ECO101: Introduction to Microeconomics

Lectures 14-15

Markets and Competition

Different firms operate in different markets/industries with different degrees of competition

Generally, we have four major types of markets

- Perfect competition: large number of firms selling identical products
- Monopolistic competition: large number of firms but with some degree of product differentiation
- Oligopoly: small number of firms with some degree of product differentiation
- Monopoly: One firm producing a good/service which has no close substitutes

Perfect Competition

A market structure in which

- Many firms sell identical products to many buyers
- No restrictions on entry into the market
- Established firms have no advantage over new ones
- Everyone has perfect information regarding prices (consumers know what all firms are charging)

Note:

No single entity (buyer or seller) has any significant market power – no influence over prices.

Identical products so firms lose market share if they charge higher prices.

Entry/exit unrestricted means resources are mobile.

Perfect Competition

Perfectly competitive firms are price-takers

- A single firm's production is an insignificant part of the total market ($q<Q$)
- Any individual producer cannot influence the market price
- Demand for an individual firm's products (not the same as market demand for the good) is perfectly elastic – since perfect substitutes exist, people will switch to other firms
- If you sell higher than the market price – lose all market share
- If you sell lower than the market price – giving away revenue

Perfect Competition

Closest example of a perfectly competitive market:

Market for agricultural goods/vegetables

Why is competition good?

- Lower prices
- Higher quality goods and services
- More innovation (to produce most efficiently)
- Unproductive firms are driven out of business
- Creates level-playing field for small businesses

Perfect Competition

Firm's Goal: Profit Maximization

Recall

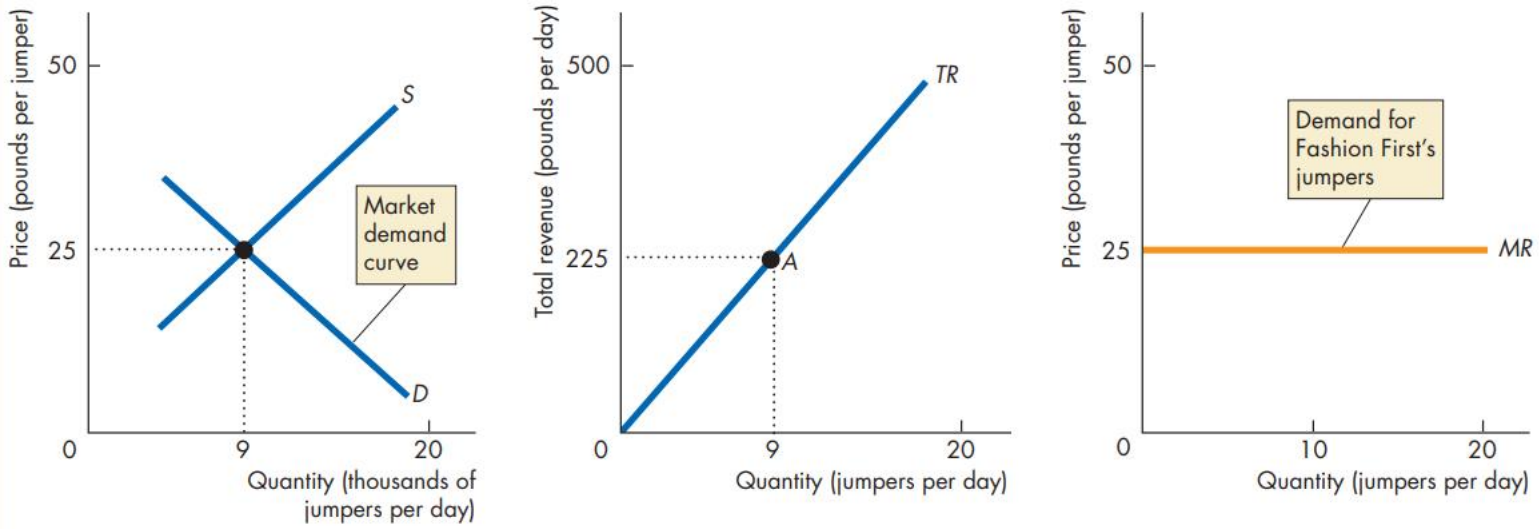
- Profit = Total Revenue – Total Cost
- Total Revenue = Price X Quantity

Marginal Revenue: Change in total revenue that results from a one unit increase in quantity sold

$$Marginal\ Revenue = \frac{\Delta\ Total\ Revenue}{\Delta\ Quantity}$$

Perfect Competition

Figure 11.1 Demand, Price and Revenue in Perfect Competition



Quantity sold (Q) (jumpers per day)	Price (P) (pounds per jumper)	Total revenue ($TR = P \times Q$) (pounds)	Marginal revenue ($MR = \Delta TR/\Delta Q$) (pounds per jumper)
8	25	200	
		.....	25
9	25	225	
		.....	25
10	25	250	

Market Demand Vs Firm Demand

- Market demand and market supply determine market price
- Since each firm is a price taker, demand for their product is perfectly elastic (horizontal line)
- Each firm cannot change its price, but can change the quantity it sells
- Each additional unit (jumper) sold brings in a constant amount – £25 – the total revenue curve is an upward-sloping straight line
- The change in total revenue that results from a one-unit increase in the quantity sold equals market price
- In perfect competition, the firm's marginal revenue (also average revenue) equals the market price
- MR = Prices

Perfect Competition

Firm's Output Decision

What quantity should a firm produce?

- A perfectly competitive firm chooses the quantity that maximizes its economic profit
- One way to do this is to look at TR and TC curves

We know

- A firm's revenue curves (relationship between total revenue, marginal revenue & output)
- A firm's cost curves (relationship between total cost, marginal cost & output)

Perfect Competition

Quantity (Q)	Price (P)	Total Revenue (PXQ)	Marginal Revenue =ΔTR/ΔQ	Total Cost (FC+VC)	Marginal Cost = ΔTC/ΔQ	Profit (TR-TC)
0	25	**0**		**22**		**-22**
1	25	**25**	25	**45**	23	**-20**
2	25	**50**	25	**66**	21	**-16**
3	25	**75**	25	**85**	19	**-10**
4	25	**100**	25	**100**	15	**0**
5	25	**125**	25	**114**	14	**11**
6	25	**150**	25	**126**	12	**24**
7	25	**175**	25	**141**	15	**34**
8	25	**200**	25	**160**	19	**40**
9	**25**	**225**	**25**	**183**	**23**	**42**
10	25	**250**	25	**210**	27	**40**
11	25	**275**	25	**245**	35	**30**
12	25	**300**	25	**300**	55	**0**
13	25	**325**	25	**360**	60	**-35**

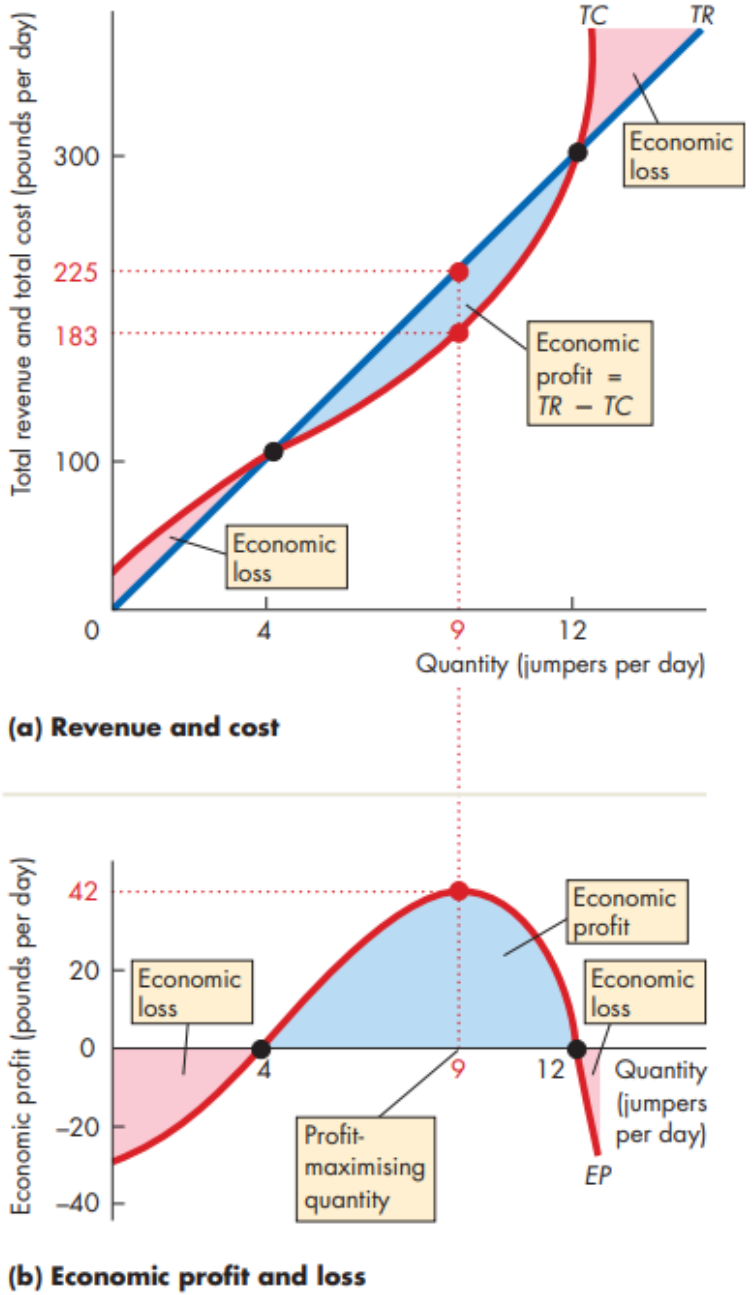
Firm's Output Decision

- In a perfectly competitive market, price is given
- Profit is maximized (Profit = 42) when Q* = 9
- Therefore, firm should produce 9 jumpers a day
- At outputs of less than 4 jumpers and more than 12 jumpers a day, the firm is incurring an economic loss.
- At either 4 or 12 jumpers a day, the firm is making zero economic profit, called a break-even point.

Perfect Competition

Firm's Output Decision

- Part a graphs TR & TC against Quantity produced
- Vertical distance between TR and TC gives profits
- Part b graphs Economic Profits against Quantity
- At low levels of production, firm is making losses – its production level is not high enough to cover its fixed costs
- At output levels greater than 4 jumpers and less than 12 jumpers, the firm is enjoying varying levels of economic profit, with profits reaching a peak at 9 jumpers per day
- At greater levels of output, firm's costs are steeply rising (due to diminishing returns to capital/labor) and therefore firm is making losses once again



Perfect Competition

Firm's Output Decision

Another way to find the profit-maximizing level of output is to use Marginal Analysis

- Compare MR with MC
- In perfectly competitive markets, MR which equals price remains constant
- However, with increasing output, MC changes
- At low output levels, marginal cost decreases as output increases, but eventually marginal cost increases (law of diminishing marginal returns)

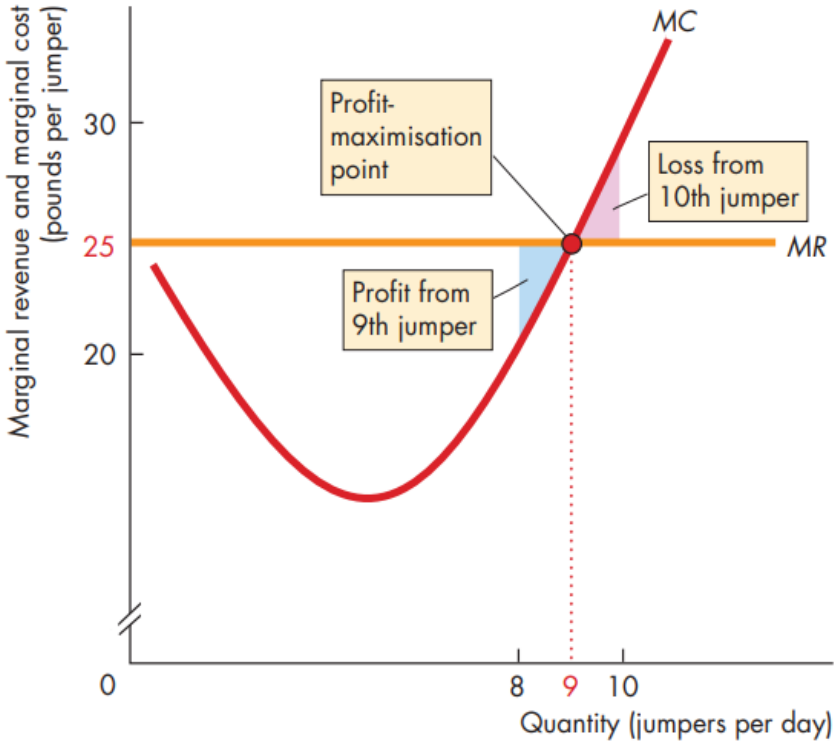
Economic profits are maximized when MR=MC

Perfect Competition

Firm's Output Decision

- If marginal revenue exceeds marginal cost (if MR > MC), then the extra revenue from selling one more unit exceeds the extra cost incurred to produce it.
- The firm makes an economic profit on the marginal unit, so economic profit increases if output increases.
- If marginal revenue is less than marginal cost (if MR < MC), then the extra revenue from selling one more unit is less than the extra cost incurred to produce it.
- The firm incurs an economic loss on the marginal unit, so its economic profit decreases if output increases
- If MR = MC, economic profit decreases if output changes in either direction, so economic profit is maximized.

Figure 11.3 Profit-Maximising Output



Perfect Competition

Firm's Output Decision

- We have seen that economic profits are maximized if

$$MR = MC$$

- However, profit-maximization does not guarantee that firm is making positive profits (it may be just minimizing its loss)
- If the firm expects the loss to be permanent, it will go out of business (in the long run)
- If the loss is temporary, should the firm shut down its production in the short run? Or should it keep producing?
- We need to compare the losses (loss from closing down temporarily vs loss with staying in business)

Perfect Competition

Firm's Output Decision

How can we measure economic loss?

$$\textit{Economic Loss} = \textit{Total Costs} - \textit{Total Revenue}$$

$$\textit{Economic Loss} = \textit{Total Fixed Cost} + \textit{Total Variable Cost} - \textit{Total Revenue}$$

$$\textit{Economic Loss} = TFC + (AVCXQ) - (PXQ) \;|\; (\textit{We know } AVC = \frac{TVC}{Q}, TR = PXQ)$$

$$\boldsymbol{\textit{Economic Loss} = TFC + Q(AVC - P)}$$

If the firm decides to shut down temporarily, Q = 0

- Therefore, Economic Loss = TFC
- Even if the firm stops production, it has to pay its fixed costs – consider lease agreements, interest payments on loans etc.

What if the firm remains in operation?

Perfect Competition

Firm's Output Decision

What if the firm remains in operation?

It pays fixed costs, variable costs but also earns some revenue

If TVC > TR or AVC > P (see the derivation in the previous slide)

- The loss from operations exceeds the loss incurred when the firm is temporarily shut down (which is just TFC)
- Therefore, the firm shuts down

If TVC < TR or AVC < P

- The loss from operations is less than the loss incurred when the firm is temporarily shut down
- Therefore, the firm remains in operation

Perfect Competition

The Shutdown Point

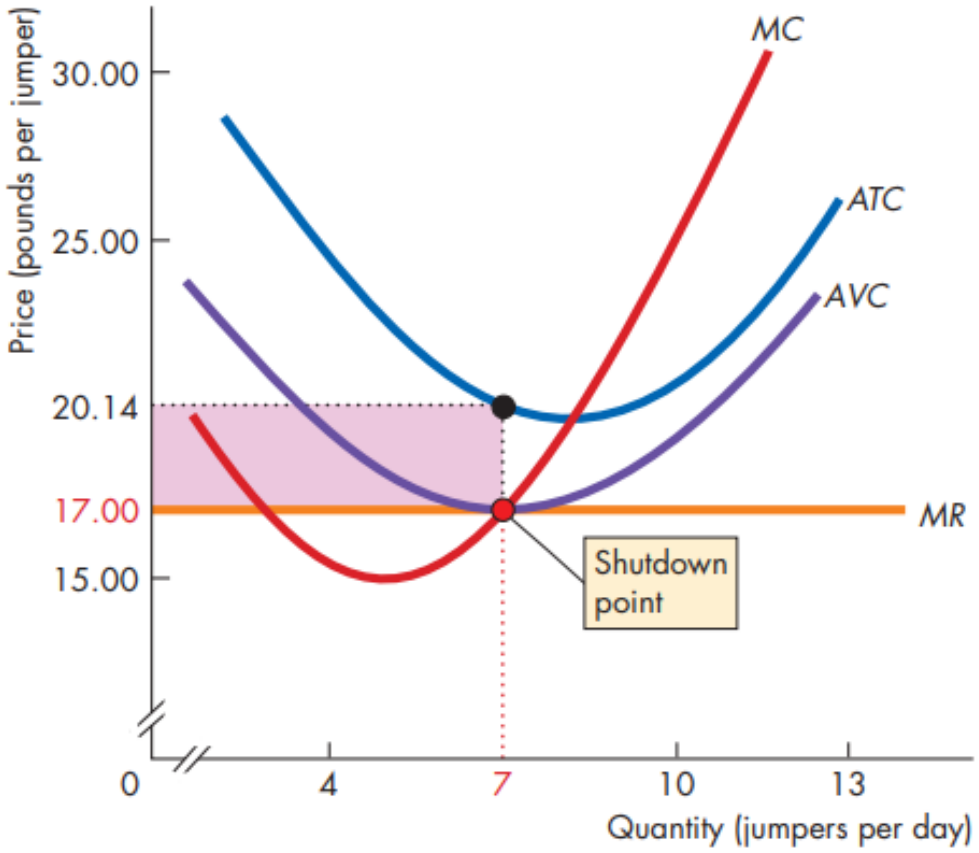
A firm's shutdown point is the price and quantity at which it is indifferent between producing and shutting down in the short-run.

The shutdown point occurs at the price and the quantity at which average variable cost is a minimum.

The area of the red rectangle shows that at the shutdown point the economic loss equals total fixed cost.

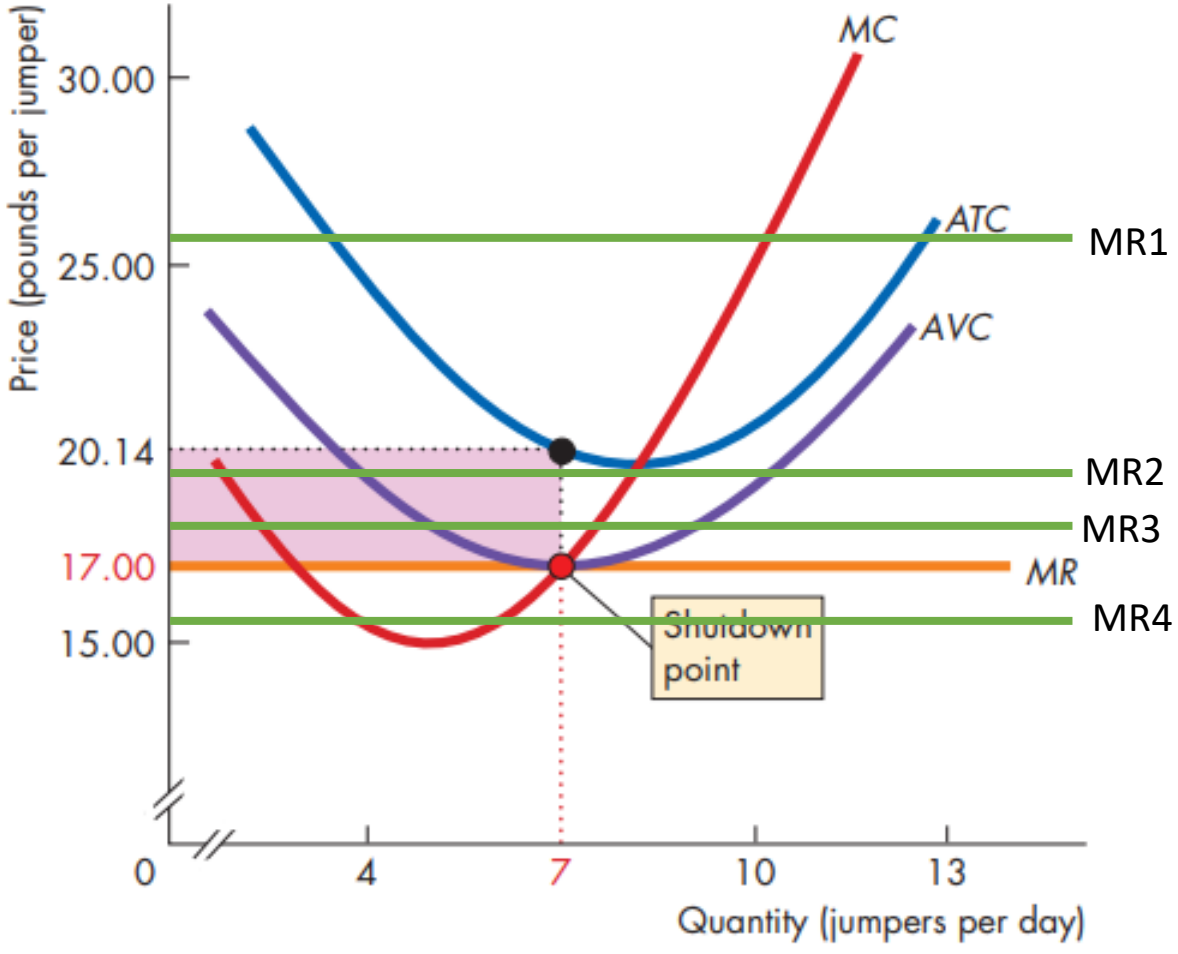
At the shutdown point, the firm is minimizing its loss, and its loss equals total fixed cost.

Figure 11.4 The Shutdown Decision



Perfect Competition

Figure 11.4 The Shutdown Decision



Let's look at the green lines

Consider MR1, Price > ATC

Firm is making profits (sometimes called abnormal profits)

Consider MR2, Price = ATC

Firm is at a break-even point and making zero profits (sometimes called normal profits)

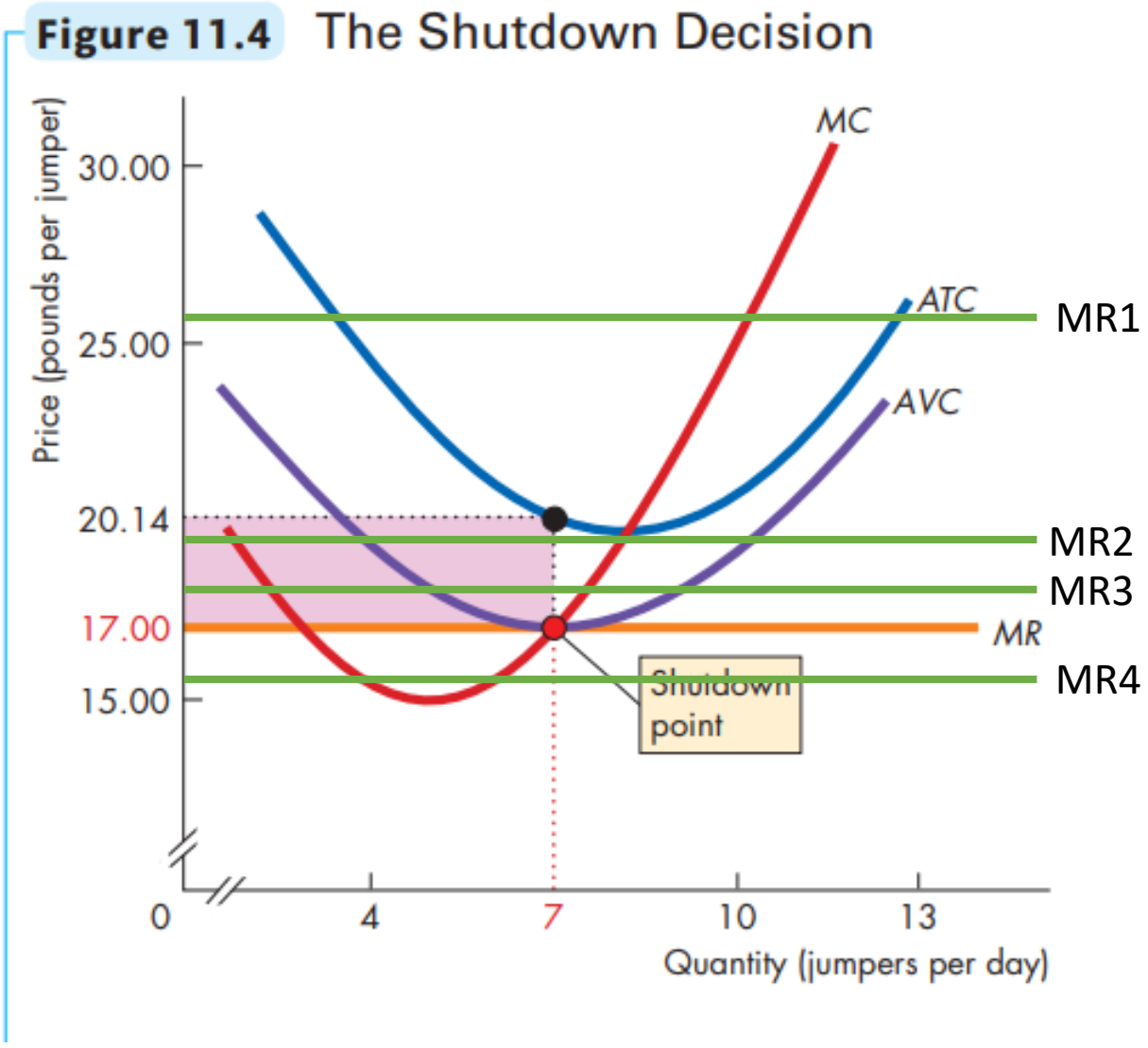
In the long-run, the firm is indifferent between staying in operation or shutting down

Consider MR3, Price < ATC but Price > AVC

Firm is not profitable

It will stay in operation in the short run to minimize its loss, but it will eventually exit in the long run

Perfect Competition



Let's look at the green lines

Consider MR4,

Price < ATC and Price < AVC

Firm should stop production in the short-run as well as exit in the long-run

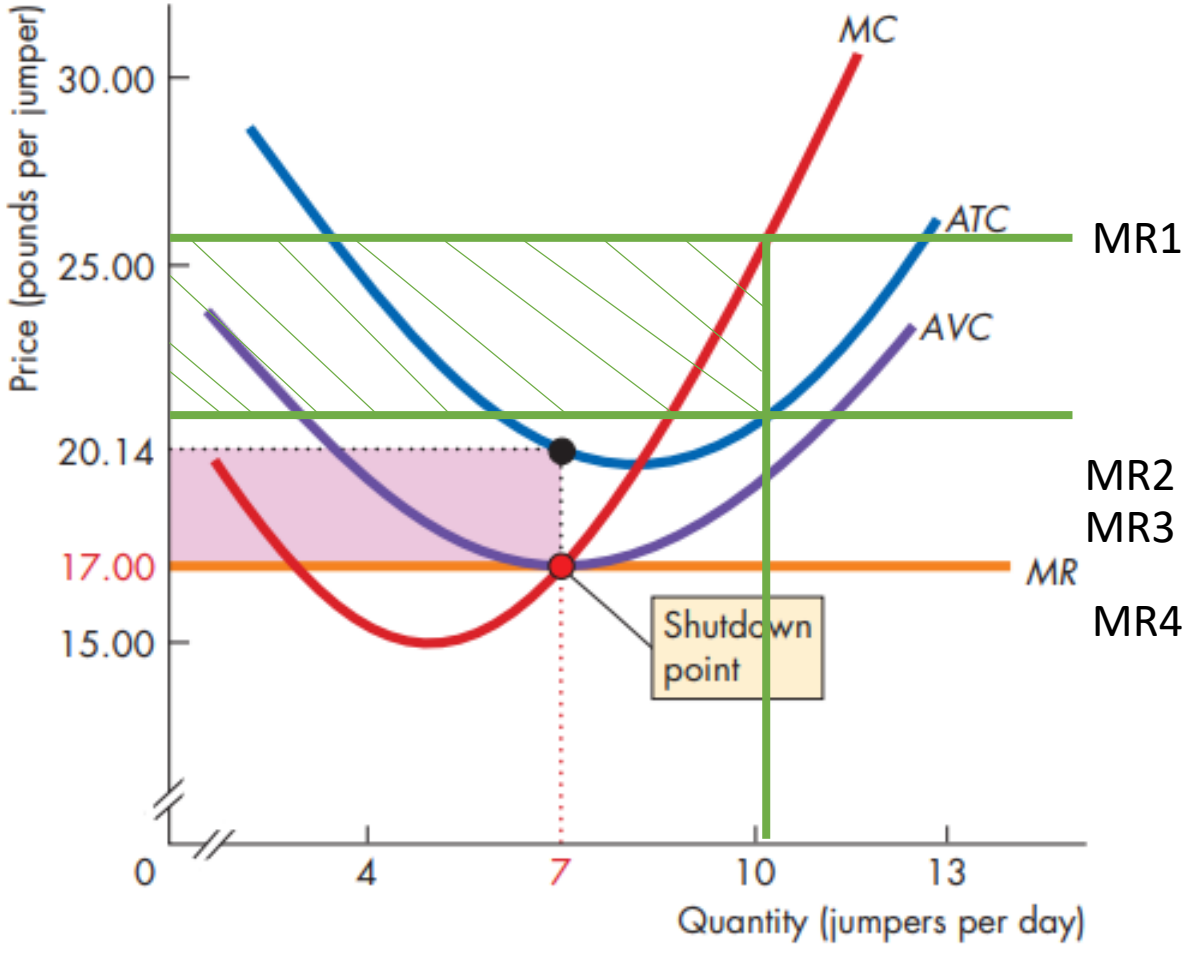
Price is so low that it does not make sense to continue production

At MR = Price = AVC

Firm is indifferent in the short-run (known as the shutdown point)

Perfect Competition

Figure 11.4 The Shutdown Decision



Let's look at the green lines

Consider MR1

How do we calculate profits from the graph?

Revenue = MR X Q

TC = ATC XQ

Profit = Revenue – TC (area of green shaded rectangle)

Perfect Competition

Figure 11.8 Three Short-Run Outcomes for the Firm