, tobacco). Shifts the supply curve leftward (upward) by the amount of the tax.

Effects:

- Supply shifts left (up) by the amount of the tax per unit
- Equilibrium price rises (but by less than the tax, depending on PED/PES)
- Equilibrium quantity falls
- CS and PS both fall: part of lost surplus becomes tax revenue, part becomes deadweight loss

Exam Tip Tax Diagrams

Draw: initial D and S, new S_{tax} left of S, label vertical distance = tax per unit. Shade: tax revenue rectangle, DWL triangle. The steeper (more inelastic) the D curve, the more of the tax is borne by consumers as higher price. The syllabus does NOT require knowledge of 'tax incidence' terminology, but you must explain who bears the burden.

Subsidies

Definition Subsidy

A payment from the government to producers (or consumers) to lower the cost of production or consumption. Shifts the supply curve rightward (downward) by the amount of the subsidy.

Effects:

- Supply shifts right (down) by the subsidy per unit
- Equilibrium price falls (but by less than the subsidy)
- Equilibrium quantity rises
- CS rises, PS rises, but total benefit $<$ total subsidy cost $\rightarrow$ DWL from overproduction

Example Singapore Carbon Tax and EV Subsidies

Singapore introduced a carbon tax (excise tax on carbon emissions) to internalise negative externalities. At the same time, EV early adoption incentives (subsidies) shift supply of EVs right, lowering EV prices to encourage adoption. Both policies are affected by PED/PES — e.g., if EV demand is price elastic, the subsidy has a larger effect on Q.

Price Controls

Maximum Price (Price Ceiling):

- Set below equilibrium to make essential goods affordable
- Creates persistent shortage (excess demand)
- Requires rationing mechanism (queues, lotteries, black markets)
- Example: HDB rental caps, rental control in some countries

Minimum Price (Price Floor):

- Set above equilibrium to guarantee producers a minimum income
- Creates persistent surplus (excess supply)
- Government must buy surplus or restrict supply
- Example: agricultural price supports, minimum wage

Warning Key Exam Trap

Price ceilings cause shortages; price floors cause surpluses. Do NOT mix them up. In a short 10-mark question, one well-labelled diagram with proper labels (shortage/surplus shaded) is worth most of the marks. Always include welfare analysis (CS, PS changes, DWL).

Quantity Controls (Quotas)

Definition Quota

A legal limit on the quantity of a good that can be produced, imported, or sold. Shifts the supply curve to a fixed vertical line at the quota quantity.

Effects:

- Supply becomes perfectly inelastic at the quota quantity
- Price rises above equilibrium
- CS falls (consumers pay more for less)
- PS may rise (higher price per unit)
- DWL created from lost trades
- Example: COE quota system in Singapore, import quotas on rice

Theme 2.2: Firms and Decisions

Crash-Course Overview

Theme 2.2 shifts focus from the market level to the **firm level**. We examine how firms make decisions to achieve their objectives, the cost structures they face, and the strategies they use to compete.

- **2.2.1** — Objectives of firms (profit maximisation and alternatives)
- **2.2.2** — Cost and revenue concepts (SR and LR, economies of scale)
- **2.2.3** — Firms' decisions and strategies (pricing, collusion, price discrimination, innovation, market structures, efficiency)

Syllabus Learning Outcomes

Code	Outcome	Priority
2.2.1(a)	Profit maximisation: $\pi = \text{TR} - \text{TC}$, MR = MC with rising MC	High
2.2.1(b)	Alternative objectives: revenue max, satisficing, market share	High
2.2.2(a)	SR and LR cost and revenue concepts	Medium
2.2.2(b)	Internal/external econ./disecon. of scale → LRAC	High
2.2.3(a)	Firm strategies: growth, price competition, price discrimination, innovation, marketing, collusion	High
2.2.3(b)	Firms consider competition when deciding strategies	Medium
2.2.3(c)	Impact on efficiency (allocative, productive, dynamic), consumer welfare, other firms	High

2.2.1: Objectives of Firms

Profit Maximisation

Definition Profit Maximisation

Firms aim to maximise profit, where $\pi = \text{TR} - \text{TC}$. The profit-maximising output occurs where **MR = MC** and MC is rising.

Why MR = MC?

- If MR > MC: producing one more unit adds more to revenue than cost → profit increases → firm should expand output
- If MR < MC: the last unit costs more than it earns → profit decreases → firm should reduce output
- If MR = MC (and MC rising): profit is maximised — any deviation reduces profit

Warning Common Trap: MR = MC is the Condition, not Price = MC

In perfect competition, P = MR = AR, so profit max simplifies to P = MC. But in other market structures (monopoly, monopolistic competition), P > MR, so MR = MC is the correct rule, not P = MC. Do not default to P = MC unless the question explicitly assumes perfect competition.

Firms may lack sufficient or accurate information to identify the exact MR = MC output — this is an important evaluative point. Real firms use rules of thumb, trial and error, or break-even analysis.

Alternative Objectives

Definition Alternative Firm Objectives

Firms may choose other objectives instead of strict profit maximisation:

- **Revenue maximisation**: maximise sales revenue (TR), occurs where MR = 0. Higher output than profit max, lower profit. Common in firms with sales targets or where manager bonuses are tied to revenue.
- **Profit satisficing**: earn enough profit to keep shareholders happy, then pursue other goals. Common in large corporations with separation of ownership (shareholders) and control (managers).
- **Market share dominance**: grow market share even at expense of short-term profit. Common in oligopolistic markets (Grab, Netflix initially).

Exam Tip Evaluating Objectives

A strong essay evaluates when each objective applies:

- **Profit max:** competitive markets, small firms, owner-managed businesses
- **Revenue max:** salary-based managers, sales-linked bonuses, firms wanting to discourage entry
- **Satisficing:** large PLCs with dispersed shareholders, principal-agent problem
- **Market share:** new entrants, oligopolies, technology firms with network effects

Using the correct objective for the market context is a high-value evaluative skill.

2.2.2: Cost and Revenue

Short Run Cost Concepts

Definition Short Run

A period where at least one factor of production is fixed (typically capital). Firms can only vary variable factors (labour, raw materials).

Key cost concepts (no curve derivation required by syllabus):

- **Total Fixed Cost (TFC)**: Costs that do not vary with output (rent, loan repayments)
- **Total Variable Cost (TVC)**: Costs that vary with output (wages, raw materials)
- **Total Cost (TC)**: TC = TFC + TVC

- **Average Fixed Cost (AFC)**: AFC = TFC / Q — falls continuously as output rises (spreading overheads)
- **Average Variable Cost (AVC)**: AVC = TVC / Q — U-shaped due to diminishing returns
- **Average Total Cost (ATC)**: ATC = AFC + AVC — U-shaped
- **Marginal Cost (MC)**: Change in TC from producing one more unit. MC intersects ATC and AVC at their minimum points.

Exam Tip The Law of Diminishing Returns

In the SR, as more variable factor is added to a fixed factor, the marginal product of the variable factor eventually falls, causing MC to rise. This is why MC, AVC, and ATC are U-shaped. This is the fundamental reason firms cannot keep expanding output without costs rising in the short run.

Long Run: Economies and Diseconomies of Scale

Definition Long Run

A period where all factors of production are variable. No fixed costs. Firms can choose any plant size.

Long Run Average Cost (LRAC): The envelope of all possible SRATC curves. LRAC is typically L-shaped or U-shaped.

Economies of Scale (LRAC falling)

Internal economies of scale (firm-specific cost advantages as firm grows):

- **Technical economies:** Large firms can use specialised machinery, benefit from the law of increased dimensions (e.g., doubling pipeline diameter more than doubles capacity)
- **Managerial economies:** Specialisation of management functions (HR, finance, marketing)
- **Financial economies:** Lower borrowing costs for large firms
- **Marketing economies:** Bulk advertising discounts, brand recognition
- **Risk-bearing economies:** Diversification across products/markets
- **Purchasing economies:** Bulk-buying discounts from suppliers

External economies of scale (industry-wide cost advantages):

- Concentration of skilled labour in an area (Silicon Valley)
- Specialised suppliers and support services
- Knowledge spillovers between firms
- Improved infrastructure and transport networks

Definition Minimum Efficient Scale (MES)

The lowest level of output at which LRAC is minimised. Natural monopoly exists if MES is very large relative to market demand (only one firm can produce at lowest cost).

Diseconomies of Scale (LRAC rising)

Internal diseconomies:

- **Coordination and control problems:** Bureaucracy, slow decision-making, communication breakdowns
- **Principal-agent problem:** Managers pursue self-interest over profit max
- **Alienation of workforce:** Lower morale, lower productivity, higher absenteeism

External diseconomies:

- Congestion (traffic, transport delays)
- Rising factor prices (competition for scarce labour drives up wages)
- Negative externalities (pollution)

Revenue Concepts

- **Total Revenue (TR)**: TR = P × Q
- **Average Revenue (AR)**: AR = TR / Q = P (demand curve of the firm)
- **Marginal Revenue (MR)**: Change in TR from selling one more unit

For a firm facing a downward-sloping demand curve (price-maker), MR is always below AR. For a price-taker (perfect competition), P = AR = MR.

2.2.3: Firms' Decisions and Strategies

Growth, Diversification, and Shut-Down

- **Growth:** Firms grow through internal expansion or external integration (mergers & acquisitions)
  - Horizontal integration: same stage, same industry (merging with competitor)
  - Vertical integration: different stages of supply chain (backward — supplier, forward — retailer)
  - Conglomerate integration: unrelated businesses (diversification)
- **Shut-down condition (SR):** If P < AVC (and AR < AVC), the firm minimises losses by shutting down. It still pays fixed costs but avoids variable costs. If P ≥ AVC, the firm continues producing even if making a loss (covers variable costs + contributes to fixed costs).

Warning Shut-Down vs. Exit

Shut-down is a **short-run** decision — the firm stops producing but still exists (pays fixed costs). Exit is a **long-run** decision — the firm leaves the industry entirely (no costs). Do not confuse these in essays.

Price Competition

Firms compete on price to attract consumers. This is most effective when demand is price elastic — a price cut leads to a more-than-proportionate increase in Qd, raising TR.

- **Price wars:** Successive price cuts by competitors, common in oligopolies (e.g., Grab vs Gojek). Can be destructive — all firms end up with lower profit.
- **Predatory pricing:** Temporarily setting price below cost to drive rivals out of market, then raising price back up. Illegal under competition law in Singapore.
- **Limit pricing:** Setting price just low enough to deter new entrants.

Third Degree Price Discrimination

Definition Third Degree Price Discrimination

Charging different prices to different groups of consumers for the same product, based on differences in PED, not cost differences.

Conditions required:

1. The firm must have market power (price-maker, not price-taker)
2. The firm must be able to separate markets (by age, location, time, student status)
3. Different sub-markets must have different PEDs
4. No resale/arbitrage between markets (otherwise the low-price group resells to the high-price group)

How it works: The firm charges a higher price in the sub-market with more inelastic demand (e.g., adult tickets) and a lower price in the sub-market with more elastic demand (e.g., student tickets). This allows the firm to capture more consumer surplus, increasing profit.

Example Singapore Examples

- Movie theatres: Adult vs student/senior citizen pricing
- MRT: Peak vs off-peak fares
- Airlines: Business class vs economy (different PEDs based on purpose of travel)
- Restaurants: Lunch vs dinner pricing

Innovation, Research and Development

Firms invest in R&D to:

- Develop new products (product innovation) — can charge premium price, differentiate from rivals
- Improve production processes (process innovation) — lower costs, improve efficiency
- Create brand loyalty and barriers to entry (patents)

Evaluation: R&D spending is high-risk — many projects fail. Large firms with supernormal profits (monopolies, oligopolies) are best positioned to fund R&D. This is the key argument for **dynamic efficiency** — short-run allocative inefficiency may be offset by long-run innovation gains.

Marketing

Marketing strategies (advertising, branding, loyalty programmes) aim to:

- Increase demand (shift D curve rightward)
- Make demand less price elastic (build brand loyalty)
- Create barriers to entry (strong brands are hard to challenge)
- Differentiate the product from competitors' offerings

Warning Marketing Cost vs Benefit

Marketing is costly and these costs are eventually passed to consumers as higher prices. However, it can increase consumer awareness, enable economies of scale (higher Q), and provide information that benefits consumers. Evaluation should weigh these effects.

Collusion

Definition Collusion

An agreement between firms to coordinate prices, output, or market division rather than compete. Reduces uncertainty and can increase joint profit.

- **Overt collusion (cartel):** Explicit agreement — illegal in most countries including Singapore (Competition Act). Example: OPEC
- **Tacit collusion:** Implicit understanding — firms avoid price wars without explicit communication. Common in oligopolistic markets where firms follow price leaders
- **Cartel instability:** Each member has an incentive to **cheat** — increase output secretly to capture more profit. Without enforcement, cartels tend to break down

Exam Tip Collusion Evaluation

Factors that make collusion more likely: few firms, similar costs, high entry barriers, transparent pricing, stable demand, legal. Factors that make collusion less likely: many firms, different costs, secret price cuts possible, fluctuating demand, anti-trust enforcement. Use these as evaluative criteria in essays.

Market Structures Overview

The syllabus requires **awareness** of the four market structures based on:

- Number and size of firms
- Barriers to entry
- Nature of product (homogeneous vs differentiated)

Feature	Perfect Competition	Monopolistic Competition	Oligopoly	Monopoly
Number of firms	Very many	Many	Few	One
Product type	Homogeneous	Differentiated	Differentiated or homogeneous	Unique (no close substitutes)
Barriers to entry	None	Low	High	Very high / blockaded
Pricing power	Price-taker (P = MR = AR)	Some (P > MR)	Interdependent (strategic)	Price-maker (P > MR)
Profit in LR	Normal profit only	Normal profit only	Supernormal possible	Supernormal profit
Key feature	Allocatively efficient	Non-price competition	Strategic interdependence	Market power, DWL

Warning Diagrams — Not Required

The syllabus explicitly states: "Diagrammatic analyses of comparison of types of market structure, price discrimination and shut-down condition; and firms' SR to LR equilibrium adjustment are not required." Do NOT draw cost/revenue diagrams for market structure comparisons. Instead, focus on **descriptive analysis** and **real-world examples**.

Efficiency Concepts

Definition Allocative Efficiency

Achieved when P = MC (or MSB = MSC). Resources are allocated to their highest-value uses. At this point, it is impossible to make one person better off without making another worse off.

- Perfect competition achieves allocative efficiency in LR (P = MC)
- Monopoly does NOT — P > MC → underproduction → DWL
- Monopolistic competition does NOT in SR, close to it in LR (P > MC but small)

Definition Productive Efficiency

Achieved when the firm produces at the minimum point of its LRAC curve. No waste in production — output is produced at the lowest possible cost per unit.

- Perfect competition achieves productive efficiency in LR (at min LRAC)
- Monopoly may NOT — X-inefficiency (no competitive pressure to minimise costs)
- However, monopoly may achieve productive efficiency if it exploits economies of scale

Definition Dynamic Efficiency

The ability of firms to innovate, develop new products, and improve production processes over time. This involves investment in R&D and long-run cost reduction.

- Monopoly and oligopoly are more dynamcially efficient — supernormal profits fund R&D, patents protect returns
- Perfect competition is LESS dynamically efficient — no supernormal profit to fund R&D, free-riding on innovation
- This is the classic **static vs dynamic efficiency trade-off**

Exam Tip Efficiency in Essays

When evaluating firm strategies, always discuss the impact on ALL THREE types of efficiency:

1. **Allocative:** Is P = MC? If not, where is the DWL?
2. **Productive:** Is production at minimum LRAC? Are there X-inefficiencies?
3. **Dynamic:** Does the market structure incentivise or discourage innovation?

A strategy that reduces allocative efficiency (e.g., price discrimination raises prices for some groups) might still improve dynamic efficiency (more profit for R&D). Weighing these trade-offs earns AO4 marks.

Consumer Welfare

Firms' strategies affect consumer welfare through:

- **Consumer choice:** More variety (monopolistic competition) vs standardisation (perfect competition)
- **Product quality:** Competition drives quality improvements; monopoly may reduce quality
- **Consumer surplus:** Price discrimination reduces CS overall (but may increase CS for some groups)
- **Price:** Collusion raises prices (reduces welfare); price competition lowers prices (increases welfare)

Exam Tip Singapore Context

Always cite Singapore examples where relevant for evaluation:

- **Price discrimination:** MRT peak/off-peak, Changi Airport parking rates, Sentosa entry fees
- **Economies of scale:** SIA's hub operations at Changi, NTUC Fairprice's purchasing power
- **Collusion:** CCCS (Competition and Consumer Commission of Singapore) actions against bid-rigging in construction
- **Barriers to entry:** COE system as artificial supply constraint
- **Government intervention:** MAS regulation of banks, CCCS merger guidelines

Key Definitions Summary

Term	Definition
Price Mechanism	System where D&S determine prices and allocate resources
Consumer Surplus	Willingness to pay minus actual price paid
Producer Surplus	Price received minus minimum willingness to accept
PED	% change in Qd / % change in P
YED	% change in Qd / % change in Income
XED	% change in Qd of Good A / % change in P of Good B
PES	% change in Qs / % change in P
Profit	TR - TC
Profit Max	MR = MC (MC rising)
Economies of Scale	Falling LRAC as output increases (in LR)
Diseconomies of Scale	Rising LRAC as output increases (in LR)
Price Discrimination	Charging different prices to different consumers for same good
Collusion	Agreement between firms to restrict competition
Allocative Efficiency	P = MC (MSB = MSC)
Productive Efficiency	Production at minimum LRAC
Dynamic Efficiency	Long-run innovation and improvement

Connections to Other Topics

- **Theme 1 (Central Economic Problem):** The price mechanism is how markets solve the what/how/for-whom questions. Scarcity underlies all demand and supply.
- **Theme 2.3 (Microeconomic Objectives and Policies):** Market failure (externalities, public goods, information failure) is why governments intervene beyond taxes/subsidies/controls. Allocative efficiency at MSB = MSC extends the P = MC condition.
- **Theme 3 (National & International Economy):** Firm strategies affect aggregate supply, national competitiveness. Economies of scale link to international trade theory. Price discrimination by exporting firms relates to dumping.