

H2 Economics (9570)

Chapter 3: Firms and Decisions — Lecture & Exam Notes

A-Level 2027 Syllabus | Theme 2.2

Part I: Lecture Notes

Firms and Decisions

Syllabus Learning Outcomes

By the end of this chapter, you should be able to:

- Explain the objectives of firms (profit maximisation, revenue maximisation, profit satisficing, market share dominance)
- Apply cost and revenue concepts in the short run and long run
- Analyse internal and external economies and diseconomies of scale
- Evaluate firms' pricing, cost, and product differentiation strategies
- Assess the impact of firms' decisions on efficiency, consumer welfare, and other firms

2.2.1 Objectives of Firms

Profit Maximisation

Definition Profit

Profit is the difference between total revenue (TR) and total cost (TC):

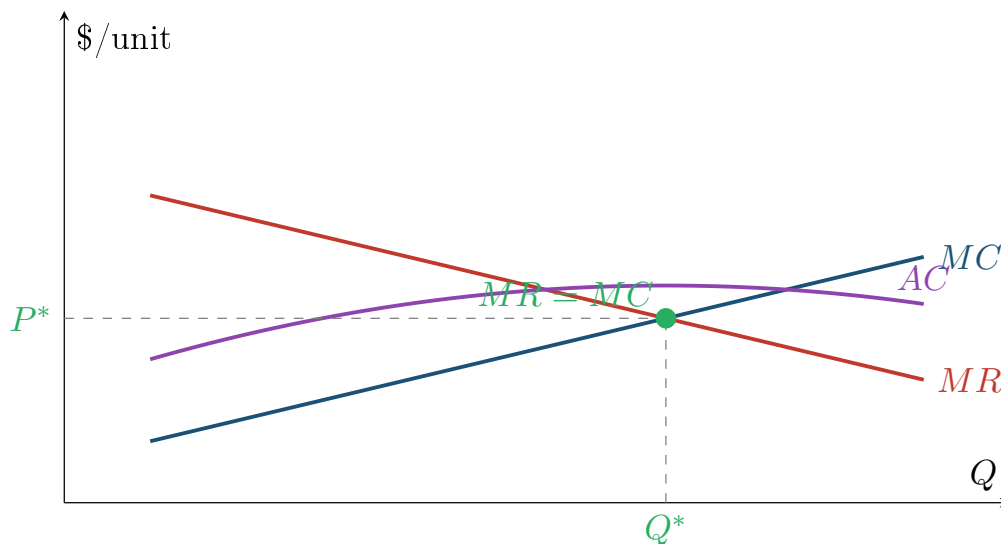
$$\pi = TR - TC$$

A firm **maximises profit** by producing at the output level where **Marginal Revenue = Marginal Cost** and MC is rising.

Why MR = MC?

- If $MR > MC$: producing one more unit adds more to revenue than to cost \Rightarrow profit increases \Rightarrow firm should produce more.
- If $MR < MC$: producing one more unit adds more to cost than to revenue \Rightarrow profit decreases \Rightarrow firm should produce less.
- Therefore, profit is maximised when $MR = MC$ (the last unit adds exactly as much to revenue as it does to cost).

The condition "MC is rising" ensures we are at a maximum, not a minimum, of profit.



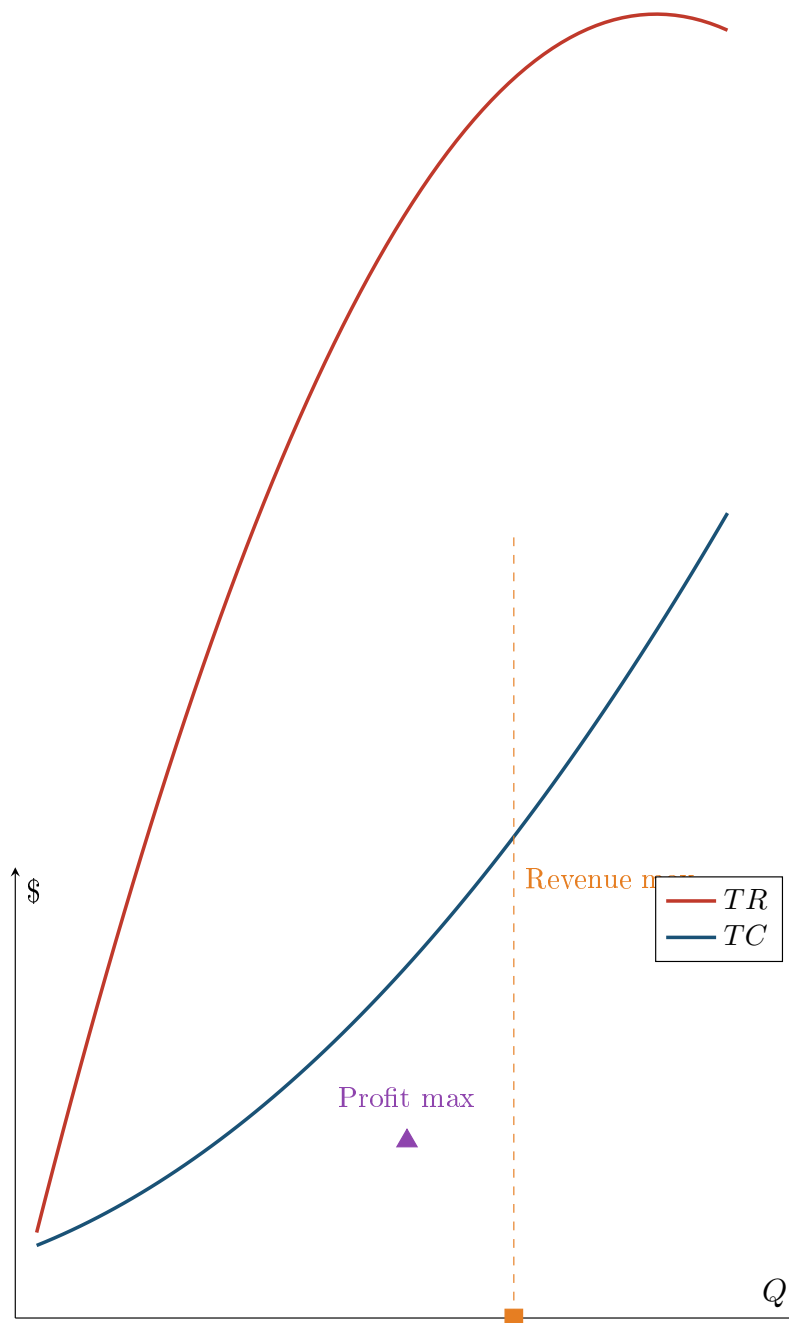
Warning Information Problems

Firms may lack sufficient or accurate information to know their exact MR and MC curves, making it difficult to truly maximise profits. This is a key **limitation** of the profit maximisation assumption.

Alternative Objectives

Not all firms prioritise profit maximisation. Three alternatives:

1. **Revenue maximisation:** Produce where $MR = 0$ (total revenue is at its peak). This yields higher output and lower price than profit maximisation — often pursued by managers seeking growth or market presence.
2. **Profit satisficing:** Achieve a “satisfactory” level of profit rather than the maximum. Based on Herbert Simon’s **bounded rationality** — firms set a target profit and stop once it’s reached, rather than optimising further.
3. **Market share dominance:** Prioritise growing market share (e.g. via aggressive pricing, heavy marketing). Short-run profits may be sacrificed for long-run market power. Common in tech platforms (Grab, Uber) and retail (Amazon).



2.2.2 Cost and Revenue

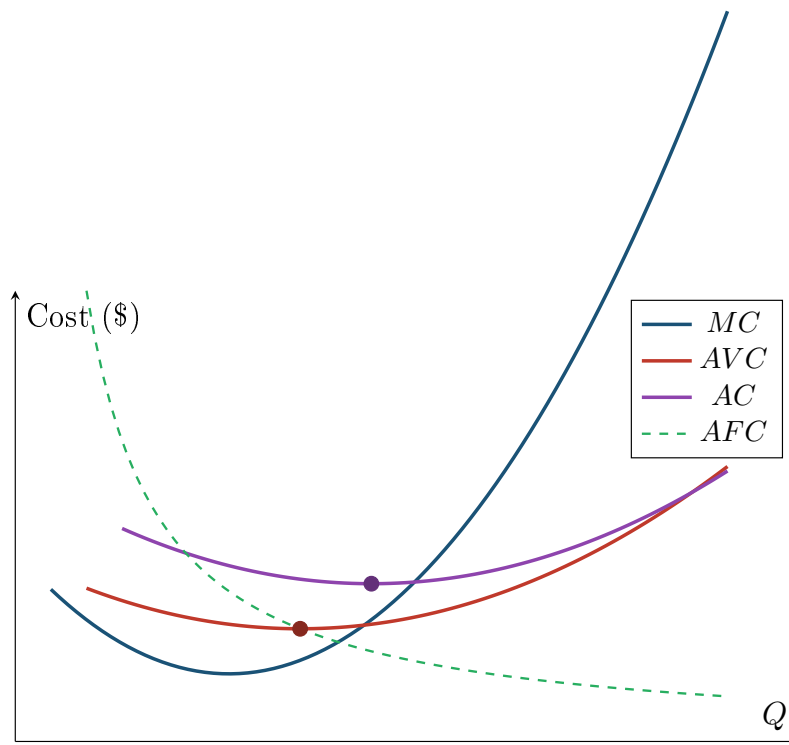
Short-Run Cost Concepts

Definition Short Run

The **short run** is the time period in which at least one factor of production is fixed (typically capital). The firm can vary output by changing variable inputs (labour, raw materials) but cannot change its fixed inputs.

Key cost terms:

Term	Abbreviation	Definition
Total Fixed Cost	TFC	Costs that do not vary with output (rent, salaries)
Total Variable Cost	TVC	Costs that vary with output (raw materials, hourly wages)
Total Cost	TC	$TC = TFC + TVC$
Average Fixed Cost	AFC	$AFC = TFC/Q$ (falls as Q rises)
Average Variable Cost	AVC	$AVC = TVC/Q$ (U-shaped)
Average Cost	AC	$AC = TC/Q = AFC + AVC$ (U-shaped)
Marginal Cost	MC	Change in TC from producing one more unit



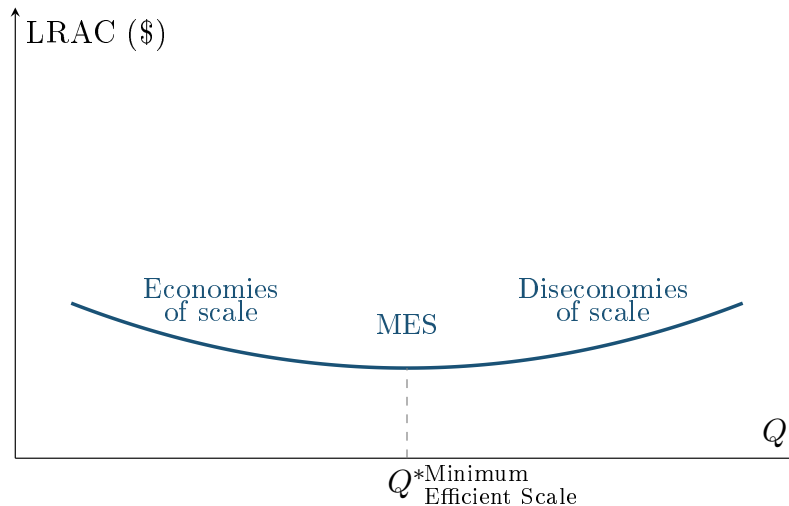
Exam Tip
MC always crosses AVC and AC at their minimum points. This is a fundamental relationship you must know. Reason: when $MC < AC$, AC is falling; when $MC > AC$, AC is rising. The crossing point is where AC stops falling and starts rising — its minimum.

Long-Run Cost Concepts

Definition Long Run
 The **long run** is the time period in which all factors of production are variable. The firm can change its scale of production (build new factories, buy more machines). There are no fixed costs.

The **Long-Run Average Cost** (LRAC) curve is **U-shaped** and is an envelope curve that touches the minimum points of various short-run AC curves.

Economies and Diseconomies of Scale



Definition Economies of Scale

Economies of scale occur when LRAC falls as the scale of production increases. They can be **internal** (specific to the firm) or **external** (specific to the industry).

Internal economies of scale (firm-specific):

- **Technical:** Specialisation of labour and capital; bulk buying discounts
- **Marketing:** Spreading advertising costs over larger output
- **Financial:** Larger firms get better interest rates on loans
- **Managerial:** Employing specialist managers; division of labour
- **Risk-bearing:** Diversification reduces risk exposure

External economies of scale (industry-wide):

- **Concentration:** Clustering of firms (e.g. Silicon Valley) creates a pool of skilled labour and shared infrastructure
- **Information:** Industry associations share research and best practices

Definition Diseconomies of Scale

Diseconomies of scale occur when LRAC rises as the scale of production increases beyond the **minimum efficient scale** (MES).

Causes of diseconomies of scale:

- **Managerial inefficiency:** Coordination problems in very large organisations; communication breakdowns; bureaucracy
- **Worker alienation:** Low morale and motivation in large, impersonal firms
- **Control problems:** Difficulty monitoring productivity across many layers of management

Warning Internal vs. External Economies

Internal economies shift the firm's own LRAC downward. **External** economies shift the *entire industry's* cost structure downward. When asked about economies of scale, always specify which type.

Revenue Concepts

Term	Abbreviation	Definition
Total Revenue	TR	$TR = P \times Q$
Average Revenue	AR	$AR = TR/Q = P$ (the demand curve)
Marginal Revenue	MR	Change in TR from selling one more unit

The relationship between AR and MR depends on market structure:

- **Perfect competition:** $AR = MR$ (firm is a price taker; demand curve is horizontal)
- **Imperfect competition:** $MR < AR$ (firm faces downward-sloping demand; must lower price on all units to sell more)

2.2.3 Firms' Decisions and Strategies

Market Structures (Awareness Level)

The syllabus requires awareness of four market structures based on key characteristics:

Characteristic	Perfect Comp.	Monopolistic Comp.	Oligopoly	Monopoly
Number of firms	Many	Many	Few	One
Barriers to entry	None	Low	High	Very high
Nature of product	Homogeneous	Differentiated	Differs	Unique
Price control	None	Some	Some	Significant
Information	Perfect	Imperfect	Imperfect	Imperfect

Warning Market Structures — Exam Scope

The syllabus states that **diagrammatic analyses** of market structure comparison, price discrimination, shut-down condition, and short-run to long-run equilibrium adjustment are **not required**. You need *awareness* of these structures but should not draw full equilibrium diagrams for each.

Growth, Diversification, and Shut-Down

Growth strategies:

- **Internal (organic) growth:** Reinvesting profits to expand capacity
- **External growth:** Mergers and acquisitions (M&A) — horizontal, vertical, or conglomerate

Diversification: Expanding into new markets or products to spread risk (conglomerate mergers). Reduces dependence on a single market.

Shut-down decision:

- **Short run:** Firm should shut down if $TR < TVC$ (i.e. $AR < AVC$). It cannot cover its variable costs and loses more by operating than by shutting down (it still pays TFC either way).
- **Long run:** Firm should shut down if $TR < TC$ (i.e. $AR < AC$). It cannot cover total costs and will exit the market.

Price Competition and Third-Degree Price Discrimination

Definition Price Discrimination

Price discrimination occurs when a firm charges different prices for the same good to different consumers, where the price difference is not due to differences in cost.

Third-degree price discrimination: Charging different prices to different *groups* of consumers based on their price elasticity of demand.

Conditions for price discrimination:

1. Firm must have **market power** (price setter, not price taker)
2. Markets must be **separable** (no arbitrage/resale between groups)
3. Different groups must have **different PEDs**

Rule: Charge a *higher* price in the market with *more inelastic* demand, and a *lower* price in the market with *more elastic* demand.

Example Price Discrimination in Singapore

- **Cinema tickets:** Student/senior discounts — students have more elastic demand (lower income, more substitutes for entertainment)
- **Airlines:** Business class vs. economy — business travellers have inelastic demand (must travel, company pays)
- **MRT fares:** Concession fares for students/seniors — same service, different price based on PED

Non-Price Competition

Product differentiation: Making a product appear different from competitors' products through branding, quality, design, or features. Key in monopolistic competition and oligopoly.

Innovation and R&D: Developing new products or improving existing ones. Creates dynamic efficiency but involves risk and high fixed costs.

Marketing and advertising: Builds brand loyalty, makes demand more inelastic, raises barriers to entry for new competitors.

Exam Tip

When evaluating a firm's strategy, always consider:

1. Impact on **efficiency** (allocative, productive, dynamic)
2. Impact on **consumer welfare** (choice, quality, consumer surplus)
3. Impact on **other firms** (barriers to entry, competitive pressure)

Collusion

Definition Collusion

Collusion is an agreement between firms to limit competition, typically by fixing prices, restricting output, or dividing markets. It can be **explicit** (cartel) or **tacit** (price leadership, conscious parallelism).

Why firms collude: To act as a collective monopoly, raising prices above competitive levels and increasing joint profits.

Why collusion may fail:

- **Incentive to cheat:** Each member has an incentive to secretly lower prices to gain market share (prisoner's dilemma)
- **New entrants:** High profits attract entry, increasing supply and lowering price
- **Legal enforcement:** Competition laws prohibit cartels (e.g. CCCS in Singapore)
- **Difficulties in agreement:** Firms may disagree on price levels, market shares, or output quotas

Barriers to Entry

Barriers to entry are obstacles that prevent new firms from entering a market. They protect incumbent firms' market power:

1. **Economies of scale:** New entrants face cost disadvantage at small scale
2. **Sunk costs:** High initial investment that cannot be recovered if the firm exits
3. **Legal barriers:** Patents, copyrights, government licences
4. **Strategic barriers:** Predatory pricing, limit pricing, excess capacity
5. **Brand loyalty:** Consumers reluctant to switch from established brands
6. **Control of essential resources:** Incumbent controls key inputs or distribution channels

Impact of Firms' Decisions

On efficiency:

- **Allocative efficiency:** $P = MC$ (price reflects marginal cost to society). Achieved in perfect competition. Monopolies tend to set $P > MC$ — allocatively inefficient.
- **Productive efficiency:** Producing at minimum AC on the LRAC curve. Achieved in perfect competition in the long run. Monopolies may have productive efficiency *if* they exploit economies of scale.
- **Dynamic efficiency:** Innovation and technological progress over time. Large firms with market power may have more resources for R&D, but lack of competitive pressure may reduce the incentive.

On consumer welfare:

- Price discrimination can *increase* total output and allow some consumers (with elastic demand) to access the good at lower prices, but reduces consumer surplus for those paying higher prices.
- Product differentiation increases **consumer choice** but may create artificial distinctions (branding without real quality difference).
- Collusion typically *reduces* consumer welfare (higher prices, less output).

On other firms:

- Aggressive pricing strategies may drive competitors out (predatory pricing).
- Mergers reduce the number of competitors, potentially increasing market concentration.
- R&D and innovation by one firm force competitors to also innovate or lose market share.

Behavioural Economics Awareness

The syllabus requires awareness that firms may exploit consumers' **cognitive biases**:

- **Sunk cost fallacy**: Consumers continue using a service because they've already invested in it (e.g. gym memberships, subscription traps)
- **Loss aversion**: Framing prices as “discounts from original price” makes consumers perceive they're avoiding a loss
- **Salience bias**: Highlighting certain features (e.g. “0% interest”) while downplaying hidden costs

Exam Tip

When evaluating firms' strategies, mentioning behavioural economics (cognitive biases) adds sophistication to your evaluation. It shows awareness of why consumers may not always act rationally — a key theme in the 2027 syllabus.

Common Misconceptions

Warning Profit \neq Revenue

A firm with high revenue is not necessarily profitable. Revenue maximisation ($MR = 0$) produces *more* output but *lower* profit than profit maximisation ($MR = MC$). Always distinguish between these two objectives.

Warning Economies of Scale \neq Increasing Returns to Scale

Economies of scale refer to the **falling LRAC** as output increases. “Increasing returns to scale” is a related but distinct concept referring to the proportional increase in output when all inputs are increased. The syllabus uses the LRAC definition.

Warning Shut-Down \neq Exit

Shut-down is a **short-run** decision (firm stops producing but remains in the market, still pays fixed costs). Exit is a **long-run** decision (firm leaves the market entirely, all costs avoided). These are different decisions with different conditions.

Connections to Other Topics

- **Theme 2.1 (Price Mechanism)**: Market structures determine how firms set prices. PED (from Chapter 2) is essential for understanding price discrimination.
- **Theme 2.3 (Market Failure)**: Monopoly power can cause market failure ($P > MC$). Government intervention (competition policy) addresses this.
- **Theme 3 (Macro)**: Firms' investment decisions affect aggregate demand. Economies of scale affect international competitiveness.

Part II: Exam Notes

Exam Notes: Firms and Decisions

Command Words & What They Require

Command Word	Expected Response
State / Define	Precise definition. No explanation.
Explain	Give reasons. Show the mechanism step by step (e.g. how $MR = MC$ leads to profit max).
Analyse	Break into components. Show cause-effect chains. Draw and refer to diagrams.
Discuss	Both sides. E.g. benefits and drawbacks of a firm strategy.
Evaluate	Make a judgement. Weigh the strength of arguments. Consider context.
To what extent	Similar to evaluate. Indicate degree (e.g. “to a large extent because...”).

Mark Allocation Patterns

Marks	Level	What is required
1	AO1	State a definition
2	AO1+AO3	Define + one analytical point
3–4	AO1+AO3	Define + analysis with diagram reference
5–8	AO1+AO3+AO4	Full analysis + evaluation (e.g. effectiveness, limitations, context)
10–12	AO1+AO3+AO4	Extended essay: define, 2–3 analytical points with diagrams, evaluation, conclusion
25	Full essay	Introduction + 3 body paragraphs (DIEE each) + conclusion with balanced judgement

Question Templates & Model Answers

Template 1: Explain how a firm decides how much to produce

Command Word “Explain how a firm determines its profit-maximising level of output.”

Answer Structure:

1. **Define** profit maximisation: producing where $MR = MC$ and MC is rising.
2. **Explain the logic:**
 - If $MR > MC$, the firm gains by producing more (each unit adds more revenue than cost).
 - If $MR < MC$, the firm gains by producing less (each unit adds more cost than revenue).
 - At $MR = MC$, the firm cannot increase profit by changing output.
3. **Diagram:** Draw MC and MR curves, mark intersection.
4. **Condition:** MC must be rising (otherwise it’s a profit minimum).
5. **Evaluation:** Firms may not have perfect information about MR and MC . They may satisfice instead.

Template 2: Evaluate the impact of economies of scale

Command Word “Discuss the impact of internal economies of scale on a firm’s cost structure.”

Answer Structure (DIEE):

1. **Define** internal economies of scale.
2. **Illustrate:** Draw $LRAC$ curve showing falling portion.
3. **Explain:** As firm grows, it can specialise labour, buy in bulk, spread fixed costs $\Rightarrow LRAC$ falls \Rightarrow firm becomes more competitive, can lower prices or increase profit margins.
4. **Evaluate:**
 - *For:* Lower costs benefit consumers (lower prices); firm can compete internationally.
 - *Against:* Beyond MES , diseconomies set in (coordination problems). Large firms may become complacent. External economies may be more important than internal for some industries.
 - *Context:* Depends on industry — manufacturing has strong scale economies; services often do not.

Template 3: Evaluate price discrimination

Command Word “Evaluate the use of third-degree price discrimination by a firm.”

Answer Structure:

1. **Define** third-degree price discrimination.
2. **State conditions:** Market power, separable markets, different PEDs.
3. **Explain the rule:** Charge higher price in inelastic market, lower price in elastic market. Show with diagram if possible (two AR/MR pairs).
4. **Evaluate:**
 - *Producers:* Higher total revenue and profit. Captures more consumer surplus.
 - *Consumers (elastic market):* Benefit from lower prices; may access good they otherwise couldn't afford.
 - *Consumers (inelastic market):* Pay higher prices; consumer surplus transferred to producer.
 - *Efficiency:* May increase total output (closer to allocative efficiency) compared to single price. But distributional concern — equity issue.
5. **Conclude:** Price discrimination is generally beneficial to the firm but has mixed effects on consumers and efficiency. Depends on the extent of price difference and the fairness of market segmentation.

Key Essay Structures

For 25-Mark Essays: The 3-Paragraph Structure

Para	Focus	Content
1	Introduction	Define key terms, state your thesis, outline the essay
2	Body 1 (DIEE)	First argument — e.g. how the strategy benefits the firm/consumers
3	Body 2 (DIEE)	Second argument — e.g. limitations or counter-argument
4	Body 3 (DIEE)	Third argument — e.g. alternative strategies or contextual factors
5	Conclusion	Weigh arguments, make balanced judgement, qualify with context

Exam Tip

Every body paragraph must have:

- A clear **topic sentence** linked to the question
- An **economic concept** applied (not just described)
- A **diagram** where relevant (not every paragraph needs one, but at least 1-2 per essay)
- **Evaluation** — this is what accesses AO4 marks

Timing Guide

Component	Time	Marks
Paper 2: Essays	2h 30min	75 marks
Per essay (25m)	~40–45 min	25 marks
Planning	5 min	—
Writing	35–40 min	—
Per mark	~1.7 min	—

Exam Tip

Time management is critical. Many students spend too long on the first essay and rush the remaining two. Stick to 45 min per essay. A complete essay with evaluation always beats an excellent half-essay.

Common Errors to Avoid

Warning Top Mistakes in Firms & Decisions Questions

- Describing without analysing:** Don't just list features of a market structure — explain *how* and *why* they matter for the specific question.
- No diagrams for cost/revenue:** Cost curves, LRAC, and price discrimination diagrams should be drawn when discussing these topics. They are expected even if not explicitly asked for.
- Confusing internal and external economies:** Internal = firm-level, External = industry-level. The exam often tests your ability to distinguish these.
- One-sided evaluation:** “Evaluate” requires both sides. Stating only benefits of a strategy cannot score above AO3.
- Ignoring the shut-down condition:** When discussing firm survival, always state the condition ($AR < AVC$ for short-run shut-down).
- Generic conclusions:** “It depends” is not a conclusion. Specify *what* it depends on and give a **judgement** (e.g. “Price discrimination is likely beneficial to the firm but harms consumer equity, particularly for low-income groups with inelastic demand”).
- Missing behavioural economics:** The 2027 syllabus explicitly mentions cognitive biases. Reference them where relevant for higher marks.

Singapore-Specific Applications

Exam Tip Singapore Examples for Firms & Decisions

- **Economies of scale:** Temasek-linked companies (SIA, Singtel) benefit from scale; Singapore's small domestic market means firms must go regional
- **Price discrimination:** MRT concession fares, student movie tickets, hospital fees (citizen vs. PR vs. foreigner)
- **Barriers to entry:** Banking (MAS licensing), telecom (spectrum auctions), ride-hailing (Grab's network effects)
- **Collusion:** CCCS (Competition and Consumer Commission of Singapore) actively prosecutes cartels
- **Market dominance:** Grab's dominance in ride-hailing; Shopee vs. Lazada in e-commerce
- **Behavioural biases:** FairPrice "two-for" promotions exploiting loss aversion; telco contracts with auto-renewal exploiting sunk cost fallacy