### Chapter 27: Theory of the firm – perfect competition (1.5)

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- The perfectly competitive market firm in the long run
- Shut down and break-even price
- Efficiency in the perfectly competitive market firm

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‘If a man write a better book, preach a better sermon, or make a better mousetrap than his neighbour, tho’ he build his house in the woods, the world will make a beaten path to his door.’

- **Assumptions of the perfectly competitive market model**

Recall that a poor model is one which does not do a good job of explaining or predicting reality. I would add that a good model is also one which is based upon realistic assumptions, meaning that the model is not too removed from reality by the time all the model’s assumptions are in place. As we shall see, many of our models within this section turn out to be fraught with assumptions and stipulations which weaken their explanatory and predictive links to reality. Yet one should be careful in being distracted from the value of micro economic models that are abstractions of reality – they do indeed offer insight into most of the essential real-world features of economic activity in firms. The model of perfect competition is at one end of the extreme while monopoly is to be found at the other. We will go through them both, black and white, in order to mix a potpourri of grey – where in fact 99% of reality is to be found.

The model of perfect competition operates within the confines of five basic assumptions:

1. **There are a large number of firms** competing in the market: A single firm is powerless to influence total market output and/or price. Therefore the firm is a price-taker.

2. **The firms are producing homogeneous (= identical) goods**: Firm A’s Widgets will in no way be differentiated from those of Firm B. This results in price competition.

3. **Each firm is a short run profit maximiser**: Firms operate under the profitmax condition of setting output where MC = MR.

4. **There is perfect knowledge/information** amongst both firms and consumers: Firms will have total knowledge of any improvements in technology and manufacturing processes, while consumers will be fully aware of all firms’ prices.

5. **There are no barriers to entry**: Nothing hinders firms from entering the market in order to compete with existing producers. Such barriers could be insurmountably high initial (start-up) costs, lack of access to key technology or raw materials, and legal barriers such as not having necessary patent rights.

**Comment on the assumptions**

I would be lax in not commenting on the implicit (= underlying) necessity of having a legal framework and the rule of law for firms to operate within. This is one of the major obstacles in many developing countries, as the right to private ownership (often called **property rights**) and protection of these rights under a (democratic?) rule of law is often lacking. It has been duly noted for several years that Russia is in more dire need of lawyers than economists.

I would also be remiss in not offering some basic criticism of the assumptions. As a whole, I cannot think of one single industry or market that comes even close to fulfilling all of them. Very few goods are in fact homogeneous – even water is branded and sold at ridiculous prices.

The closest one comes to homogeneous goods are probably to be found in basic commodities such as copper and potatoes. And looking at perfect knowledge, well, how many times have you bought something in a shop and then seen the same good in another at a lower price?! All the assumptions above remove us from real life, yes, but again, our model serves us well as an approximation of real life. ‘Perfect’ does not mean ‘best’ or ‘optimal’ in any normative sense of the word but rather a situation where all factors of production can freely flow to the best possible use.

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1 Quote credited to Ralph Waldo Emerson (1803 – 1882)

2 I just saw a report on TV from a wealthy area in the US where the price of bottled water at a rather upmarket store was far higher than the price of petrol.

3 It’s embarrassing, but I must tell this story. For five years I had been going into the school’s student café for my daily dose of chocolate. One day a student of mine asked me why I didn’t buy the chocolate from the vending machine which for five years had been parked right outside the entrance to the café and had the same chocolate bars at a 20% lower price. I think this was the most embarrassing event in my life which didn’t involve a woman or a head waiter.
• **The firm as a price taker and short run profit maximiser**

I often fall for the temptation to have a little fun in class here. I start out by drawing two identical supply and demand diagrams on the board and then I ask if they can spot the difference. Unfortunately they know me too well by then and I get a lot of smart-ass answers. Then I say that the one on the right shows the increase in market supply when one of the firms on the market doubles its output. ‘Ahhhh!’, goes the class, as assumption number one (firm is a price-taker) occurs to them. So, if the firm cannot influence supply, yet is able to sell all its output at the given market price, what would market demand look like from the firm’s point of view? You guessed it; demand facing the firm would be infinite.

The market for potatoes (figure 2.3.22) shows that market supply and demand forces create an equilibrium price of 10 Danish Crowns (DKK). The firm cannot influence this on its own, and thus simply accepts that it is facing a fixed price. The demand curve for the firm is infinitely elastic, since the market can soak up any amount produced by any one supplier. This is the perfectly competitive market firm’s demand curve, which looks confusingly like the average revenue (AR) and marginal revenue (MR) curve – which is because it is one and the same.

![Fig. 2.3.22 Demand and revenue for a perfectly competitive market](image)

In summing up so far, we arrive at the following identity for the perfectly competitive market firm; the price will be the same as a horizontal demand curve, which is also the average and marginal revenue. Here’s another credo for your presentation T-shirt to your economics teacher: ‘Price equals murder!’ Spelt ‘P = MR, D, AR’. Get it?

What about the supply curve for the firm? Well, consider that the firm will always set output where marginal costs equal marginal revenue and that the demand curve is given by market supply and demand. A change in, say, demand, would shift the demand curve for the firm also – and the MC = MR point would change. **Figure 2.3.23** shows that when market demand increases from $D_0$ to $D_1$ and decreases to $D_2$, the demand curve (which is also the MR and AR curve) for the firm shifts upwards, along the upward-sloping MC curve! Any change in MR will change the profitmax intersection of MC = MR. The MC curve is thus the firm’s supply curve and is the ultimate reason why market supply curves are upward sloping.
I will elaborate on the short and long run supply curve for the firm in the chapter on break-even and shut-down points further on. I introduce the concept at this stage in order for you to be able to adequately follow the examples on increasing and decreasing output levels in a firm.
Perfectly competitive firm as price-taker

Consider the following: Perfo-Firm is one out of 4,000 competing firms in a market for Widgets; PED is 1; total output is 60 million units; the market price of a Widget is 10 Swedish Crowns (SEK); and each of the 4,000 firms has an equal share of the market.

How would the market be affected by a 100% increase in output by Perfo-Firm?! Let's look at the market change first and then try to show why Perfo-Firm is a price taker.

Here are the main figures:

Total market output = 60 million. Average output of a single firm, e.g. Perfo-Firm => 60,000,000 / 4,000 = 15,000 units. Market price = 10 SEK. PED = –1. Percentage increase in total market output due to 100% increase by Perfo-Firm => 15 000 / 60 000 000 = 0,00025%.

Total impact on market: (remember, we know the PED of Widgets, and that PED = %ΔQd / %ΔP).

How would the market price be affected by Perfo-Firm’s doubling of output? As we know the PED and increase in quantity of the Widgets on the market, it’s a matter of working out the change in price:

\[ -1 = \frac{+0.00025}{P} \]

We would see the market price fall by 0,00025%, or 1 SEK \( \times (1 - 0.0000025) \), which gives a new market price of 9.999975.

Conclusion: When a single firm doubles its output, the market price falls by 0.000025 SEK! (About 0.003125 US cents at the current exchange rate.)

Perfo-Firm’s PED; this individual firm faces a demand curve which gives a different PED than that of the entire market. When the firm raised output by 100%, the price changed by -0.00025%.

\[ \text{PED} = \frac{\%\Delta Q_d}{\%\Delta P} \Rightarrow \text{PED for Perfo-Firm is } \frac{+100}{-0.00025} = -400,000! \]

Conclusion: The single firm faces a PED that is 400,000, or the functional equivalent of infinity. That is why the D-curve for the firm is horizontal for the firm operation on a perfectly competitive market – the firm cannot affect the market price and is thus a price taker.
The perfectly competitive market firm in the short run and long run

**Short run price and output**

The perfectly competitive market firm (‘PCM firm’ henceforth) is basically left with two decisions in the short run; whether to produce and how much to produce. We will start by assuming that the firm has answered ‘Yes’ to the former and is now regarding the latter. In line with our assumption of profitmax, the PCM firm will set output at the point where MC equals MR. Being a price-taker, the price is set by market forces (supply and demand) and the firm will have three possible outcomes in the short run, as shown in *figure 2.3.24* below. (Note: AC is henceforth used for average total costs unless otherwise stated.)

**Recall that profit is the result of subtracting total costs from total revenue, which in the unit-cost picture corresponds to subtracting average costs from average revenue. **Figure 2.3.24** shows three possibilities:

- **Normal profit**: When the market price equals the AC of the PCM firm, the firm will break-even, i.e. it will enjoy normal profits. This is shown in the diagram to the far left above, as the MR = MC point coincides with average costs. As AR = AC there is a normal profit.

- **Abnormal/supernormal profit**: The middle diagram illustrates a situation where the market price (and thus the MR, AR curve) is above the average cost. The firm sets output at $Q_{\Pi\text{-max}}$ and earns an abnormal profit, shown by the red area.

- **Loss**: Finally, when the price is below any point on the AC-curve, the firm will operate at a loss, as profitmax output ($Q_{\Pi\text{-max}}$ – which is the same as the loss minimising level of output; $Q_{\text{loss-min}}$ in the diagram) results in an
AR below AC. The loss is shown by the dark grey area in the far right diagram\(^4\).

A firm in a perfectly competitive environment can only enjoy abnormal profits in the short run. The same holds for losses, which makes intuitive sense as no firm will be willing/able to uphold long term losses.\(^5\) The market mechanism together with the assumptions will act to create long run equilibrium where the PCM firm will earn normal profits only. We look at both scenarios in turn.

**Type 3 Medium heading** SHORT RUN abnormal profit – market entry

I finally got full colour to play around with for this edition! I want you to think of the red area of abnormal profit in *figure 2.3.25* below as a bullfighter’s cape. You see, a firm which is making a profit above and beyond possible alternatives – an abnormal profit – would be to other firms what the cape is to the bull; a signal to charge in. The firm depicted in the diagram on the left has an AC curve where the AC\(_{min}\) point is below the market price, \(P_0\). The firm sets output at the profit\(_{max}\) point of MC = MR and thus has an average revenue which is above average cost. This is the abnormal profit per unit, shown by the double-edged arrow, and this times the quantity shows the total abnormal profit for the PCM firm – the red rectangle.

What then happens, keeping in mind the assumptions of 1) free market entry and 2) perfect knowledge/information, is that new firms will be attracted and of course enter the market. This increases supply from \(S_0\) to \(S_1\) causing the price to fall from \(P_0\) to \(P_1\). Falling market price will lower AR for the single PCM firm, creating a long run equilibrium where once again AR = AC. The firm’s short run profit is thus eroded in the long run by market entry.

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\(^4\) Students often ask why the firm continues to set output at MC = MR even when average costs are higher than the price. The answer is that this point is also the loss\(_{min}\)ising point of output, i.e. the firm would make an even greater loss by setting output at any other level than the MC = MR point.

\(^5\) Possible exceptions; US car manufacturers. Look up the USD80 billion dollar US government bailout of GM and Chrysler during 2008.
(Type 3 Medium heading) SHORT RUN LOSS

Assume that firms which have been attracted to the market (as outlined in the example above) increased market output to the extent where the increase in supply lowered the market price to a level where individual firms made losses. This is the situation shown in figure 2.3.26 for a loss-making firm. At a market price of $P_0$, the firm’s AR is below AC. The firm will still produce at $MC = MR$ (‘loss-minimising’ point in this case) and will run at a loss, shown by the double-sided arrow. Total loss is the grey rectangle. As firms begin to exit the market over time – switching to more attractive producer substitutes – the market supply curve will shift to the left. Firms, such as the one in our example, which have managed to ‘ride out the storm’, will see how the price once again rises to a level where a normal profit can be made; $AR = AC$.  

**QUESTION:**

How is it possible that the individual firm in figure 2.3.25 above is producing less, while market output has evidently increased??
The firm makes a SR loss shown by the grey area in the diagram on the left; loss is when AR < AC. At the market price of $P_0$, this firm, and in all likelihood other firms, will run at a loss. In the LR, firms will exit the market and market supply will decrease – shown by the shift from $S_0$ to $S_1$ in the market diagram on the right. As the market price rises, the firm’s AR rises and when AR = AC once again, there is LR equilibrium and normal profits.

As you no doubt already suspect, firms will not simply sit with crossed arms and wait for better times. As a PCM firm is a price taker, not much can be done to influence the AR side of the coin, so firms are focused on lowering costs. A firm running at a loss will have to find ways to become more efficient (i.e. lower MC) and/or decrease costs in general. One of the most common methods used to decrease costs is to decrease the amount of labour used in production and to try to use remaining labour more efficiently. This is a major part of the issue of unemployment and the business cycle dealt with in Section 3.5.

Conclusions

- The PCM firm can make abnormal profits in the short run, but will make a normal profit in the long run as lack of entry barriers allows new firms to enter the market and increase supply and lower the market price.
- The firm cannot run at a loss in the long run either since firms will leave the market and supply will converge on a long run equilibrium which allows the (surviving) firm a normal profit once again.
- The LR equilibrium level of output is thus: $P = AC_{\text{min}} = MC = AR = MR$.

- Shut down and break-even price
  “I’ll be here ‘til the end of time
  So you gotta let me know
  Should I stay or should I go?” (Awesome song by The Clash, from ‘Combat Rock’, 1981)

When a firm is earning normal profit output is at the point where AR = AC, this is the break-even point of output. What then, is the point where a firm will leave the market? Simple, the shut-down point is the output level where it is equally costly for the firm to continue producing as it is for the firm to leave the market. If the firm can cover all of the variable costs and at least some of the fixed costs then it has an incentive to remain on the market. If the price falls below the AVC then the firm will not even cover the variable costs – and leave the market. Hence, the point where the firm must decide...
whether to remain on the market or leave is when AR = AVC. This is the **shut-down point**.

### Definition: break-even price and shut-down price

When a firm is selling at a price where total revenue is equal to total costs one speaks of the **break-even price**. In the unit cost picture this is when \( P(AR) = AC \).

When a firm is operating at a price level where the price only covers average variable costs and none of the average fixed costs, then the firm must make a decision whether to remain on the market or exit. This **shut-down price** is defined as \( P = AVC \).

I will use figures to show this, as my experience is that it is easier to comprehend actual numbers rather than using ‘points A, B and C’. The firm depicted in **figure 2.3.27** shows a firm subjected to ever-lower market price. Assume that the original demand on the market gives a market price of €10, which is the firm’s MR and AR. This is the long run equilibrium and also the break-even point, as the firm covers all its costs – even opportunity costs – earning it a normal profit.

Say that for some reason (either increasing supply or decreasing demand) the market price starts to fall and subsequently the firm’s AR, MR, D-curve falls to a price level of €6. Being a profit maximiser, the firm sets output where MC = MR, which is now at 80 units rather than 100. At this output level the firm cannot cover all its costs; ATC at an output of 80 is €11. The firm loses €5 on each unit produced, giving an overall loss of €400 (€5 x 80 units).
Why doesn’t the firm leave the market at a price level of €6? Consider the choices facing the firm:

I) Stay in the business and make a loss of €400

II) Leave the business and make a loss of €560, which is the total fixed cost (see TFC calculation in figure 2.3.27 above)

This is not much of a choice, rather a lack of options. The firm will have a strong incentive to stay on the market during the short run, hoping perhaps that either market price will increase or that increased efficiency and/or cost-cutting can lower MC and AC to a normal profit level again.

If, however, the market price falls even further, to €4, then the options become:

I) Stay in the business and make a loss of €560

II) Leave the business and make a loss of €560

This is what my grandmother called ‘Choosing between sleeping on a rock or a hard place’; i.e. not much of a choice. The firm’s TR (€4 x 70 = €280) will be identical to the TVC – which means that there is no contribution towards covering the

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**Fig. 2.3.27 Short run loss in a perfectly competitive market firm**

Note: **TFC = (ATC − AVC) x Q. At an output of 70, we get (€12 − €4) x 70 = €560.**
fixed costs. The firm is making a loss of €560 by staying in the business and would make the same loss by leaving it. The point where \( P \) (AR) = AVC is therefore the shut-down point for the firm. The firm will not produce at a lower price level – just consider the options at a price of €2. The firm’s TR would be €120 (€2 x 60) and TC would be €720 (€12 x 60) leading to a loss of €600. The reason is that at a price (e.g. AR) of €2 the firm would not even be covering all its variable costs so total costs would be greater than total fixed costs alone. At any price below AVC the firm will leave the market.

**Conclusion:** As long as the firm has an AR above AVC, the firm covers variable costs and at least some of the fixed costs – therefore there is an incentive to stay in the business in the short run. The **shut-down point is when \( P \) (AR) = AVC.**

**(Type 5 Smallest heading) SR and LR supply curves for the firm**

At any price (AR) above €4, the AR received will help to cover at least some of the fixed costs. This contribution to covering total costs would enable the firm to stay in the business during the short run, as any price which is above AVC will mean less loss to the firm than shutting down and still having to pay the total fixed costs.

- The PCM firm’s supply curve in the *short run* is thus the portion of the MC curve which is *above the AVC curve.*
- The *long run* supply would be the portion of the MC curve *above ATC* as no firm could withstand indefinite losses and would ultimately have to leave the market if it did not cover all costs.

**(Type 3 Medium heading) Back to basics; explaining the supply curve**

I finish this chapter by ‘circling around’ and connecting the firm’s supply curve to the market supply curve. Building on the proposition that firms will supply at any possible level above the average variable cost curve in the short run, the market supply can be derived from this. *Figure 2.3.28* assumes a market of three firms (it wouldn’t matter if I used 35,000 firms, but my editor has told me to save space) which all have different marginal and average costs. Only the portion of the MC-curve above AVC is of interest in this case, and summing the individual firms’ output at various prices yields the short run industry/market supply curve; 5,000 units per month at a price of €5 up to 25,000 units per month at a price of €12.

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6 The father of one of my students was the President of the Mexican branch of one of the world’s largest steel producers. He kindly invited me to his rather select club one Saturday morning for breakfast. During our talks, I probed him on the issue of “shut-down” at his operations during the on-going financial crisis (December 2008). Steel is very sensitive to cyclical changes in demand and the impending recession was of course causing steel prices to plummet world wide. His answer was very clear: “As soon as I cannot get a price that justifies production – in other words, does not cover production costs – I close the plant down!” So much for a “short run supply-curve”.
This is when most of my students have something of an ‘AH-HA!’ experience. The concept of increasing marginal costs coupled to the profitmax condition of MC = MR renders each individual firm’s supply curve, and the aggregate thereof is market supply. It helps in understanding that when firms’ marginal costs are affected by technology, production improvements, lower costs of labour and raw material etc, the total market supply will change as a result.

- Efficiency in the perfectly competitive market firm

I had this brilliant idea once for ‘Floor-laying Instructions For Complete Morons’. I suggested to Glenn, my friend in the house-renovation business, that we could market easy-do-it-yourself kits for people redoing their bathrooms. On the bottom of each floor tile we would print ‘If you can read this, you are doing it wrong!’ There are two versions of efficiency for economists; productive efficiency and allocative efficiency. Productive efficiency means ‘doing things right’, while allocative efficiency means ‘doing the right things’. Putting the tiles in with the least amount of resource use, i.e. doing it correctly, is productively efficient. Putting in the kind of tiles that your better half (= wife or husband) likes the most is allocatively efficient. Hmmm, I suppose I should be a bit more technical…

**Type 3 Medium heading** Productive efficiency – doing things right

A firm is productively efficient when total use of resources (factor inputs) results in the lowest possible cost per unit of output. This would be the point where average total cost is minimised. Any other level of average costs would be sub-optimal. A perfectly competitive industry is characterised by forever attempting to implement production methods and technology that increases efficiency – see the LRAC curve.

**Type 3 Medium heading** Allocative (economic) efficiency – doing the right things

If the market is producing 1,000 red pens at the lowest possible average cost, but market demand enables it to sell only 800 then the firm is utilising resources wrongly. There is waste since the resources used in the production of the excess 200 units could be better allocated. Firms could use the resources to produce goods which are in higher demand, say green pens. Thus, on a market level, optimal allocative efficiency (also known as economic efficiency) occurs when supply equals demand on the market.

In regards to individual firms, the definition of allocative efficiency is that the individual firm is producing the correct
quantity of the right goods – “doing the right things”. In stating that the correct quantity is produced we are in fact saying that since the last unit produced costs exactly what the consumer is willing to pay, resources have been optimally allocated. As consumers buy ‘on the margin’ (see Section 2.2) then the price paid reflects the value placed on the good. Resources have been optimally allocated when there is no waste, i.e. when the price equals marginal cost of the last unit produced. This occurs when the output level is where $P = AR = MC$ for the firm. When all firms fulfil this criterion then supply equals demand on the market.

**Definition: Productive efficiency**

*Productive efficiency* occurs when goods are produced at the lowest possible cost per unit, taking into account all costs arising. For a firm, this is when output level is at $AC_{min}$.

**Definition: Allocative (economic) efficiency**

When there is no waste in resources in the production of goods, allocative efficiency is optimised. This point is reached when there is zero excess supply or demand on the market and the marginal revenue is equal to the firm’s marginal cost. $S = D$ and $P = AR = MC$.

The firm operating within a perfectly competitive market will be both productively and allocatively efficient in the long run. It has been shown that the firm cannot have an abnormal profit in the long run due to the entry of new firms whereby the subsequent increase in supply and lower market price will dissolve any such profits. Nor can the firm survive endless losses. *Figure 2.3.30* shows the LR equilibrium for a PCM firm; output is at $P = AC_{min} = MC = AR = MR$.

- **Productive efficiency**: The LR equilibrium for the perfectly competitive market shows that $AR = AC_{min}$. The firm is *productively efficient*.

- **Allocative efficiency**: The horizontal demand curve will set output along the upward sloping MC curve, inevitably forcing the firm to produce where the marginal revenue equals the marginal cost. In LR equilibrium, $P = AR = MC$. The firm is *allocatively efficient*. 
In summarising the issues in perfect competition and efficiency, we must conclude that the PCM firm in the long run produces at an output level where \( P = AC_{\text{min}} = MC = AR = MR \). This identity fulfils the criteria for both productive and allocative efficiency, i.e. the model shows that the perfectly competitive firm (and market) is both productively and allocatively efficient in the long run. Yet, as seen in Chapters 16–21 on market failure, there are a good many ‘howevers’ involved in the real world.

**Summary of how to ‘interpret’ cost curves**

The curves used in *theory of the firm* tell us different things about the state of the firm’s environment and possible choices. The main ones are:

- **Profitmax output**: Firm’s output is where \( MC = MR \)
- **Profit**: \( TR - TC \) and \( AR - AC \) (note that opportunity costs are included)
- **Productive efficiency**: Firm’s output is at \( AC_{\text{min}} \) (or where \( AC = MC \))
- **Allocative efficiency**: Firm’s output is where \( P (AR) = MC \) (also when \( S = D \) on the competitive market)
An estimate shows that global GDP per capita (in constant purchasing power dollars, 1990s) was around $400 for most of the last 2,000 years. In 1800 this jumped to around $700 and by the year 2000, global GDP per capita was over $6,000. During the same period, England’s GDP/capita increased 20-fold and the USA’s 36 fold. It doesn’t take an intellectual quantum-leap to understand why this enormous increase in productivity occurred during the end of the 1800s; the industrial/technological revolution.

A central point in any competitive environment is the ability to make better use of resources. A firm which comes up with a better method of production or implements new technology at an early stage will be able to increase output per unit of factor use. This is equivalent to saying that the cost per Widget falls. The diagram on the left below portrays a firm which has implemented new technology, for example a computer-assisted manufacturing system. This lowers the marginal cost (from $MC_0$ to $MC_1$) and also average costs ($AC_0$ to $AC_1$) – which is in line with previous diagrams of increased capital use lowering AC in the long run. The firm will increase output to $Q_1$ in line with the $MC = MR$ condition of profitmax. (Note that the firm is producing beyond $AC_{min}$) The firm’s increase in output does not influence market output or price at $P_0$ and $Q'_1$. The firm is now able to enjoy an abnormal profit (the blue area) as AR is higher than AC.

**Fig. 2.3.31 New technology and SR abnormal profit**
A little depth…continued

As the firm is operating in a competitive market, two key assumptions of the perfectly competitive market come in to play and cause market forces to react and increase market output;

1) *Perfect knowledge/information* – other firms on the market will know about the new technology and start to adopt it;

2) *No barriers to entry* – there will be an incentive for other firms to enter the market as abnormal profits are being made.

Taken together, market output will increase, shown in diagram B by the shift of $S_0$ to $S_1$. As more firms adopt/enter causing an increase in supply, output increases from $Q'_0$ to $Q'$, and the market price falls from $P_0$ to $P_1$.

The lower market price accordingly shifts the $AR$, $MR$, $D$, in the right diagram. This will lower the firm’s output as $MR$ moves along the MC curve to where long run equilibrium is attained at $Q_2$. Once again, at $P_1$ and $Q_2$, the PCM firm is making a normal profit, as abnormal profits have been eaten away by existing firms’ technology adoption and additional firms entering the market.

Conclusion: The ‘path’ of output increase in the long run here is in total accordance with the LRAC curve done in Chapter 24.


(TYPE 3 MEDIUM HEADING) A LITTLE RUMINATION… ‘PERFECT’…

A perfectly competitive market could easily be considered a dream world stretch of the imagination - ‘Mermaidomics’ to coin a phrase. There *are* barriers to entry such as high initial costs and legislative barriers; there *is no such thing* as perfect knowledge/information since no one person could possibly amass all prices for example?; many markets have only a *few* suppliers; and many firms do have the power to set price and/or quantity.

However, our model will be broadly in tune with reality as many firms will in fact be reaching for solutions that increase profit – they will act to lower costs, enhance efficiency and increase output. The competitive forces on a market do create a dynamic over time where firms tend towards efficient solutions in order to reap profits.

In the long run, it is empirically (= practically observable) apparent that many firms will be struggling to make the most of scarce factors; this is a competitive outcome leading to efficiency. The theory of the competitive market can help us to understand this.

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7 Yes colleagues, this is debatable. Currency markets might be considered to be perfectly symmetric in terms of available information. Yet I always ask myself why there are willing sellers of, say, US dollars no matter what…
1. Illustrate and explain the concept of allocative and productive efficiency in a perfectly competitive market.

2. Why does our assumption of each individual firm being too small to influence the market have such an effect on the firm’s demand curve?

3. Explain why the sum of individual firms’ MC curves is the market supply curve.

4. How would increased labour costs affect the PCM firm’s unit cost picture? Explain. Use appropriate assumptions!

5. Why can a PCM firm only make a normal profit in the LR according to our model?

6. A firm is operating at a loss. Explain why the firm might stay rather than exit the market.

7. Assume a total of three firms operating all operating in equilibrium on a perfectly competitive market. AR = €8. Firm A can produce a quantity of 6,000 at a MC of €8; Firm B can produce 4,000 at MC = €8; Firm C can produce 2,000 at AC_{min}. What is total market demand?

8. Using diagrams, explain the probable effects of a permanent increase in demand on a perfectly competitive market. Might the price actually decrease ultimately?

9. Tricky one (and outside the syllabus!): How would a lump-sum tax (which is a one-off or ‘once only’ tax – for example, if all firms had to pay £1,000 pounds as a ‘one-only environmental fee’) affect MC and AC?
Summary and revision

1. xx

2. xx

3. Using factors of production in order to create the highest possible output per unit of input is the measure of efficiency – **productive efficiency**. In other words, when goods are produced at the lowest possible cost per unit there is optimal allocative efficiency. The question is basically “Are firms doing things right?”

4. The question of whether consumers are then willing and able to buy the amount of goods produced is also a measure of efficiency – **allocative efficiency**. When firms are producing goods in the correct quantity – as defined by market demand – then there is no excess in supply or demand and firms are allocating factors of production allocatively efficiently. The question is basically “Are firms doing the right things?”

5. xx