OCR – A Level Economics

Component 1 – Microeconomics

3. Business objectives

Revision Notes

Contents

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3.1 Business objectives

Profit maximisation

Most businesses have one big goal: **to make as much profit as possible** – this is called **profit maximisation**.

🤑 **Why do they want profits so badly?**

- More profit means more money to reinvest, grow the business, or just beat the competition.
- Profit can be paid to shareholders as **dividends** – which makes investing in the business more attractive.
- A rise in profits usually increases the company's **share price**, boosting the **wealth** of shareholders.

The Golden Rule: MC = MR

To maximise profit, firms use a simple rule:

👉 **Produce at the point where**
Marginal Cost (MC) = Marginal Revenue (MR)

- **Marginal Cost (MC)** = the cost of making one extra unit
- **Marginal Revenue (MR)** = the money earned from selling one extra unit

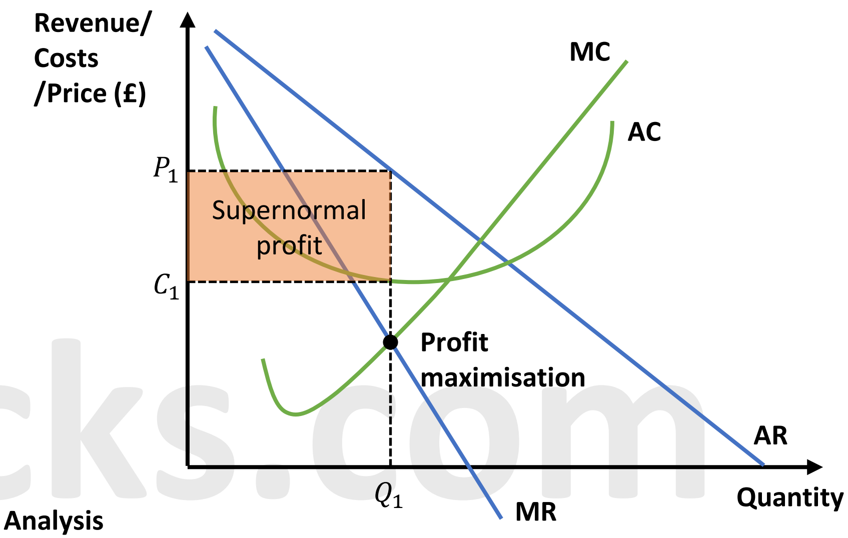
Here's what firms do:

- If **MC < MR**: keep producing – you're making profit on each extra unit.
- If **MC = MR**: stop here – you're at the perfect level (profit maximised!)
- If **MC > MR**: you've gone too far – every extra unit now loses money.

3.1 Business objectives

Profit maximisation

🎨 **Example**: Imagine a business that sells handmade candles.
It costs £3 (MC) to make one candle, and they sell it for £6 (MR) – great!
But if the cost rises to £6.50 while still selling at £6, they're losing money on every new candle. Time to stop.



Analysis

The diagram shows that the firm will produce at P_1Q_1. At the profit maximisation point (where MC = MR), the firm is making as much money as it possibly can from selling its products. The price (P_1) at this output is determined by the AR (average revenue) curve. The average cost (C_1) per unit is determined by the AC (average total cost) curve.

If **P_1 > C_1**, the firm is making more on each unit than it costs to produce – that's called **supernormal profit** (or abnormal profit). It's the extra profit over and above normal expectations.

👉 Formula:
Supernormal profit = (P_1 – C_1) × Q_1

🧁 **Example**:
Let's say a bakery sells cupcakes for £4 (P_1), and they cost £2 to make (C_1).
If it sells 100 cupcakes (Q_1), then:
Supernormal profit = (£4 – £2) × 100 = £200

3.1 Business objectives

Profit maximisation

Why Don't Firms Always Maximise Profit in Real Life?

Although the MC = MR rule sounds simple, it's harder to apply in real life.

1. Hard to measure

Firms don't always know exactly what their marginal costs and revenues are – especially when prices or production change constantly.

2. Short-term challenges

Costs can change quickly, but businesses can't constantly change prices – that would confuse customers or reduce demand.

3. Long-term adjustments

Over time, firms can change prices or reduce costs to move closer to that ideal profit-maximising level.

4. Government intervention

Sometimes, if prices get too high (especially in essential services), the **Competition Commission** might step in to protect consumers. This can stop firms from pushing prices up, even if that's where profit is maximised.

3.1 Business objectives

Sales revenue maximisation

Sometimes, instead of aiming for maximum **profit**, firms go for **revenue maximisation** – that means making as much money from **sales** as possible, even if it doesn't lead to the highest profit. It focuses on increasing total revenue – which is calculated as:

Total Revenue = Price × Quantity Sold

Why Would a Firm Do This?

Not all firms are laser-focused on profit. Here's why:

1. Manager Bonuses

In some companies, sales managers earn bonuses based on revenue, not profit. This encourages them to sell as much as possible, even if costs rise.

2. Grow Fast and Beat Competitors

Start-ups or growing businesses (think: Spotify in its early days) might focus on grabbing customers quickly by keeping prices low and selling more – even if profits are tiny or non-existent.

3. Economies of Scale

Selling more units can help reduce **average costs** (e.g. bulk buying materials), making production more efficient in the long run.

3.1 Business objectives

Sales revenue maximisation

How Do Firms Know When They've Hit Revenue Max?

Firms will produce **up to the point where Marginal Revenue (MR) = 0**.

🧠 **Marginal Revenue** is the extra money a firm makes from selling one more unit.

- If **MR > 0**, selling more still increases revenue = 👍
- If **MR = 0**, they've reached the max – no extra revenue from extra sales.
- If **MR < 0**, they're actually losing revenue on each extra unit.

📌 So, revenue-maximising firms stop producing when **MR = 0**.

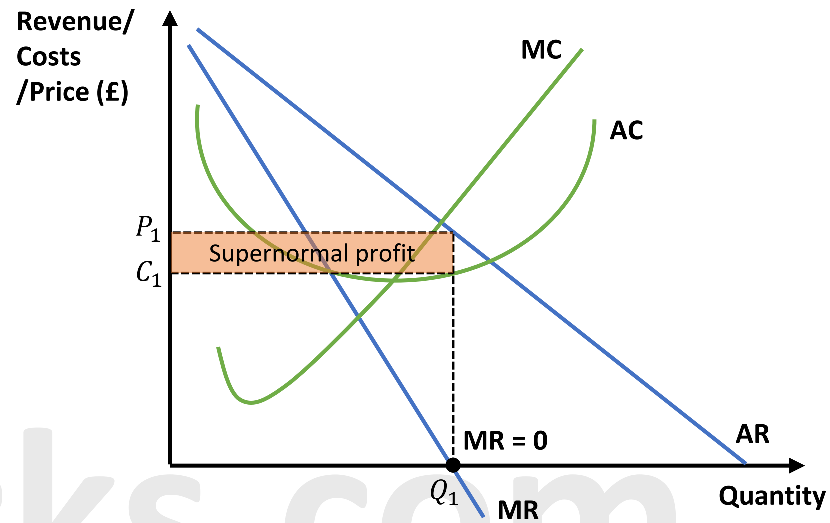
📦 **Example:**

Let's say a bakery sells cupcakes. As it lowers the price, it sells more. At some point, lowering the price further doesn't bring in more money overall – maybe because they've had to cut prices too much. That's the point where **MR = 0** – and where they'll stop if they're trying to maximise revenue.

Imagine a clothing brand selling t-shirts. If lowering the price helps them sell more and generate £10,000 in revenue (even if profit is only £1,000), they might go for it – especially if they want to dominate the market or hit bonus targets.

3.1 Business objectives

Sales revenue maximisation



Analysis

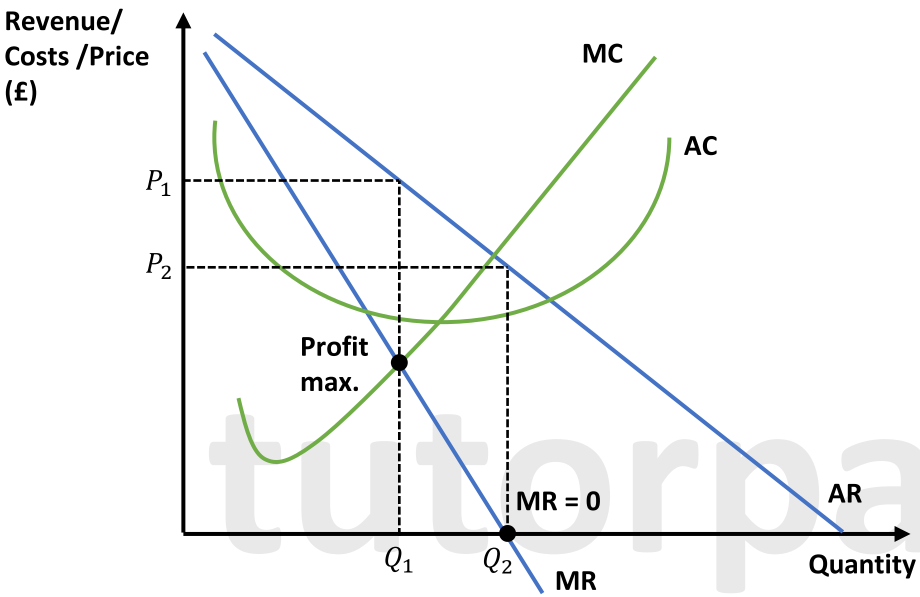
When a business is aiming to **maximise revenue**, it keeps increasing output until **MR = 0** – in other words, selling one more unit doesn't bring in any extra money.

At this point:

- The **price charged** is **P_1**
- The **average cost** of production is **C_1**
- The firm still earns **supernormal profit**, calculated as:
  👉 **$(P_1 - C_1) \times Q_1$**

🎯 But here's the catch:
While they do make supernormal profit, it's **less than** what they could have made if they followed the **profit maximisation rule** (where MR = MC). So, they're trading off some profit for more sales.

Profit v Revenue maximisation



To **revenue maximise**, a firm will produce at the point where **marginal revenue (MR) = 0**. This is because if MR is still positive, making and selling one more unit will still add to total revenue. So, the firm keeps producing until adding another unit brings in no extra money.

This means they produce a larger quantity, let's call it **Q2**, and sell at a lower price **P2**. In contrast, if they were **profit maximising**, they'd produce where **MR = MC**, which is at a smaller output (**Q1**) and a higher price (**P1**).

🔁 In simple terms:
Revenue maximisation = more products sold, lower price.
Profit maximisation = fewer products sold, higher price per unit.

3.1 Business objectives

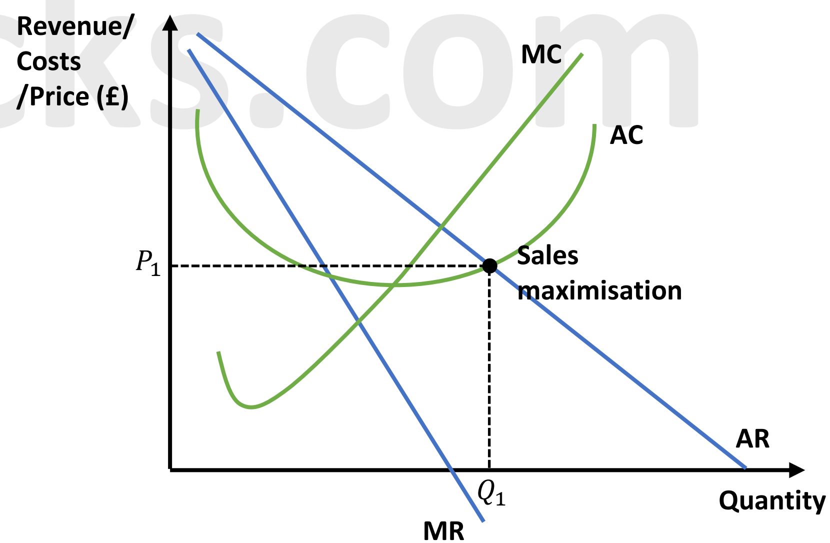
Sales volume maximisation

Some businesses aren't just chasing profit , instead, they aim to **sell as many units as possible**. This is known as **sales maximisation**.

📍 **This happens where average cost (AC) = average revenue (AR)**.
This is also called the **breakeven point** – where the firm isn't making a loss, but it isn't making a super profit either (just covering all costs, including normal profit).

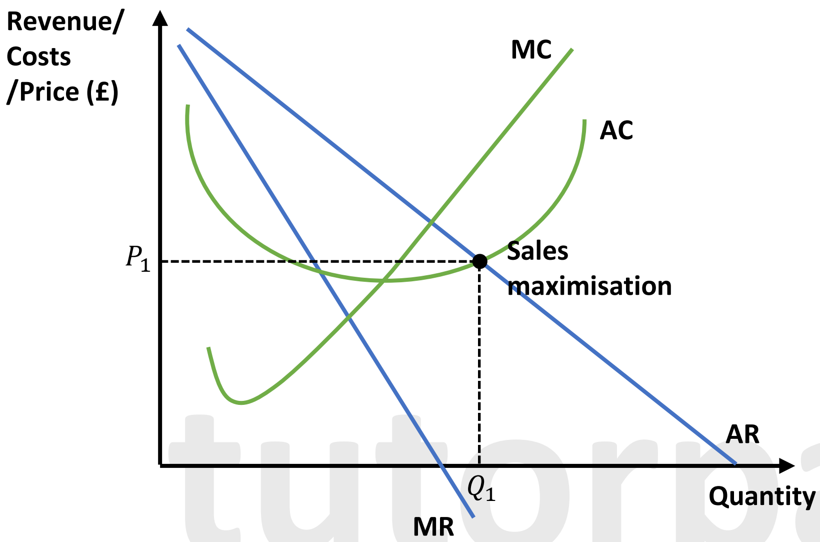
Why would a business want to do this?

Let's say a company is running a **big end-of-season sale**. Their goal? Get rid of as much stock as they can – even if they don't make much profit – as long as they're not losing money on each sale.



3.1 Business objectives

Sales volume maximisation



Analysis

At the **sales maximisation point**, output is at **Q_1** and the selling price is **P_1**.

Here:

- **AR = AC**, so the **firm breaks even** – no supernormal (extra) profit, but no losses either.
- The firm earns **normal profit**, which is just enough to cover all opportunity costs.

3.1 Business objectives

Profit Satisficing

In the world of business, not everyone wants to squeeze out every last penny of profit. Sometimes, firms aim for a more relaxed objective called **satisficing** – basically making **just enough profit to keep the owners happy**, while also focusing on other goals.

Why does this happen?

It all comes down to something called the **principal-agent problem**. Here's what that means:

- **Principals** = the shareholders or owners of the business
- **Agents** = the managers or directors who run the business day to day

Now, these two groups don't always want the same thing. Owners want **maximum profit** to boost share prices and get big dividends 💰. But managers might have other things in mind – like keeping their jobs, enjoying big salaries, or getting bonuses and perks. So, managers will make sure the firm makes **enough** profit to avoid complaints from the owners… but they might not push for maximum profit if it gets in the way of their own goals.

So what do managers actually do?

They **satisfice** – they hit a profit target that's "good enough" rather than perfect. This lets them also:

- Spend more on fancy offices or extra staff
- Take less risky decisions
- Give themselves higher wages or bonuses

Of course, doing all this means profits are lower than they could be. But as long as shareholders aren't angry, managers get what they want too. It's a bit of a balancing act.

And how much profit is "good enough"?

That **changes every year**. For example:

- If the economy is down and other firms are making losses, then just breaking even (aka **normal profit**) might be fine.
- But if competitors are booming and raking in profits, shareholders will expect the same – so "good enough" suddenly means **a lot more**.

Other business objectives

Not every business is all about the money. While **profit maximisation** is a big goal for many firms, others are driven by different reasons.

1. 🌱 Growth

Some businesses aim to grow bigger and better.

- **Business growth** means expanding in size i.e., more employees, more customers, bigger market share, or more revenue.
- Companies chasing growth often focus on:
    - **Sales revenue** (the money they make from selling goods/services)
    - **Market share** (their slice of the overall industry)
- Growing helps firms **cut costs** through **economies of scale** meaning they can produce more at a lower average cost.
- A growing business is also **less likely to fail** in the long run.

🧃 **Example:** A juice company might reinvest all its profits to open new stores instead of just pocketing the cash.

2. 🌟 Utility Maximisation

Maximisation in economics basically means "getting the most out of something."

- For **consumers**, this means trying to get the most satisfaction (what economists call **utility**) from every pound, dollar, or euro they spend. For example, if you've got £10, you'll try to spend it in a way that makes you happiest; maybe on food, a cinema ticket, or saving for a new phone.
- For **firms**, maximisation usually means chasing **profit;** selling goods and services for more than it costs to make them.

3.1 Business objectives

Other business objectives

Utility is just a fancy word for **happiness or satisfaction**. So, when you buy a delicious pizza, the enjoyment you get is your utility. The idea is that people and businesses usually act in their own self-interest; aiming to maximise their own benefit.

But here's the twist: not all firms only care about themselves. Some companies (especially if run by philanthropic owners) also want to maximise the utility of others, like donating part of their profits to charity or funding schools.

3. 🌍 Social Welfare and Corporate Social Responsibility (CSR)

Social welfare is about improving the well-being of society as a whole, not just individual consumers.

Corporate Social Responsibility (CSR) is when firms recognise that their actions affect more than just their profits; they impact people, communities, and the environment. So, CSR is about firms acting responsibly.

For example:

- A clothing company might switch to eco-friendly materials to reduce pollution.
- A supermarket chain could cut down on food waste by donating leftover food to charities.
- A tech company might invest in recycling programmes for old devices.

3.1 Business objectives

Other business objectives

4. Survival

Especially in the early days, just staying alive is the goal.

- **Business survival** means covering your costs and keeping the doors open.
- It's especially important for startups as around **1 in 4 new businesses fail in their first year.**
- Once a business gets stable, it can shift its focus to making bigger profits.

🍔 **Example:** A new burger joint might not worry about big profits yet; just about paying staff, suppliers, and rent on time.

5. 📈 Increasing Market Share

Market share means the portion of total sales a company has in its industry like a slice of the pie.

Some firms try to grab a bigger slice by selling more products, even if it means making less profit for a while. Why? Because a bigger market share can help them stay in business long term and beat out the competition.

🧃 **Example:** Imagine a new smoothie brand that sells its drinks at a super low price to get into lots of stores and build a fanbase. They might not make big profits straight away, but they'll win loyal customers who keep coming back. Once they've grown, they can raise prices and start earning more.

3.1 Business objectives

Other business objectives

6. 🌟 Improving Quality

Firms often focus on making their **products or services better** to stand out.

Improving **quality** means offering something that works well, lasts longer, or feels premium like friendly service, faster delivery, or tastier food. This can help firms build a good reputation, attract more customers, and even **charge higher prices**, because people are happy to pay more for quality.

👟 **Example:** A shoe company might use better materials and offer free repairs. Customers trust the brand, recommend it to others, and are willing to pay a bit extra.

The difference between the short run and the long run

The Short Run

This is a time period where **at least one factor of production** (like machinery, land, or factory space) is **fixed**, meaning it can't be changed quickly. For example, if you own a small coffee shop, you can hire more baristas tomorrow, but you can't magically build a second café overnight. That's short run.

Usually, **labour** is the flexible factor because it's easier and quicker to hire or fire people than to expand buildings or buy equipment.

The Long Run

This is the opposite of the short run, **everything can be changed.** All factors of production become **variable**. So, in the long run, you can expand your shop, get new equipment, or even open more branches. It's the planning stage where big changes happen.

3.2 Costs and economics of scale

Marginal, average and total returns

Let's break down three key concepts that help businesses understand how productive their workers are: **marginal returns**, **total returns**, and **average returns**.

🔷 **Marginal Returns**

Marginal returns tell you how much extra output you get when you hire **one more worker**, while keeping everything else the same.

📍 For example:
Imagine a cupcake bakery has 5 bakers making 250 cupcakes. They hire a 6th baker, and suddenly the bakery is now making 290 cupcakes. That extra 40 cupcakes is the **marginal return** of that new worker.

It helps you answer the question: *"Is hiring another person worth it?"*

🔷 **Total Returns**

Total returns simply mean the **overall output** made by your team. It's the big-picture number; how much is being produced in total with your current number of workers.

📍 For example:
A T-shirt company has 12 workers making 600 shirts a day. That 600 is the **total return,** all the output from your current workforce.

Marginal, average and total returns

🔷 **Average Returns**

Average returns show how **efficient** your team is, by calculating how much each person produces on average. You get it by dividing total output by the number of workers.

📍 For example:
A burger stand has 10 employees who together make 500 burgers a day. That means each worker makes 50 burgers, on average. So, the **average return** is 50 burgers per worker.

✅ **Why Does This Matter?**

These three types of returns help businesses figure out:

- If adding more workers increases output efficiently
- How productive the team is overall
- Whether they're getting the most out of each employee

Understanding this makes it easier to decide when to expand, when to invest in training, or when to rethink your setup.

3.2 Costs and economics of scale

The law of diminishing returns

The **Law of Diminishing Marginal Returns** says that if you keep adding more of one input (like workers 👷) to a fixed input (like machines 🏭 or kitchen space), your extra output (or productivity) will eventually **start to fall,** even though you're still adding workers.

🧠 **Example:**

Imagine a bakery with **one oven** 🍞. You start with one baker 👨‍🍳, and everything runs smoothly. You add a second baker and now you can bake even more bread, great. 🥐 Add a third, and you still get more bread... but the kitchen's starting to feel a bit crowded. 🧍🧍🧍

Now add a fourth or fifth baker, suddenly, people are bumping into each other, waiting for oven time, and productivity **per baker** starts to **drop**. That's the law in action. ⚠️

🧠 **Why It Happens:**

- **Labour gets less productive** because there's limited equipment or space
- Each added worker brings **less output** than the one before
- But overall output still **increases**, just **more slowly**

⏳ **Why "Short Run"?**

This law only applies in the **short run**, which means **some inputs (like the size of the shop or number of machines) are fixed**. In the long run, you can buy more ovens or build a bigger kitchen, so this issue doesn't happen the same way.

The law of diminishing returns

💼 **What It Assumes:**

This law is based on the idea that:

- Technology stays the same 🔧 (no new gadgets or upgrades)
- Some resources are **fixed** (you can't suddenly add more ovens)
- It's all happening **in the short run** ⏳

3.2 Costs and economics of scale

Returns to scale

Returns to scale is just a fancy way of asking:

"If a business grows, and increases all its inputs like workers, machines, and raw materials, how much more stuff does it produce?"

In the **long run**, businesses can change *all* their inputs, workers, machines, factories, you name it.

Let's look at three types of returns to scale 👇

📈 **1. Increasing Returns to Scale**

Definition: When a business increases all its inputs (like labour and machines) and gets *more than double* the output.
This means it's becoming **more efficient** as it grows, a sweet spot known as **economies of scale**.

Example:
A bakery doubles its staff and ovens and ends up producing 3 times as many cupcakes. 🍰

➡️ **2. Constant Returns to Scale**

Definition: When inputs are increased and output increases by the **same proportion**.
This means the business is scaling steadily, without becoming more or less efficient.

Example:
A T-shirt printing shop buys twice the machines and hires twice the staff and prints exactly twice the shirts 👕.

Returns to scale

📉 **3. Decreasing Returns to Scale**

Definition: When inputs are increased, but output increases by **less** than expected.
This means the business is getting **less efficient,** a situation called **diseconomies of scale**.

Example:
A fast-food chain triples its locations and employees but only increases burger sales by 2x 🍔. Too many people, too much chaos, not efficient anymore.

🧠 **Why Does This Matter?**

Understanding returns to scale helps businesses:

- Know when to grow (and when not to 🚫)
- Avoid becoming too big for their own good
- Maximise productivity and profits in the long run

Returns to scale

Continue to the next page…

3.2 Costs and economics of scale

Types of costs

Fixed Costs (FC)

These are your **non-negotiable bills**. They don't change no matter how many customers you serve.

Examples:

- Monthly rent on your shop
- Annual website hosting fees
- Salaries of office staff (not paid by the hour)

Even if you don't book any clients this month, you still pay these.

Variable Costs (VC)

These **depend on how much you produce or sell;** they go up when business is booming and down when it's quiet.

Examples:

- Printing materials for photo packages
- Coffee cups and beans for each drink sold at your café

The more services/products, the more these costs add up.

Marginal Cost (MC)

This is how much it costs to produce **one extra unit;** your cost for "just one more."

3.2 Costs and economics of scale

Types of costs

Simple cost formulas

1. **Total Cost (TC) = Total Fixed Costs (TFC) + Total Variable Costs (TVC)**

This is everything it costs to run your business at a given output.

2. **Total Variable Cost (TVC) = Variable Cost per unit × Quantity**

If each t-shirt costs £5 to make and you make 100, your TVC is £500.

3. **Average Total Cost (ATC) = Total Cost ÷ Quantity**

How much, on average, it costs to make each unit.

4. **Average Fixed Cost (AFC) = Total Fixed Cost ÷ Quantity**

Spread your fixed costs over all units made.

5. **Average Variable Cost (AVC) = Total Variable Cost ÷ Quantity**

The variable cost per item, averaged out.

6. **Marginal Cost (MC) = Change in Total Cost ÷ Change in Quantity**

If total cost goes from £200 to £240 when you make 10 more units, your marginal cost is £4 per unit.

3.2 Costs and economics of scale

Types of costs

Example:

Output (Q)	TFC	TVC	TC	AFC	AVC	ATC	MC $\left(\frac{\Delta TC}{\Delta Q}\right)$
0	£150						
1	£150	£50	£200	£150	£50	£200	
2	£150	£90	£240	£75	£45	£120	£40
3	£150	£115	£265	£50	£38.33	£88.33	£25
4	£150	£150	£300	£37.50	£37.50	£75	£35
5	£150	£210	£360	£30	£42	£72	£60
6	£150	£290	£440	£25	£48.33	£73.33	£80
7	£150	£410	£560	£21.43	£58.57	£80	£120

3.2 Costs and economics of scale

Short-run cost curves

To understand why cost curves (like average and marginal cost) look the way they do in the **short run**, we need to understand a few key ideas:

1. The Short Run

This is a time period where **at least one factor of production** (like machinery, land, or factory space) is **fixed**, meaning it can't be changed quickly. For example, if you own a small coffee shop, you can hire more baristas tomorrow, but you can't magically build a second café overnight. That's short run!

Usually, **labour** is the flexible factor because it's easier and quicker to hire or fire people than to expand buildings or buy equipment.

2. The Long Run

This is the opposite of the short run, **everything can be changed.** All factors of production become **variable**. So in the long run, you can expand your shop, get new equipment, or even open more branches. It's the planning stage where big changes happen.

3. Marginal Product of Labour (MP)

This is the **extra output** you get by hiring **one more worker**. So, if adding an extra employee helps make 10 more candles a day, their MP is 10.

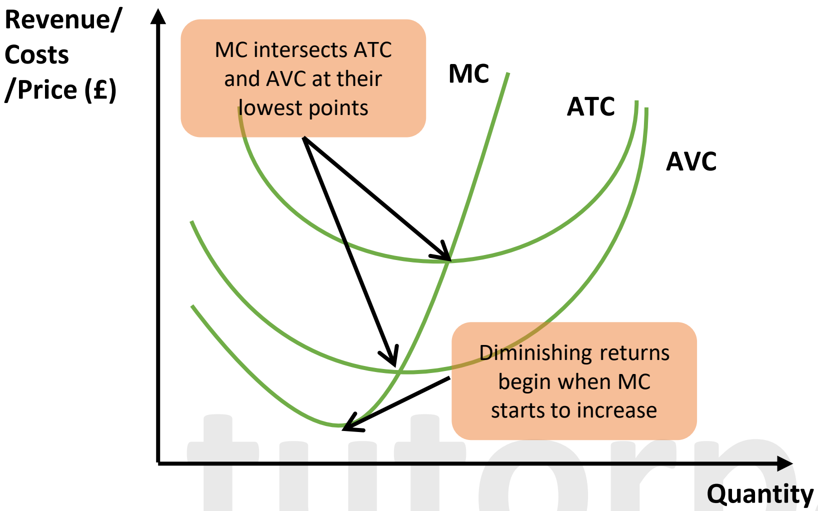
4. Law of Diminishing Marginal Productivity

In the short run, if you keep adding more workers while your space and equipment stay the same, at some point, each extra worker will become **less effective**.

Imagine trying to fit 10 baristas behind one small counter , they'll bump into each other, spill drinks, and slow each other down. At first, productivity increases with each new worker, but eventually, it **starts to fall**. That's the law of diminishing returns kicking in.

💡 **Important takeaway:** In the **short-run**, the shapes of key cost curves like **Average Cost (AC)**, **Average Variable Cost (AVC)** and **Marginal Cost (MC)** are mostly affected by this law of diminishing returns.

Short-run average cost curves



Analysis

Remember the **law of diminishing marginal productivity** (DMP) It's the idea that **as you add more of one input (like workers) to a fixed input (like a factory), the extra output you get from each new worker starts to fall**. At first, more workers = more output. But eventually, they get in each other's way, and productivity *drops*.

Average Fixed Cost (AFC)

- The distance between ATC and AVC equals AFC.
- AFC drops as output increases, because fixed costs are spread over more units.
- **Example:** Rent is £200. Make 1 unit? That's £200 per unit. Make 10? Now it's just £20 per unit.

3.2 Costs and economics of scale

Short-run average cost curves

Average Variable Cost (AVC)

- AVC is **U-shaped** due to the **law of diminishing marginal productivity**:
    - At first, extra workers = more output with lower cost.
    - But then DMP kicks in , eventually, too many cooks in the kitchen means crowding and overuse of equipment , and costs per unit rise.

Average Total Cost (ATC or AC)

- **Definition:** Total cost per unit = AFC + AVC.
- Also **U-shaped**, again because of **DMP**:
    - Initially, efficiency rises and ATC falls.
    - But as DMP sets in, rising variable costs push ATC back up.
- **Extra tip:** The **lowest point of the ATC curve** is where efficiency is at its peak *before* DMP ruins the party.

Marginal Cost (MC)

- **Definition:** The cost of making **just one more unit**.
- This curve is the most directly affected by **diminishing marginal productivity**.
    - At first, it's cheap to make one more unit.
    - But as DMP sets in, the cost of each extra unit **rises fast**.

Short-run average cost curves

📍 **Key Fact: MC Cuts AVC & AC at Their Lowest Point**

- If **MC is lower than average**, it brings the average down. 🎉
- If **MC is higher**, it pulls the average up.
- So, the MC curve always crosses **AVC and AC at their lowest point,** where they stop falling and start rising.

🎨 **A Real-World Example:**

You're running a small t-shirt shop. At first, adding another person helps get shirts made faster and cheaper. But after a while, the room gets crowded, people get in each other's way, and every extra shirt costs more to make. That's diminishing returns (and rising MC) in action.

3.2 Costs and economics of scale

Short-run and Long run average cost curves

Let's start with the basics:

- In the **short run**, some resources (like the size of your café or number of machines) are **fixed**. You can't suddenly build a bigger kitchen overnight, right? But you can hire more baristas.
- This limited flexibility means the firm works with what it has, adding more **labour** (a **variable factor**) to existing equipment. This leads to **diminishing returns** after a point, where each new worker adds less and less extra output.

This is why **Short-Run Average Cost (SRAC) curves** are **U-shaped** – costs go down first (because of better use of fixed resources), then start to rise (because of overcrowding or inefficiency).

📈 **Enter the Long Run...**

In the **long run, all factors of production are variable** – you can expand the café, buy more machines, move into new locations, etc. This gives the firm room to improve efficiency and reduce costs over time.

This flexibility leads to **economies of scale** (falling long-run costs as output grows), then eventually **diseconomies of scale** (rising costs when the business gets too big and inefficient).

So, the **Long-Run Average Cost (LRAC) curve** is also U-shaped, but **for different reasons** than the SRAC.

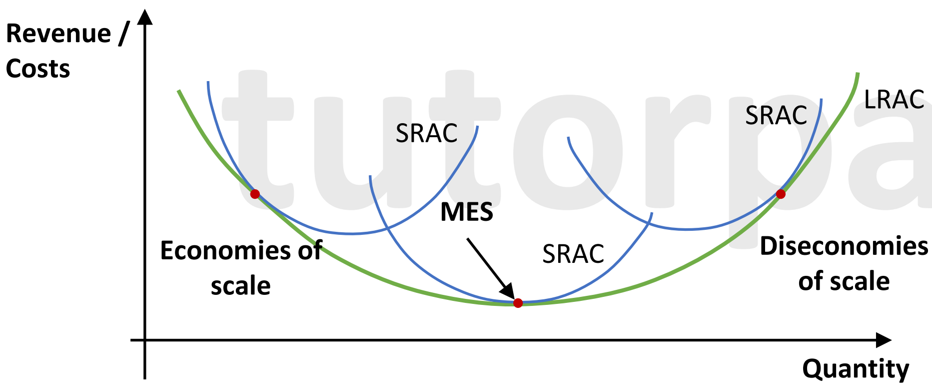
3.2 Costs and economics of scale

Short-run and Long run average cost curves

The LRAC curve is like a smooth line that "hugs" the lowest points of many SRAC curves. Why?

- Each SRAC curve represents a different short-run setup (e.g. one machine, two machines, three machines, etc.).
- As the firm increases output, it jumps to a **more efficient setup** (a new SRAC curve) until it hits the best possible cost at a certain output.

That best point is called the **Minimum Efficient Scale (MES);** the lowest output level where long-run average costs stop falling.



3.2 Costs and economics of scale

Short-run and Long run average cost curves

🔄 **Movement vs Shift**

- **Moving along the LRAC** happens when a firm changes its level of output (e.g. selling more coffee using the same tech).
- **Shifting the LRAC curve** happens when there's a major change in external conditions, like:
  - 🚀 A new espresso machine that makes 50 cups a minute = **better technology**
  - 📉 Lower electricity bills = **reduced production costs**
  - 💰 A government tax = **higher costs**, shifting the curve **up**

3.2 Costs and economics of scale

As a business grows and produces more in the **long run**, its **average cost per unit** doesn't stay the same, it changes. Here's how:

📉 Economies of Scale: When Bigger Is Cheaper

Definition:
Economies of scale are the **cost advantages** a firm gains when it increases output. This means the more it produces, the lower the cost per unit, at least for a while.

Why?

Because bigger firms can spread their fixed costs, buy in bulk, use better equipment, and hire specialists.

Example:
A smoothie company buying bananas in huge crates instead of small boxes gets a discount; that's purchasing economy.

📈 Diseconomies of Scale: When Bigger Gets Messy

Definition:
Diseconomies of scale happen when a firm gets **too big**, and average costs **start rising**. Growth creates problems; more layers of management, poor communication, or even unhappy employees.

Example:
A tech firm that expands to 10 global offices may struggle to get teams to collaborate; that's a communication diseconomy.

3.2 Costs and economics of scale

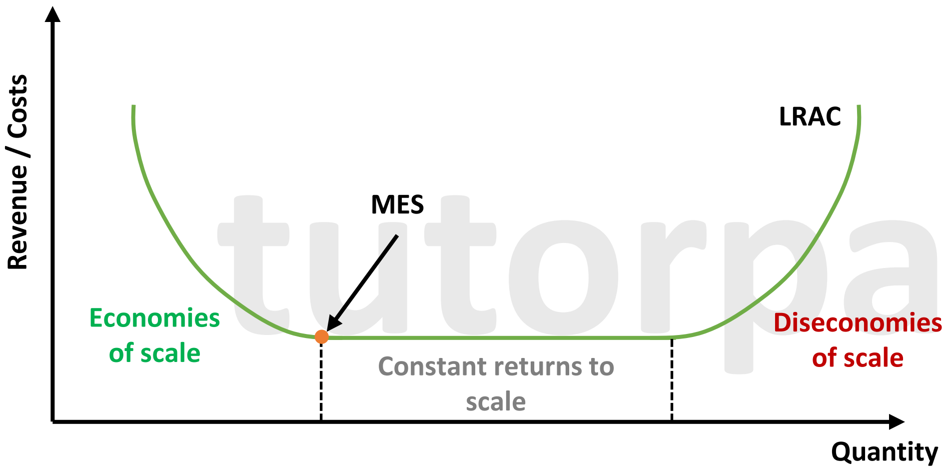
Types of economies and diseconomies of scale

Economies of scale	Diseconomies of scale
Technical – Advanced machinery, specialist workers, R&D reduces costs.	**Geographical** – more locations = more transport costs
Financial – Easier access to loans at better rates.	**Management** – too many layers slow decisions.
Risk-bearing – Diversifying products spreads risk.	**Communication** – messages get lost in the system/
Managerial – Hiring skilled managers boosts productivity.	**Cultural** – different office cultures can clash.
Purchasing – Bulk buying discounts.	
Marketing – Big firms spread ad costs over more units.	

Minimum efficient scale (MES)

The **Minimum Efficient Scale (MES)** is the sweet spot on the **Long-Run Average Cost* (LRAC)** curve. It's the **lowest average cost per unit** a firm can reach when it's operating at maximum efficiency in the long run.

In other words, it's the point where producing more doesn't make things cheaper, but also not more expensive… yet.



* **Long-Run Average Cost (LRAC)**: This shows the average cost per unit when all factors of production (like land, labour, capital) can be changed. Nothing is fixed , the firm is free to expand or shrink

3.2 Costs and economics of scale

Types of economies and diseconomies of scale

Analysis

1. **Early growth = Economies of Scale (Increasing Returns to Scale)**
    - The firm is becoming more efficient.
    - Costs per unit are falling.
    - Think: A bakery buying flour in bulk and using better ovens!
2. **MES = Minimum Efficient Scale**
    - The firm hits its lowest possible average cost per unit.
    - It's operating at peak efficiency; not too small, not too big.
3. **Beyond MES = Constant Returns to Scale**
    - Producing more doesn't really lower or raise the cost , it just stays steady.
    - The firm is cruising along at its most efficient size.
4. **Too much growth = Diseconomies of Scale (Decreasing Returns to Scale)**
    - Now, costs start to **rise**.
    - Maybe communication breaks down, or managing lots of staff gets chaotic.
    - Efficiency drops and average cost per unit increases.

3.2 Costs and economics of scale

Internal and external economies of scale

We've already talked about **internal economies of scale** (you can find the table below too), which are cost savings a business gets from growing on its own (like buying in bulk or using better machines).

Economies of scale	Diseconomies of scale
Technical – Advanced machinery, specialist workers, R&D reduces costs.	**Geographical** – more locations = more transport costs
Financial – Easier access to loans at better rates.	**Management** – too many layers slow decisions.
Risk-bearing – Diversifying products spreads risk.	**Communication** – messages get lost in the system/
Managerial – Hiring skilled managers boosts productivity.	**Cultural** – different office cultures can clash.
Purchasing – Bulk buying discounts.	
Marketing – Big firms spread ad costs over more units.	

But what about when **the whole industry** is growing, and your firm just benefits by being part of it?

That's where **external economies of scale** come in! 🎉
These are **cost savings a firm enjoys from things happening outside of the business**, but within the **industry or region** it operates in. Basically, you get a free ride on someone else's success!

These external benefits help reduce the **long-run average total cost** for all firms in the area.

3.2 Costs and economics of scale

Internal and external economies of scale

🚀 **Real-Life Sources of External Economies of Scale:**

🧑‍💻 **1. Access to Skilled Labour**

When lots of similar businesses operate in one area, workers with the right skills are more likely to live and work nearby. This gives firms a **larger pool of trained talent**, so they save on recruitment and training costs.

Example:
In **Vancouver**, Canada's booming **video game industry** has attracted loads of talented designers and developers. Companies benefit by hiring skilled workers quickly and cheaply.

🏭 **2. Geographic Clustering (aka Industry Hubs)**

When businesses in the same industry **locate near each other**, it creates a mini-ecosystem. Suppliers, support services, and specialist workers all move in, making it cheaper and easier for everyone to operate.

Example:
Think about **Toulouse in France**, where aerospace giants like Airbus operate. Hundreds of smaller engineering firms have set up shop nearby, offering parts, services, and skilled labour. That means Airbus and its neighbours don't have to look far (or pay much) for what they need.

🚚 **3. Improved Transport Links**

As an industry grows, local or national governments often improve **infrastructure** (roads, rail, ports) to support it. This reduces delivery times and transport costs for all businesses in the area.

Example:
The **Port of Rotterdam** in the Netherlands has seen huge investment because of the thriving shipping and oil industries. Faster, more efficient transport means companies spend less on moving goods in and out.

Internal and external economies of scale

🏛️ 4. Favourable Government Support

Sometimes, the government steps in with **tax breaks, subsidies, or grants** to boost a particular industry or region. These policies reduce production costs for every firm that qualifies.

Example:
The **renewable energy industry in Denmark** has flourished thanks to generous government support. All firms involved in wind energy have benefited from lower costs thanks to R&D funding and tax incentives.

🎯 Why It Matters

External economies of scale **make it cheaper for everyone in a growing industry to operate**, not because they're individually more efficient, but because the **environment around them** is working in their favour.

So, whether it's clever neighbours, smarter roads, or helpful government policies, sometimes, being in the right place at the right time makes all the difference

3.2 Costs and economics of scale

Internal and external economies of scale

Continue to the next page…

Total, average and marginal revenue

- **Total Revenue (TR)**

This is the **total amount of money a business makes** from selling its goods or services.
Formula:
TR = Price (P) × Quantity sold (Q)

Example: If a bakery sells cupcakes for £2 each and sells 100 cupcakes,
TR = £2 × 100 = **£200**

- **Average Revenue (AR)**

This is the **revenue made per unit sold**.
Formula:
AR = TR ÷ Q

Example: If our cupcake bakery made £200 from selling 100 cupcakes,
AR = £200 ÷ 100 = **£2 per cupcake**

- **Marginal Revenue (MR)**

This is the **extra revenue** a business gets from selling **one more item**.
Formula:
MR = Change in TR ÷ Change in Q

Example: If selling 100 cupcakes earns £200 and selling 101 earns £202,
MR = £2 – that's the extra revenue from that 101st cupcake.

Fun Fact: Perfect vs Imperfect Competition

- In **perfect competition** (like farmers selling identical apples), **AR = MR = Price**, and all firms are price takers.
- In **imperfect competition** (think Apple or Nike), **MR < AR**, because firms have pricing power and need to lower prices to sell more units.

3.3 Revenue and profit

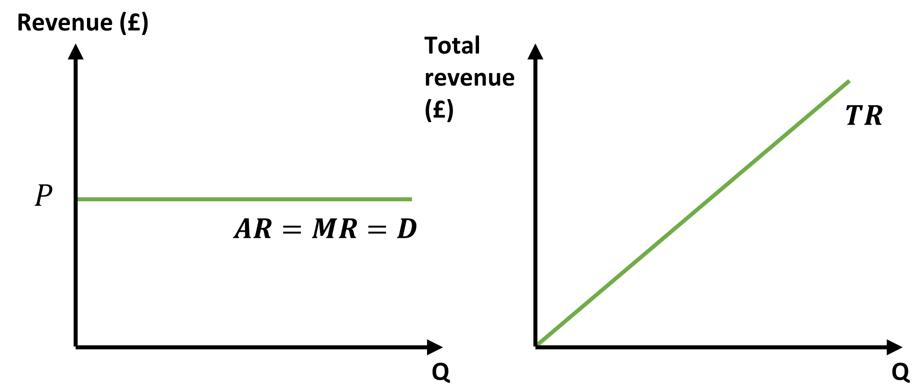
Total, average and marginal revenue

Perfect competition

The example below shows a **perfectly competitive market**, where price stays constant and **AR = MR = P**.

Output (Q)	Price (P)	TR $(P \times Q)$	AR $(TR \div Q)$	MR $\left(\frac{\Delta TR}{\Delta Q}\right)$
0	£10	**£0**	-	-
1	£10	**£10**	£10	£10
2	£10	**£20**	£10	£10
3	£10	**£30**	£10	£10
4	£10	**£40**	£10	£10
5	£10	**£50**	£10	£10

As a diagram it can be shown as below:



Total, average and marginal revenue

Analysis

- The firm is a **price taker**, which means it has **no control over the market price**, it must sell its product at the going rate. In this case, the price is £10 per unit.

Example: Think of a small wheat farmer selling in a huge national wheat market. They must accept the market price, if they try charging more, no one will buy from them.

- Since the price stays the same:
  - Every single unit is sold at **£10,** no discounts or price hikes.
  - If the farmer (or firm) tries to charge **more**, buyers would just switch to someone cheaper.
  - If they charged **less**, they'd just be undercutting themselves, and all similar sellers would have to follow, dropping prices for everyone.
  - This kind of market has **perfectly elastic demand**, customers will only buy at the market price and not a penny more.
- In this scenario:
  - **Total Revenue (TR)** increases at a **constant rate** , because you're just multiplying the number of units sold by the fixed price.
  - **Marginal Revenue (MR)** — the extra revenue from selling one more unit , is always £10.
  - **Average Revenue (AR)** is also £10.

So basically, **MR = AR = Price**, and that's also the **demand curve** in perfect competition.

3.3 Revenue and profit

Total, average and marginal revenue

Imperfect competition

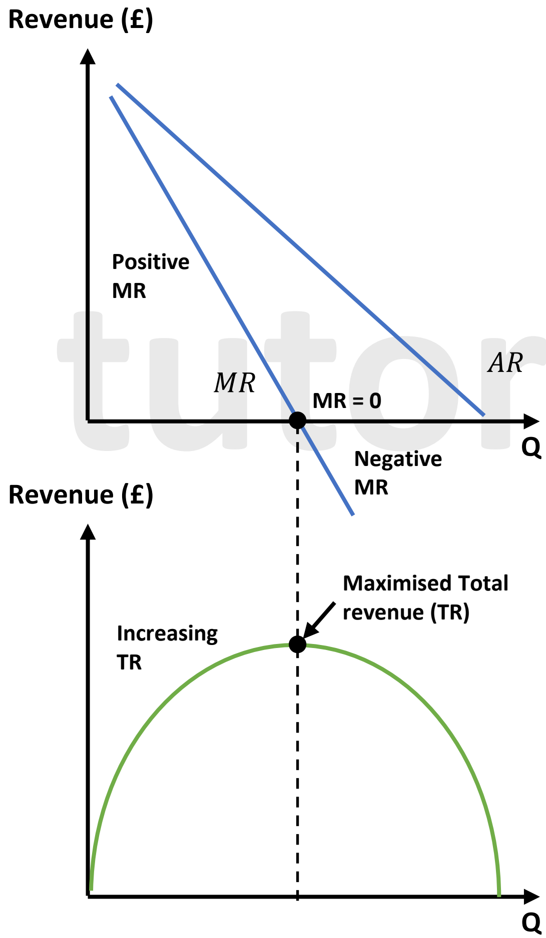
Output (Q)	Price (P)	TR $(P \times Q)$	AR $(TR \div Q)$	MR $\left(\frac{\Delta TR}{\Delta Q}\right)$
1	£5.00	**£5.00**	£5.00	£5.00
2	£4.80	**£9.60**	£4.80	£4.60
3	£4.50	**£13.50**	£4.50	£3.90
4	£4.00	**£16.00**	£4.00	£2.50
5	£3.20	**£16.00**	£3.20	£0.00
6	£2.50	**£15.00**	£2.50	-£1.00
7	£1.50	**£10.50**	£1.50	-£4.50

Diagram on the next page.

Total, average and marginal revenue

Imperfect competition

As a diagram it can be shown as below:



3.3 Revenue and profit

Total, average and marginal revenue

Analysis

- A **price maker** is a firm that has control over the price it charges (unlike a price taker). Think of a local indie café that can set its prices, not like a corner shop selling milk at the same price as the supermarket.
- In imperfect competition, if a firm wants to sell more products, it has to **lower the price**. This is because the **AR** and **MR** both drop as more units are sold.
- **Total revenue (TR)** is maximised when **MR = 0**.
- When **MR = 0**, the **price elasticity of demand (PED)** is exactly **1**, meaning that the percentage change in quantity demanded is exactly the same as the percentage change in price. This is called **unitary elasticity** – a perfectly balanced point.

3.3 Revenue and profit

Price elasticity of demand (PED) and revenue

Let's talk about how firms can make the most money (total revenue) using something called **Price Elasticity of Demand (PED).**

💡 **What's the Big Idea?**

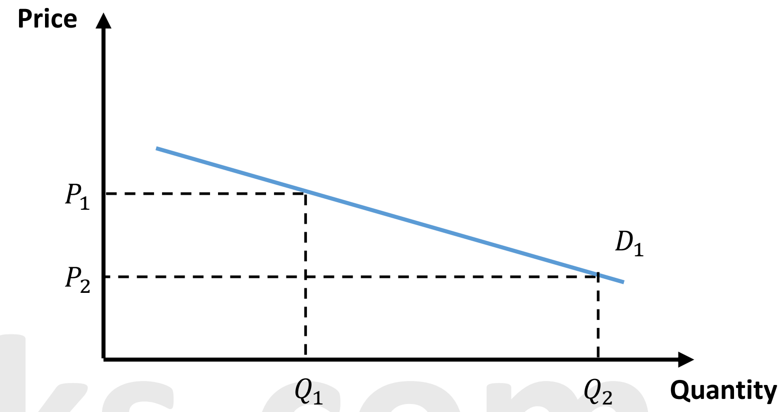
- **Total Revenue (TR)** is the amount of money a business makes from selling its products. It's calculated using: **TR = Price × Quantity sold**
- **PED** tells us how sensitive customers are to price changes:
  - If something is **price elastic**, a small drop in price = a big jump in sales.
  - If it's **price inelastic**, changing the price won't affect sales that much.

🧠 **The Total Revenue Rule**

- If a product is **elastic** (like cinema tickets or branded trainers), firms should **lower the price** to get more people buying. More quantity = more revenue.
- If a product is **inelastic** (like petrol or insulin), firms should **raise the price** because people will still buy it anyway, so TR increases without losing customers.

Price elasticity of demand (PED) and revenue

Elastic demand



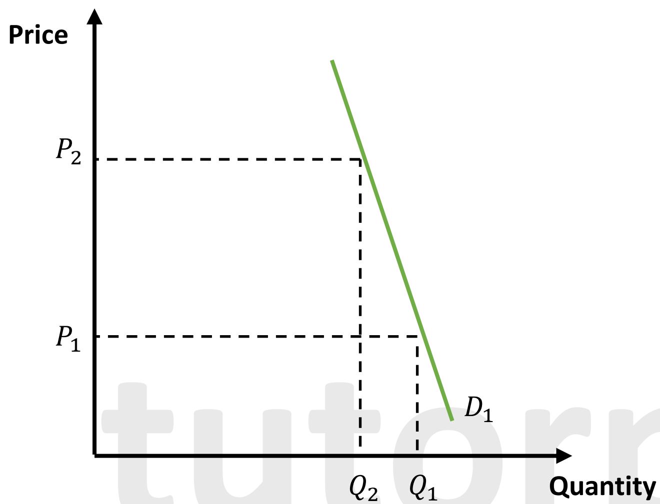
📉 **In the Diagram:**

- The firm drops the price from **P_1 to P_2**.
- Because the product is elastic, people buy **way more**, moving from **Q_1 to Q_2**.
- So, even though each item is cheaper, **total revenue goes up** because they're selling loads more.

In maths speak:
$P_2 \times Q_2 > P_1 \times Q_1$

Price elasticity of demand (PED) and revenue

Inelastic demand



In the Diagram:

If you **increase the price** of an inelastic product:

- People will buy **slightly less**, but not by much.
- You make **more money overall**, because the higher price outweighs the small drop in sales.

In math terms:
$P_2 \times Q_2 > P_1 \times Q_1$
(Revenue after the price rise is greater than before.)

3.3 Revenue and profit

Price elasticity of demand (PED) and revenue

Continue to the next page…

3.3 Revenue and profit

Profit is simply the **money a business makes after covering its costs**.
Profit = Total Revenue (TR) – Total Costs (TC)

Conditions for profit maximisation

There are **two key conditions** for profit maximisation:

1. TR and TC Are Furthest Apart

A firm makes the **highest profit** when the gap between **total revenue** and **total cost** is the **largest**, but only when **TR is above TC**.

Think of it like this: if you're selling cookies at a market, your profit is greatest at the point where your earnings from sales are miles ahead of what you spent on flour, sugar, and rent for the stall.

2. When Marginal Cost = Marginal Revenue (MC = MR)

This is the **golden rule** in economics.

- **Marginal cost (MC)** is the cost of producing **one more unit**.
- **Marginal revenue (MR)** is the extra money you earn from selling that **one more unit**.
  Profit is maximised when **the cost of making the next item equals the money it brings in.**

Let's say you're selling handmade candles:

- If making an extra candle costs £2 (MC) but brings in £5 (MR), you should definitely make it, it increases profit.
- Keep doing this until MC = MR — that's the sweet spot.

3.3 Revenue and profit

Profits and losses

💵 **Accounting Profit**

Definition: The money a business makes after subtracting all its **explicit costs** (things you actually pay for, like wages, rent, raw materials).

Formula:

Accounting Profit = Total Revenue – Explicit Costs

Example: You run a lemonade stand 🍋. You make £100 in sales and spend £40 on lemons, sugar, and cups. Accounting profit = £100 – £40 = **£60**

📉 **Economic Profit**

Definition: Takes accounting profit a step further. It also subtracts the **opportunity cost** (the profit you gave up from the *next best alternative*).

Formula:

Economic Profit = Total Revenue – (Explicit Costs + Opportunity Costs)

Example: Same lemonade stand 🍋. You could have worked a part-time job instead and earned £30. That £30 is your *opportunity cost*.
👉 Economic profit = £100 – (£40 + £30) = **£30**

Profits and losses

✅ **Normal Profit**

Normal profit is the **minimum return** a business needs to stay in operation. It's just enough to **cover all costs**, including the **opportunity cost** (what the business owner gives up to run the business, like another job).

Think of it as breaking even, not making extra, but not losing anything either.
This happens when:
📍 **Total Revenue (TR) = Total Cost (TC)** or **Average Revenue (AR) = Average Cost (AC)**.

Example:
You run a coffee cart. You make £100 a day, and your total daily costs (coffee, milk, rent, your time) also come to £100. You're not rich, but you're covering everything; that's normal profit.

💸 **Supernormal Profit (also called abnormal or monopoly profit)**

This is when your business is making **more than enough** to just survive, you're thriving.

This happens when: **TR > TC** or **AR > AC**

Example:
Back to your coffee cart, now you're making £150 a day, but your costs are still only £100. That extra £50 is **supernormal profit,** you're not just surviving, you're smashing it.

❌ **Losses**

A loss happens when your income **isn't enough** to cover your costs.

This happens when:
📍 **TR < TC** or **AR < AC**

Example:
Imagine you're only making £70 a day, but your costs are £100. You're **losing £30** a day. You'll need to fix that fast or risk closing the business.

Short-run shut-down point

Sometimes, firms face tough choices. One of those is whether to keep producing or shut down completely, at least for a while. Let's break it down:

🔍 **The Rule:**

In the short run, a firm should keep producing as long as the **price** (which is the same as **average revenue, or AR**) is **higher than the average variable cost (AVC)**.

This means the business is at least covering the day-to-day running costs like wages and materials.

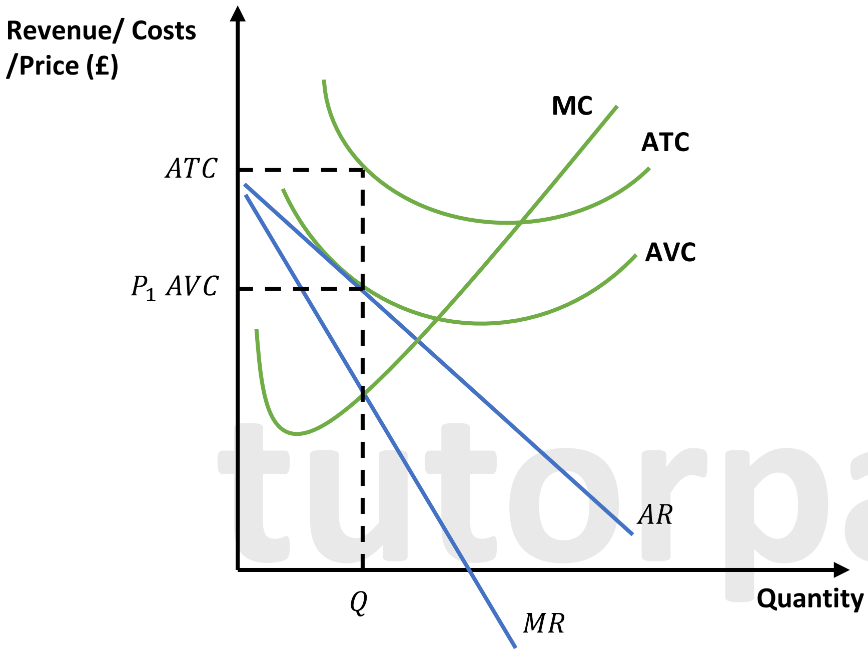
✅ If **AR > AVC**, keep going.

❌ But if **AR = AVC** (so the firm is only just covering variable costs and not even touching fixed costs like rent or equipment), then it's better to **shut down**.

💡 **Definitions:**

- **Short run**: A time period where at least one input (like capital or machinery) is fixed.
- **Average Variable Cost (AVC)**: Cost per unit for things that change with output, like raw materials or hourly labour.
- **Average Revenue (AR)**: Revenue per unit sold (basically the price).
- **Contribution**: The money left over after paying AVC, which goes towards covering **fixed costs** like rent or salaries.

Short-run shut down point



🧠 **What the Diagram Shows:**

- The firm is producing at the point where **MC = MR** — this is the **profit-maximising output**.
- But here, **Price = AVC**, so the firm is **breaking even on variable costs** but **not covering fixed costs**.
- That's like running a café where your coffee sales only pay for the beans and cups, but not your rent or staff. Not sustainable.

3.3 Revenue and profit

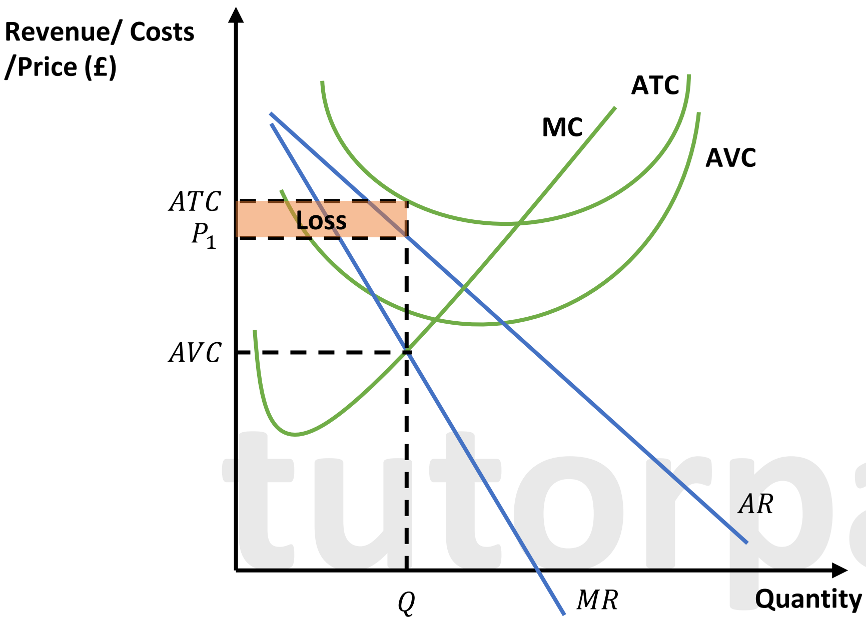
Long-run shut down point

Imagine running a bakery 🍞. You've got rent to pay, staff to pay, and ingredients to buy. In the **long run**, all costs (**fixed** and **variable)** need to be covered by the money you make from selling your croissants (yum). If they're not? Maybe its time to close shop. Let's break it down:

🔍 **What is the Long-Run Shutdown Point?**

- In the **long run**, firms need to cover **all** their costs, not just the ones that change with output like ingredients (**variable costs**), but also the ones that don't, like rent (**fixed costs**).
- If the **selling price** (or **Average Revenue**, AR) is **higher than the Average Total Cost** (ATC), then great, the business is making **profit.** 🎉 Keep operating.
- But if **AR = AC**, the firm is just **breaking even,** it's covering all its costs but making **zero economic profit**.
- And if **AR < AC**, the firm is **losing money** in the long run and should **shut down**.

Long-run shut down point



What the Diagram Shows:

- The firm is producing where **MC = MR**, which is the **profit maximising output** (or trying to be).
- But at that level of output, **P1 < ATC**. The price they sell at doesn't cover their total costs.
- It might still operate in the **short run** because it's covering **variable costs** (AVC), but in the **long run**, when there's no improvement, the firm will eventually close.

3.3 Revenue and profit

Long-run shut down point

Continue to the next page…

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For more revision notes, tutorials, worked examples and more help visit www.tutorpacks.com