Chapter 14: Competitive Markets

Jamie Hyder
Discussion section 4

October 31, 2025

Outline

Today we will talk about:

- Long run costs
- Perfect competition
  - profit maximization
  - shutdown/exit conditions

Economies and Diseconomies of Scale

Thinking about costs... *We can define the scale of production in the following 3 ways:*

1. Economies of Scale: Long run ATC declines as Q increases
2. Diseconomies of Scale: Long run ATC increases as Q increases
3. Constant returns to scale: Long run ATC stays the same as Q changes

Cost curves

Let's remember what our cost curves look like:

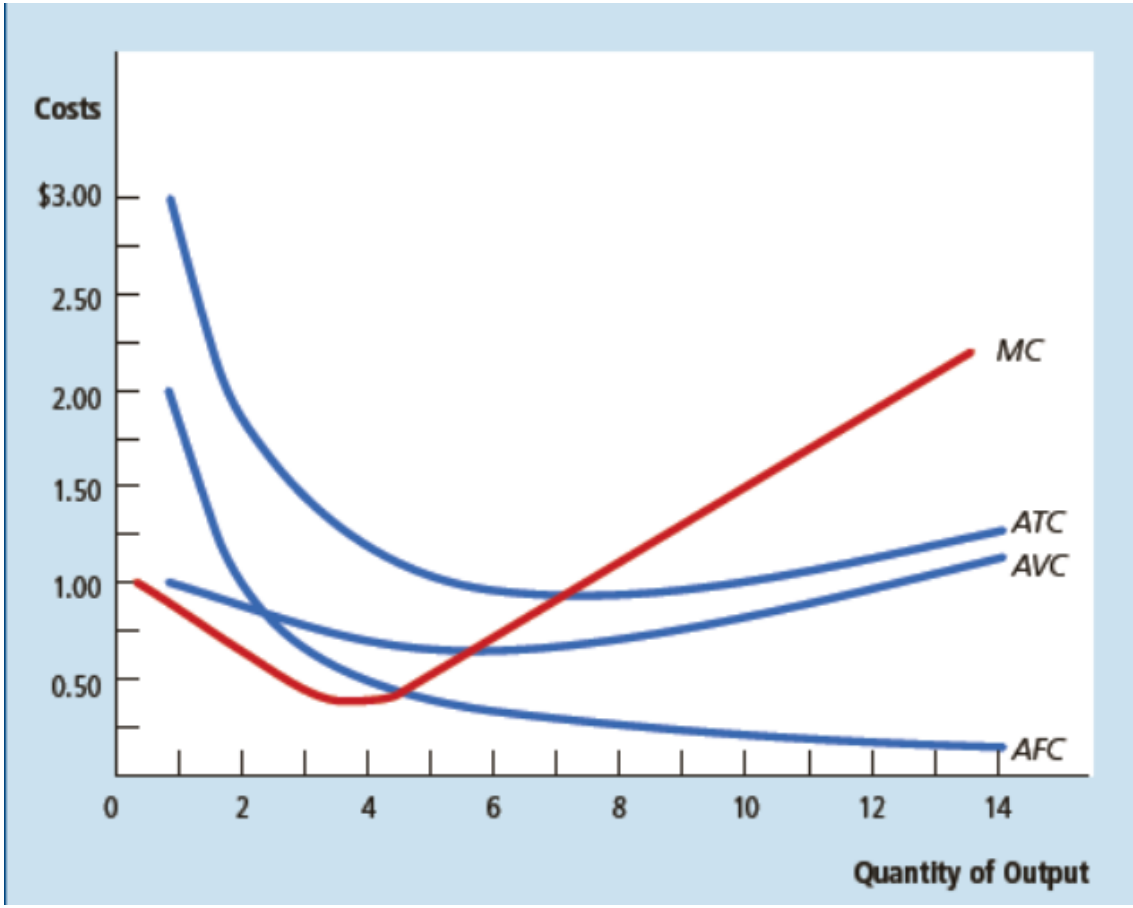

Figure 1: Realistic Cost Curves

Competitive markets

Let's recall what we mean by "competitive market":

- Many buyers and sellers $\implies$ No single buyer or seller has influence over price
- The goods/services being sold are homogeneous
- Firms can freely enter/exit the market *(this is new!)*

What does this mean for firms?

- Firms are price takers
- P remains constant for a firm at any level of Q $\implies$ $MR = P$

Competitive Markets

Firms in competitive markets want to maximize their profit.

Recall that profit is:

$$\pi = TR - TC$$

Total revenue (TR) is:

$$TR = P \times Q$$

We also consider average and marginal revenue:

- Average revenue: $AR = \frac{TR}{Q} = \frac{P \times Q}{Q} = P$
- Marginal revenue: $MR = \frac{\Delta TR}{\Delta Q}$ $\quad (= P$ in a competitive market)

Optimal Choices in a competitive market

Firms will always maximize their profit when they choose to produce the Q where $MR = MC$!

- This is a direct result of the firms thinking on the margin:
  - If $MR > MC$ the firm should increase Q
  - If $MR < MC$ the firm should decrease Q
- **** The only Q where they do not want to make a change is the Q where $MR = MC$ ****

Because MC determines Q for any P (we look for Q such that $MR = MC$ and in a competitive market $MR = P$), the MC curve is the supply curve for a *competitive* firm

Let's fill in the following table:

Price	Quantity	TR	TC	π	MR	MC	Δπ
$6	0		$3		--	--	--
$6	1		$5				
$6	2		$8				
$6	3		$12				
$6	4		$17				
$6	5		$23				
$6	6		$30				

Firm Shutdown

Importantly, a firm does not want to operate at a loss (negative profit)

In the short run, a firm decides whether to remain open or shut down *for a period of time* (Not permanently!!!)

A firm should shutdown in the short run if:

$$P < AVC$$

- If the firm earns less per unit sold than the **variable cost** of producing that unit, they should shut down
- In the SR, there are fixed costs (rent, machines, etc.) that must be paid for whether or not the firms shuts down temporarily
  - These costs are called **sunk costs,** and we don't consider them in short term decisions

Firm Exit

Importantly, a firm does not want to operate at a loss (negative profit)

In the long run, a firm decides whether to remain in the market or exit the market *(Permanently!!!)*

A firm should exit the market in the long run if:

$$TR < TC \iff P < ATC$$

- If the firm earns less per unit sold than the *total cost* of producing that unit, they should exit the market
- We consider fixed costs in the long run because we can end our lease on the building/sell the machines in the long run
  - *These costs are not sunk in the long run*
- We can say that a firm should enter the market if the inequality is reversed

Supply curves

The supply curve of a competitive firm is the portion of their MC curve where they remain in the market, which is different in the short and long run...

In the short run

- Supply is 0 when $MC < AVC \quad (MC = MR = P)$
- Supply curve is the portion of MC curve which lies above the AVC curve

In the long run

- Supply is 0 when $MC < ATC$
- Supply curve is the portion of MC curve which lies above the ATC curve

How does shutdown/exit affect market equilibrium?

In the short run...

Firms may shutdown $\implies$ we may be pushed away from equilibrium

In the long run...

Firms may exit the market $\implies$ supply shifts left (less sellers)

- Drives prices up
- More firms enter the market because the price is higher
- Price drops back to the equilibrium level
- Firms that remain in the market must be making zero economic profit ($MC = MR$)
- Entry/Exit only stops when $ATC = MR = MC = P$

Graphing the market

Let's graph and calculate/shade the short run profit for a firm in the following two scenarios:

1. $MC > AVC$ and $MC > ATC$
2. $MC > AVC$ but $MC < ATC$

Now imagine the same firms in the long run... what does the long run profit look like on the graphs?