

Unit 3: Costs of Production and Perfect Competition

1

**Production= Converting
inputs into output**

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Inputs and Outputs

- To earn profit, firms must make products (output)
- Inputs are the resources used to make outputs.
- Input resources are also called **FACTORS**.

•**Total Physical Product (TP)**- total output or quantity produced

•**Marginal Product (MP)**- the additional output generated by additional inputs (workers).

$$\text{Marginal Product} = \frac{\text{Change in Total Product}}{\text{Change in Inputs}}$$

•**Average Product (AP)**- the output per unit of input

$$\text{Average Product} = \frac{\text{Total Product}}{\text{Units of Labor}}$$

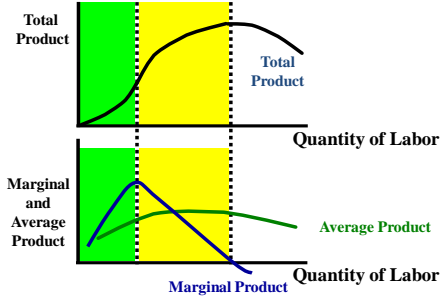
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Three Stages of Returns

Stage II: Decreasing Marginal Returns

MP Falling. TP increasing at a decreasing rate.

Why? Fixed Resources. Each worker adds less and less.

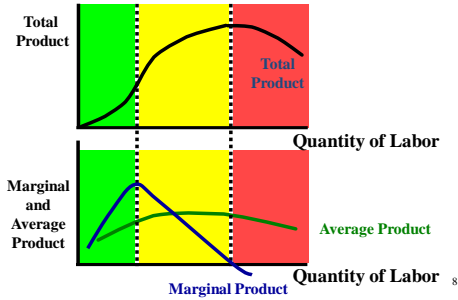


Three Stages of Returns

Stage III: Negative Marginal Returns

MP is negative. TP decreasing.

Workers get in each others way



The Law of Diminishing Marginal Returns is NOT the results of laziness, it is the result of limited fixed resources.

With your partner calculate MP and AP then discuss what the graphs for TP, MP, and AP look like.

Remember quantity of workers goes on the x-axis.

# of Workers (Input)	Total Product(TP) PIZZAS	Marginal Product(MP)	Average Product(AP)
0	0		
1	10		
2	25		
3	45		
4	60		
5	70		
6	75		
7	75		
8	70		

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More Examples of the Law of Diminishing Marginal Returns

Example #1: Learning curve when studying for an exam

Fixed Resources-Amount of class time, textbook, etc.

Variable Resources-Study time at home

Marginal return-

- 1st hour-large returns
- 2nd hour-less returns
- 3rd hour-small returns
- 4th hour- negative returns (tired and confused)

Example #2: A Farmer has fixed resource of 8 acres planted of corn. If he doesn't clear weeds he will get 30 bushels. If he clears weeds once he will get 50 bushels.

Twice-57, Three times-60. Additional returns diminishes each time.

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Costs of Production

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Accountants vs. Economists

Accountants look at only EXPLICIT COSTS

- Explicit costs (out of pocket costs) are payments paid by firms for using the resources of others.
- Example: Rent, Wages, Materials, Electricity Bills

Economists examine both the EXPLICIT COSTS and the IMPLICIT COSTS

- Implicit costs are the opportunity costs that firms “pay” for using their own resources
- Example: Forgone Wage, Forgone Rent, Time

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Accountants vs. Economists

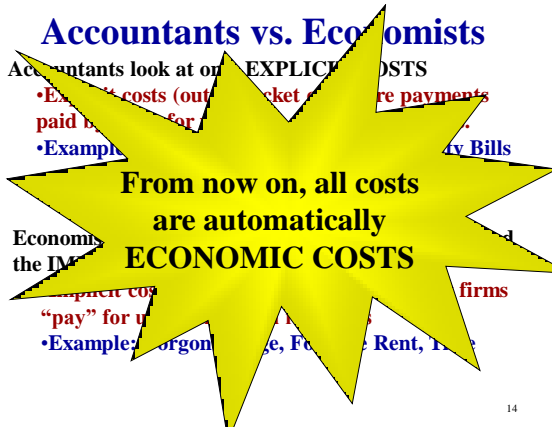
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Economists examine both the EXPLICIT COSTS and the IMPLICIT COSTS

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- Example: Forgone Wage, Forgone Rent, Time

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Short-Run Production Costs

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Definition of the “Short-Run”

- We will look at both short-run and long-run production costs.
 - Short-run is NOT a set specific amount of time.
 - The short-run is a period in which at least one resource is fixed.
 - Plant capacity/size is NOT changeable
 - In the long-run ALL resources are variable
 - NO fixed resources
 - Plant capacity/size is changeable
- Today we will examine Short-run costs.**

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Different Economic Costs

Total Costs

FC = Total Fixed Costs

VC = Total Variable Costs

TC = Total Costs

Per Unit Costs

AFC = Average Fixed Costs

AVC = Average Variable Costs

ATC = Average Total Costs

MC = Marginal Cost

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Definitions

Fixed Costs:

Costs for fixed resources that DON'T change with the amount produced

Ex: Rent, Insurance, Managers Salaries, etc.

$$\text{Average Fixed Costs} = \frac{\text{Fixed Costs}}{\text{Quantity}}$$

Variable Costs:

Costs for variable resources that DO change as more or less is produced

Ex: Raw Materials, Labor, Electricity, etc.

$$\text{Average Variable Costs} = \frac{\text{Variable Costs}}{\text{Quantity}}$$

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Definitions

Total Cost:

Sum of Fixed and Variable Costs

$$\text{Average Total Cost} = \frac{\text{Total Costs}}{\text{Quantity}}$$

Marginal Cost:

Additional costs of an additional **output**.

Ex: If the production of two more output increases total cost from \$100 to \$120, the MC is **\$10**.

$$\text{Marginal Cost} = \frac{\text{Change in Total Costs}}{\text{Change in Quantity}}$$

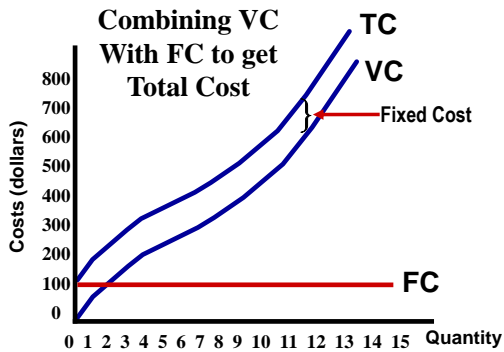
Calculating TC, VC, FC, ATC, AFC, and MC

TP	VC	FC	TC	MC	AVC	AFC	ATC
0	0	100					
1	10						
2	16						
3	21						
4	26						
5	30						
6	36						
7	46						

Draw this in your notes

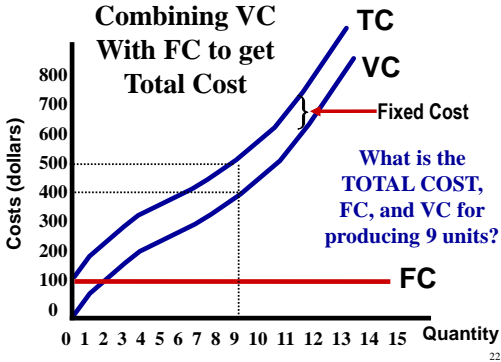
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TOTAL COSTS GRAPHICALLY

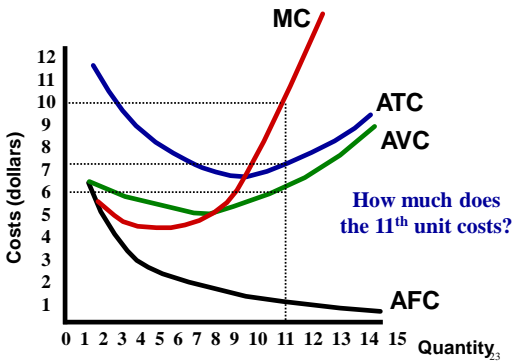


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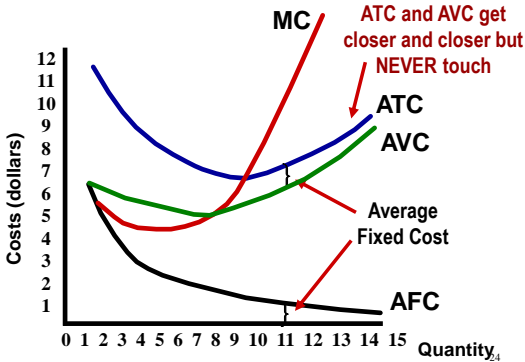
TOTAL COSTS GRAPHICALLY



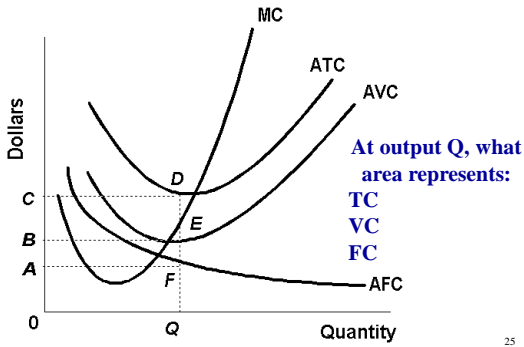
Per-Unit Costs (Average and Marginal)



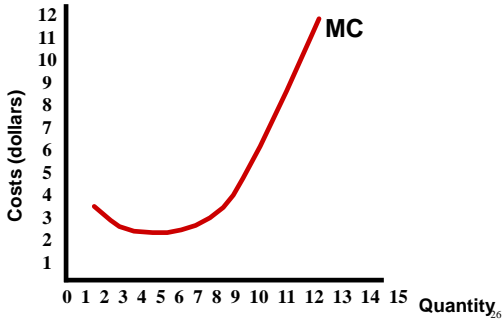
Per-Unit Costs (Average and Marginal)



Per-Unit Costs (Average and Marginal)



Why is the MC curve U-shaped?



Why is the MC curve U-shaped?

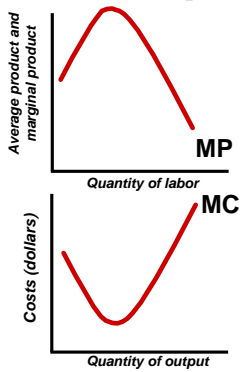
•The MC curve falls and then rises because of diminishing marginal returns.

•Example:

•Assume the fixed cost is \$20 and the ONLY variable cost is the cost for each worker (\$10)

Workers	Total Prod	Marg Prod	Total Cost	Marginal Cost
0	0			
1	5			
2	13			
3	19			
4	23			
5	25			
6	26			

Relationship between Production and Cost



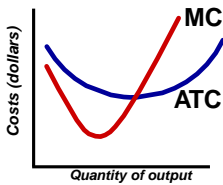
Why is the MC curve U-shaped?

- When marginal product is increasing, marginal cost falls.
- When marginal product falls, marginal costs increase.

MP and MC are mirror images of each other.

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Relationship between Production and Cost



Why is the ATC curve U-shaped?

- ATC is made up of both AFC and AVC
- The AFC is high early on in the production of output
- Diminishing Marginal Returns kicks in as output increases

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Shifting Cost Curves

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Shifting Costs Curves

TP	VC	FC	TC	MC	AVC	AFC	ATC
0	0	100	100	-	-	-	-
1	10	100	110	10	10	100	110
2	16	100	116	6	8	50	58
3	21	100	121	5	7	33.3	30.3
4	26	100	126	5	6.5	25	31.5
5	30	100	130	4	6	20	26
6	36	100	136	6	6	16.67	22.67
7	46	100	146	10	6.6	14.3	20.9

What if Fixed Costs increase to \$200

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Shifting Costs Curves

TP	VC	FC	TC	MC	AVC	AFC	ATC
0	0	100	100	-	-	-	-
1	10	100	110	10	10	100	110
2	16	100	116	6	8	50	58
3	21	100	121	5	7	33.3	30.3
4	26	100	126	5	6.5	25	31.5
5	30	100	130	4	6	20	26
6	36	100	136	6	6	16.67	22.67
7	46	100	146	10	6.6	14.3	20.9

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Shifting Costs Curves

TP	VC	FC	TC	MC	AVC	AFC	ATC
0	0	200	100	-	-	-	-
1	10	200	110	10	10	100	110
2	16	200	116	6	8	50	58
3	21	200	121	5	7	33.3	30.3
4	26	200	126	5	6.5	25	31.5
5	30	200	130	4	6	20	26
6	36	200	136	6	6	16.67	22.67
7	46	200	146	10	6.6	14.3	20.9

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Shifting Costs Curves

TP	VC	FC	TC	MC	AVC	AFC	ATC
0	0	200	200	-	-	-	-
1	10	200	210	10	10	100	110
2	16	200	216	6	8	50	58
3	21	200	221	5	7	33.3	30.3
4	26	200	226	5	6.5	25	31.5
5	30	200	230	4	6	20	26
6	36	200	236	6	6	16.67	22.67
7	46	200	246	10	6.6	14.3	20.9

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Shifting Costs Curves

TP	VC	FC	TC	MC	AVC	AFC	ATC
0	0	200	200	-	-	-	-
1	10	200	210	10	10	100	110
2	16	200	216	6	8	50	58
3	21	200	221	5	7	33.3	30.3
4	26	200	226	5	6.5	25	31.5
5	30	200	230	4	6	20	26
6	36	200	236	6	6	16.67	22.67
7	46	200	246	10	6.6	14.3	20.9

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Shifting Costs Curves

TP	VC	FC	TC	MC	AVC	AFC	ATC
0	0	200	200	-	-	-	-
1	10	200	210	10	10	200	110
2	16	200	216	6	8	100	58
3	21	200	221	5	7	66.6	30.3
4	26	200	226	5	6.5	50	31.5
5	30	200	230	4	6	40	26
6	36	200	236	6	6	33.3	22.67
7	46	200	246	10	6.6	28.6	20.9

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Shifting Costs Curves

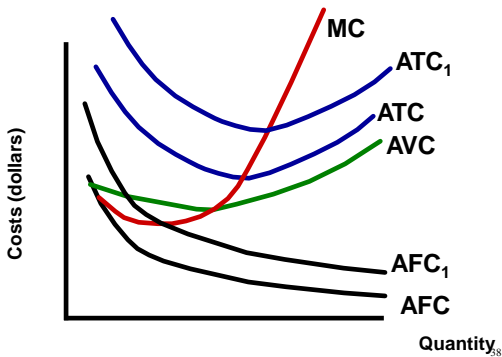
If fixed costs change **ONLY** AFC and ATC Change!

TP	VC	FC	TC	MC	AVC	AFC	ATC
0	0	200	200	-	-	-	-
1	10	200	210	10	10	200	210
2	16	200	216	6	8	100	108
3	21	200	221	5	7	66.6	73.6
4	26	200	226	5	6.5	50	56.5
5	30	200	230	4	6	40	46
6	36	200	236	6	6	33.3	39.3
7	46	200	246	10	6.6	28.6	35.2

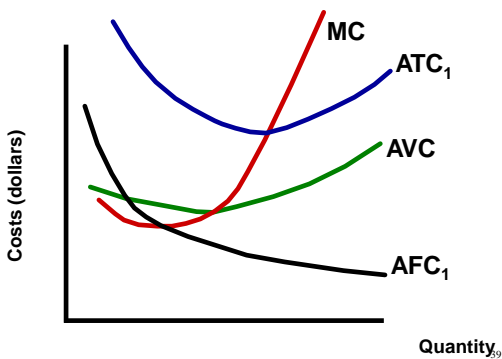
MC and AVC DON'T change!

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Shift from an increase in a Fixed Cost



Shift from an increase in a Fixed Cost



Shifting Costs Curves

TP	VC	FC	TC	MC	AVC	AFC	ATC
0	0	100	100	-	-	-	-
1	10	100	110	10	10	100	110
2	16	100	116	6	8	50	58
3	21	100	121	5	7	33.3	30.3
4	26	100	126	5	6.5	25	31.5
5	30	100	130	4	6	20	26
6	36	100	136	6	6	16.67	22.67
7	46	100	146	10	6.6	14.3	20.9

What if the cost for variable resources increase

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Shifting Costs Curves

TP	VC	FC	TC	MC	AVC	AFC	ATC
0	0	100	100	-	-	-	-
1	10	100	110	10	10	100	110
2	16	100	116	6	8	50	58
3	21	100	121	5	7	33.3	30.3
4	26	100	126	5	6.5	25	31.5
5	30	100	130	4	6	20	26
6	36	100	136	6	6	16.67	22.67
7	46	100	146	10	6.6	14.3	20.9

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Shifting Costs Curves

TP	VC	FC	TC	MC	AVC	AFC	ATC
0	0	100	100	-	-	-	-
1	11	100	110	10	10	100	110
2	18	100	116	6	8	50	58
3	24	100	121	5	7	33.3	30.3
4	30	100	126	5	6.5	25	31.5
5	35	100	130	4	6	20	26
6	43	100	136	6	6	16.67	22.67
7	55	100	146	10	6.6	14.3	20.9

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Shifting Costs Curves

TP	VC	FC	TC	MC	AVC	AFC	ATC
0	0	100	100	-	-	-	-
1	11	100	111	10	10	100	110
2	18	100	118	6	8	50	58
3	24	100	124	5	7	33.3	30.3
4	30	100	130	3	6.5	25	31.5
5	35	100	135	4	6	20	26
6	43	100	143	6	6	16.67	22.67
7	55	100	155	10	6.6	14.3	20.9

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Shifting Costs Curves

TP	VC	FC	TC	MC	AVC	AFC	ATC
0	0	100	100	-	-	-	-
1	11	100	111	11	10	100	110
2	18	100	118	7	8	50	58
3	24	100	124	6	7	33.3	30.3
4	30	100	130	6	6.5	25	31.5
5	35	100	135	5	6	20	26
6	43	100	143	8	6	16.67	22.67
7	55	100	155	12	6.6	14.3	20.9

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Shifting Costs Curves

TP	VC	FC	TC	MC	AVC	AFC	ATC
0	0	100	100	-	-	-	-
1	11	100	111	11	11	100	110
2	18	100	118	7	9	50	58
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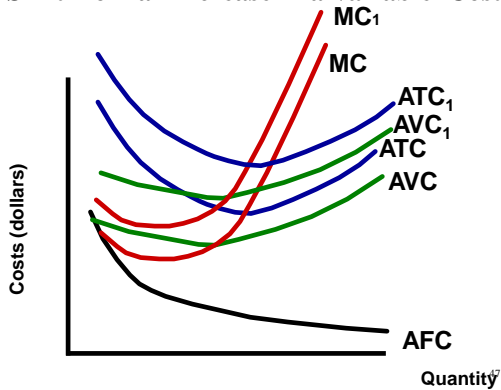
Shifting Costs Curves

If variable costs change MC, AVC, and ATC Change!

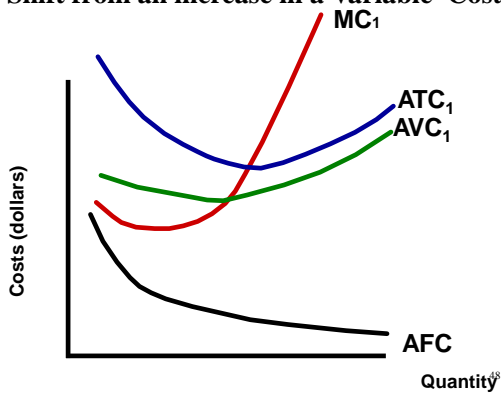
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0	0	100	100	-	-	-	-
1	11	100	111	11	11	100	111
2	18	100	118	7	9	50	59
3	24	100	124	6	8	33.3	41.3
4	30	100	130	6	7.5	25	32.5
5	35	100	135	5	7	20	27
6	43	100	143	8	7.16	16.67	23.83
7	55	100	155	12	7.8	14.3	22.1

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Shift from an increase in a Variable Costs



Shift from an increase in a Variable Costs



Long-Run Costs

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Definition and Purpose of the Long Run

In the long run all resources are variable.
Plant capacity/size can change.

Why is this important?

The Long-Run is used for planning. Firms use to identify which plant size results in the lowest per unit cost.

Ex: Assume a firm is producing 100 bikes with a fixed number of resources (workers, machines, etc.).

If this firm decides to **DOUBLE** the number of resources, what will happen to the number of bikes it can produce?

There are only three possible outcomes:

1. Number of bikes will double (constant returns to scale)
2. Number of bikes will more than double (economies of scale)
3. Number of bikes will less than double (diseconomies of scale)

Long Run ATC

What happens to the average total costs of a product when a firm increases its plant capacity?

Example of various plant sizes:

- I make tables out of my garage with one saw
- I rent out building, buy 5 saws, hire 3 workers
- I rent a factory, buy 20 saws and hire 40 workers
- I build my own plant and use robots to build tables.
- I create plants in every major city in the U.S.

Long Run ATC curve is made up of all the different short run ATC curves of various plant sizes.

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Economies of Scale

Why does economies of scale occur?

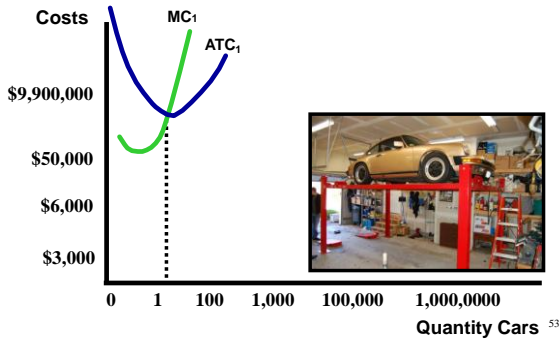
- Firms that produce more can better use Mass Production Techniques and Specialization.

Example:

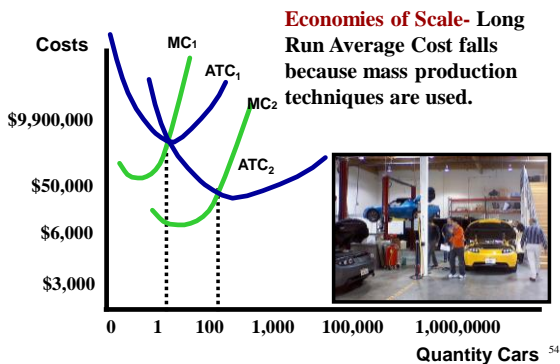
- A car company that makes 50 cars will have a very high average cost per car.
- A car company that can produce 100,000 cars will have a low average cost per car.
- Using mass production techniques, like robots, will cause total cost to be higher but the average cost for each car would be significantly lower.

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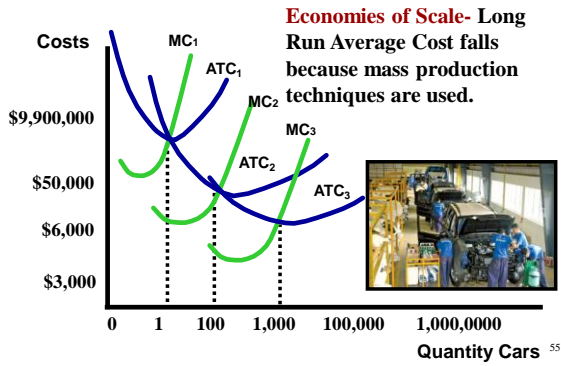
Long Run AVERAGE Total Cost



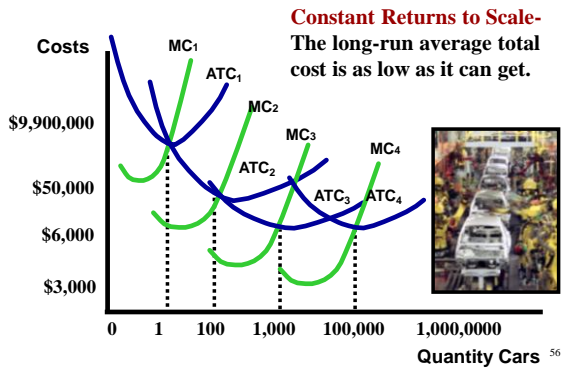
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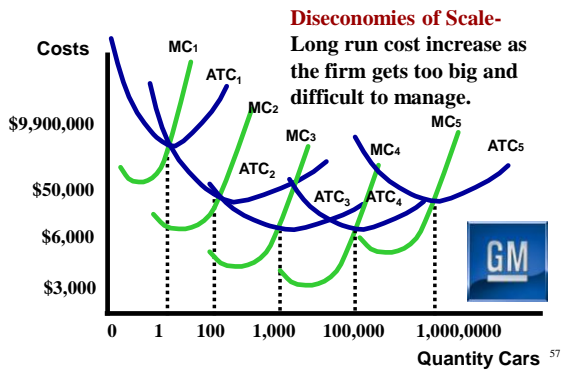
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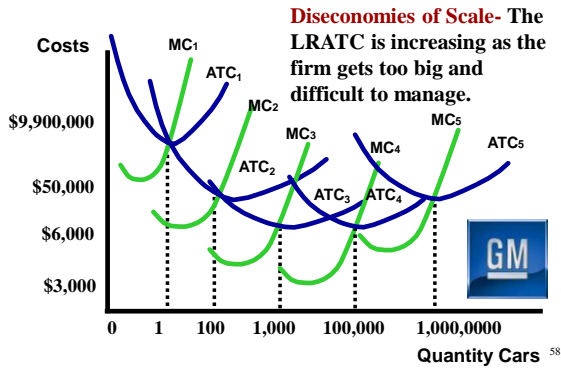
Long Run AVERAGE Total Cost



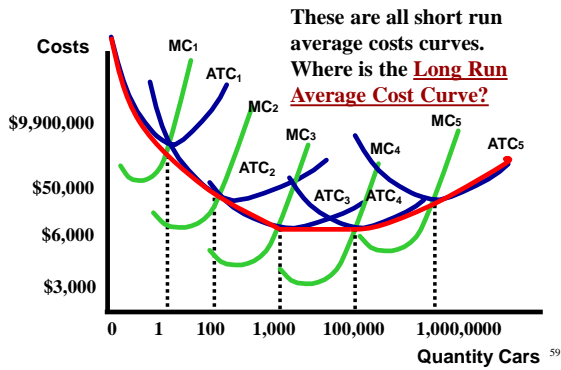
Long Run AVERAGE Total Cost



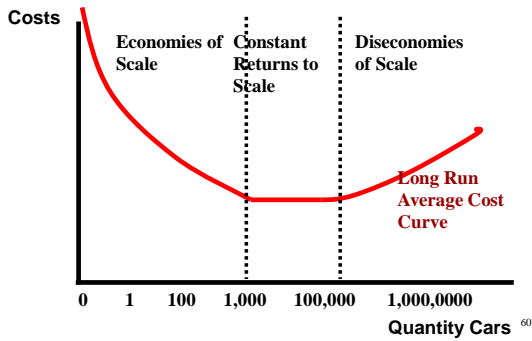
Long Run AVERAGE Total Cost



Long Run AVERAGE Total Cost

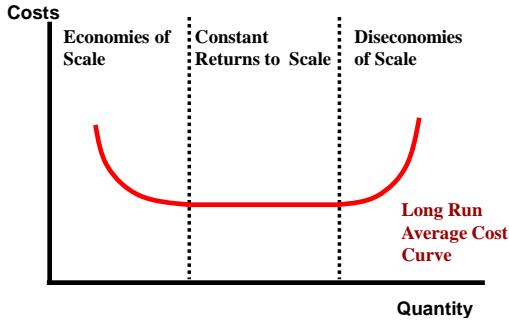


Long Run AVERAGE Total Cost



LRATC Simplified

The law of diminishing marginal returns doesn't apply in the long run because there are no **FIXED RESOURCES**.



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Practice FRQ

3. Assume that a firm uses capital as a fixed factor of production and uses labor as a variable factor. The marginal product of labor at first increases and then decreases with the amount of labor.
- (a) Using a correctly labeled graph, draw and identify the firm's average total cost curve (ATC), average variable cost curve (AVC), and marginal cost (MC).
 - (b) Given your graph in part (a), answer each of the following.
 - (i) Why is the MC shaped as it is?
 - (ii) What does the difference between the AVC and the ATC represent?
 - (c) Define economies of scale.
 - (d) Draw a long-run average total cost curve that has a region of economies of scale followed by a region of diseconomies of scale, as output increases.

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4 Market Structures

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Law of One Price

In an efficient market, all identical goods must have only one price.

Result: Each firm is a price taker. Firms have no control of the price

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Perfectly Competitive Firms

Example:

- Say you go to Mexico to buy a hammock.
- After visiting at few different shops you find that the buyers and sellers always agree on \$15.
- This is the market price (where demand and supply meet)

1. Is it likely that any shop can sell hammocks for \$20?
2. Is it likely that any shop will sell hammocks for \$10?
3. What happens if a shop prices hammocks too high?
4. Do you think that these firms make a large profit off of hammocks? Why?

These firms are “price takers” because they sell their products at a price set by the market.

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Ghana – roadside stands offering locally produced palm oil. (a main staple of every Ghanaian home)

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Demand for Perfectly Competitive Firms

Why are they Price Takers?

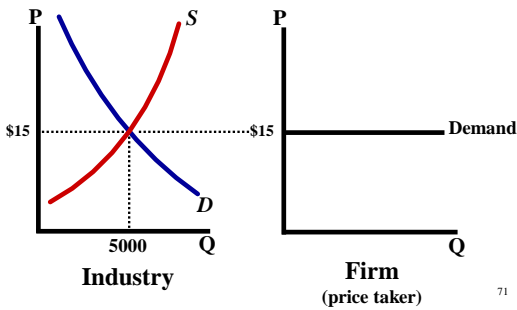
- If a firm charges above the market price, NO ONE will buy. They will go to other firms
- There is no reason to price low because consumers will buy just as much at the market price.

Since the price is the same at all quantities demanded, the demand curve for each firm is...

Perfectly Elastic
(A Horizontal straight line)

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The Competitive Firm is a Price Taker Price is set by the Industry



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The Competitive Firm is a Price Taker Price is set by the Industry

What is the additional revenue for selling an additional unit?

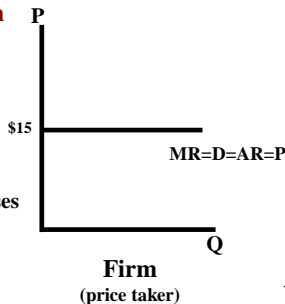
1st unit earns \$15

2nd unit earns \$15

Marginal revenue is constant at \$15

Notice:

- Total revenue increases at a constant rate
- MR equal Average Revenue



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The Competitive Firm is a **Price Taker**
 Price is set by the industry

What is the firm's revenue?

**For Perfect Competition:
 Demand = MR
 (Marginal Revenue)**

Notice:
 • Total revenue is maximized at a constant rate
 • MR equals Average Revenue

Firm
 (price taker)

Short-Run Profit Maximization

What is the goal of every business?

To Maximize Profits!!!!!!

- To maximize profit firms must make the right output
- Firms should continue to produce until the additional revenue from each new output equals the additional cost.

Example (Assume the price is \$10)

- Should you produce...
 - ...if the additional cost of another unit is \$5
 - ...if the additional cost of another unit is \$9
 - ...if the additional cost of another unit is \$11

Short-Run Profit Maximization

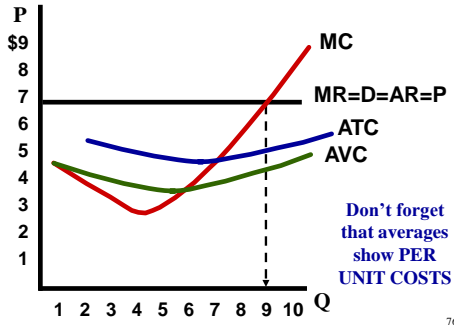
What is the goal of every business?

To Maximize Profits!!!!!!

- To maximize profit firms must make the right output
 - Firms should continue to produce until the additional revenue from each new output equals the additional cost.
- Profit Maximizing Rule**
MR=MC

- Should you produce...
 - ...if the additional cost of another unit is \$5
 - ...if the additional cost of another unit is \$9
 - ...if the additional cost of another unit is \$11

- How much output should be produced?
- How much is Total Revenue? How much is Total Cost?
- Is there profit or loss? How much?



76

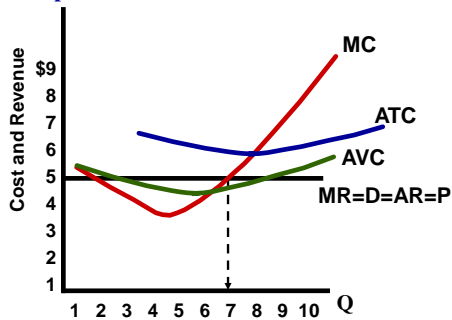
Suppose the market demand falls. What would happen if the price is lowered from \$7 to \$5?

The MR=MC rule still applies but now the firm will make an economic loss.

The profit maximizing rule is also the loss minimizing rule!!!

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- How much output should be produced?
- How much is Total Revenue? How much is Total Cost?
- Is there profit or loss? How much?



78

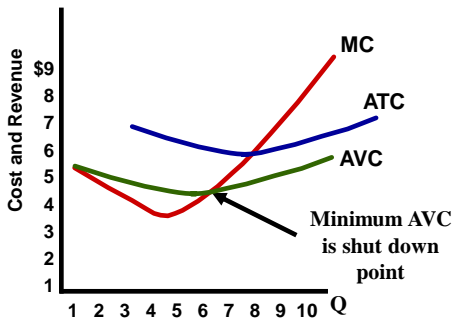
Assume the market demand falls even more. If the price is lowered from \$5 to \$4 the firm should stop producing.

Shut Down Rule:

- A firm should continue to produce as long as the price is above the AVC
- When the price falls below AVC then the firm should minimize its losses by shutting down
- Why? If the price is below AVC the firm is losing more money by producing than they would have to pay to shut down.

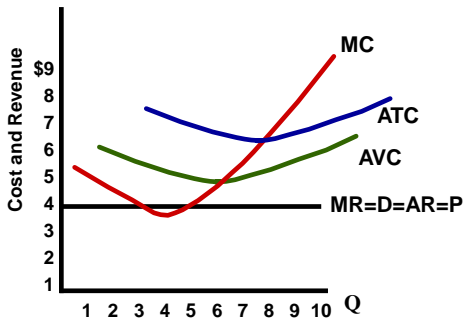
79

SHUT DOWN! Produce Zero



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P < AVC. They should shut down
Producing nothing is cheaper than staying open.



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Profit Maximizing Rule

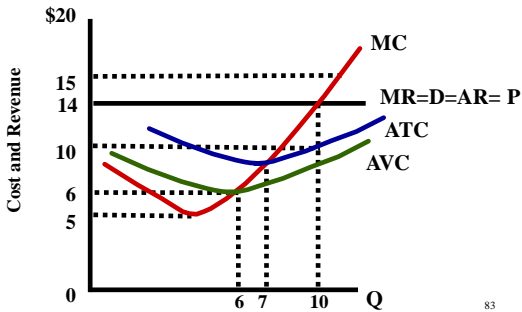
MR = MC

Three Characteristics of MR=MC Rule:

1. Rule applies to ALL markets structures (PC, Monopolies, etc.)
2. The rule applies only if price is above AVC
3. Rule can be restated $P = MC$ for perfectly competitive firms (because $MR = P$)

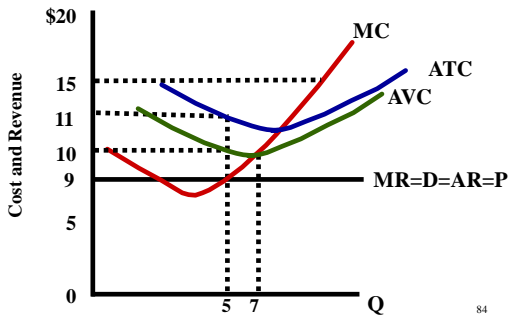
82

#1 Should the firm produce?
 What output should the firm produce?
 What is TR at that output? What is TC?
 How much profit or loss?



83

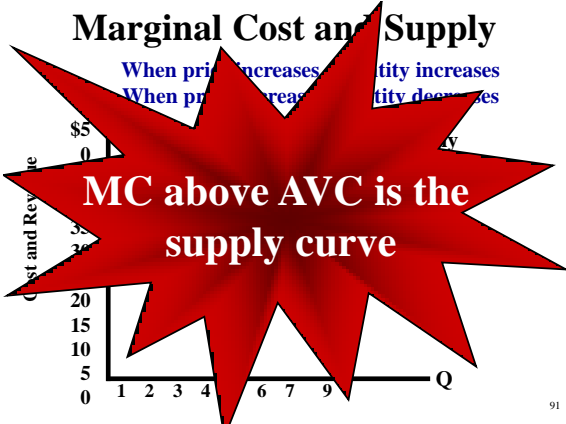
#2 What output should the firm produce?
 What is TR at MR=MC point?
 What is TC at MR=MC point?
 How much profit or loss?



84

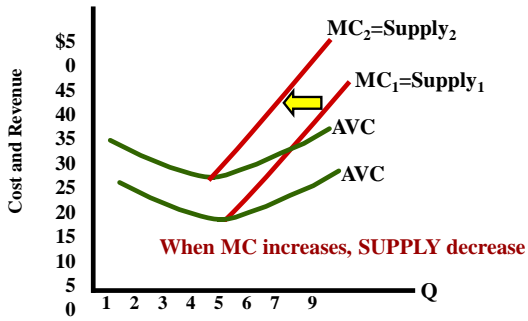
Marginal Cost and Supply

When price increases, quantity increases
 When price decreases, quantity decreases



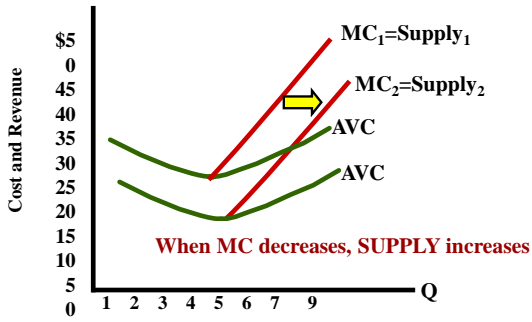
Marginal Cost and Supply

What if variable costs increase (ex: tax)?



Marginal Cost and Supply

What if variable costs decrease (ex: subsidy)?



Perfect Competition in the Long-Run

You are a wheat farmer. You learn that there is more profit in making corn.
What do you do in the long run?

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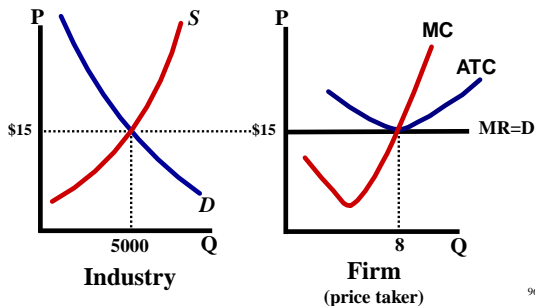
In the Long-run...

- Firms will enter if there is profit
- Firms will leave if there is loss
- So, ALL firms break even, they make NO economic profit (*Zero Economic Profit*)
 (No Economic Profit=Normal Profit)
- In long run equilibrium a perfectly competitive firm is EXTREMELY efficient.

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Side-by-side graph for perfectly competitive industry and firm in the LONG RUN

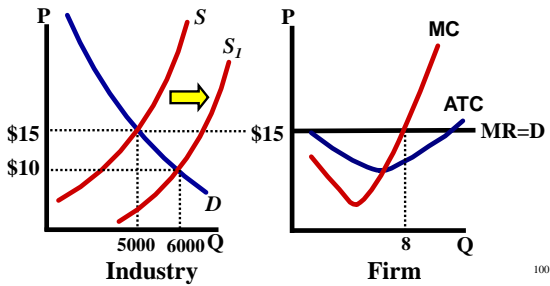
Is the firm making a profit or a loss? Why?



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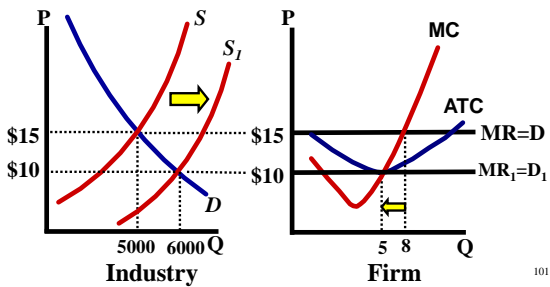
Firms enter to earn profit so supply increases in the industry

Price decreases and quantity increases

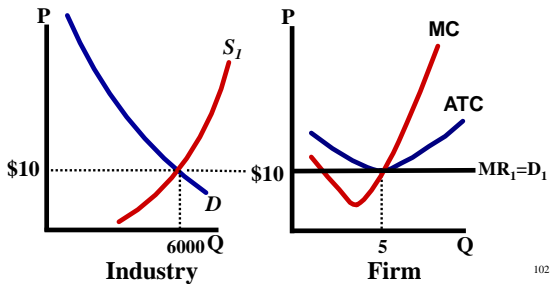


Price falls for the firm because they are price takers.

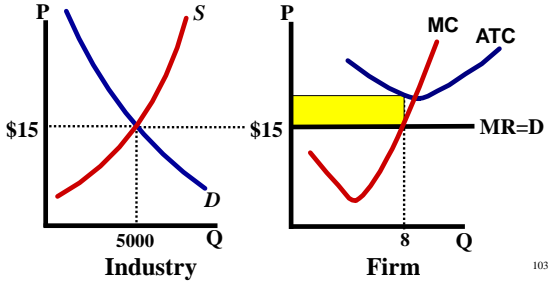
Price decreases and quantity decreases



**New Long Run Equilibrium at \$10 Price
Zero Economic Profit**

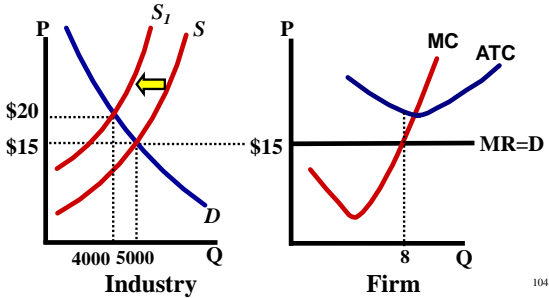


1. Is this the short or the long run? Why?
2. What will firms do in the long run?
3. What happens to P and Q in the industry?
4. What happens to P and Q in the firm?



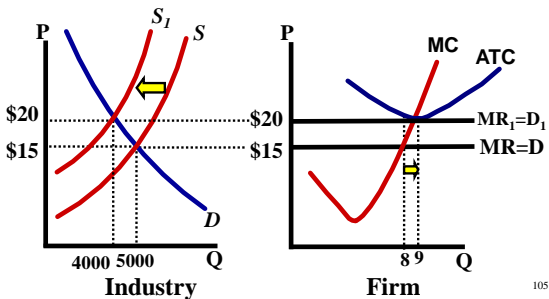
Firms leave to avoid losses so supply decreases in the industry

Price increases and quantity decreases



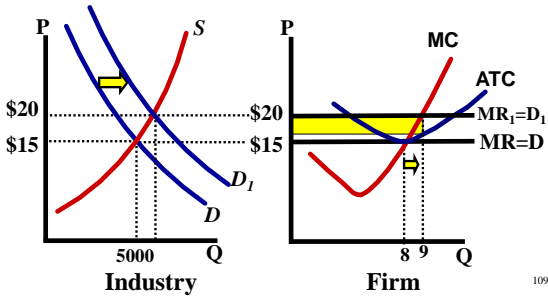
Price increase for the firm because they are price takers.

Price increases and quantity increases

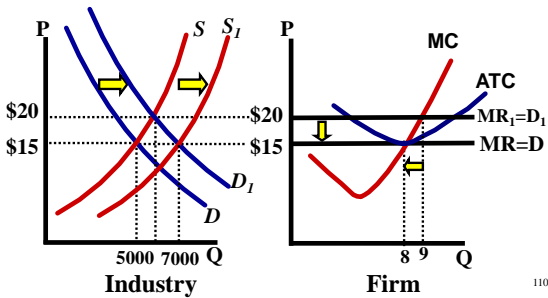


Demand Increases

The price increases and quantity increases
Profit is made in the short-run

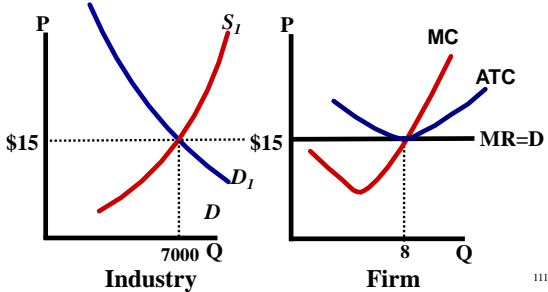


Firms enter to earn profit so supply increases in the industry
Price Returns to \$15



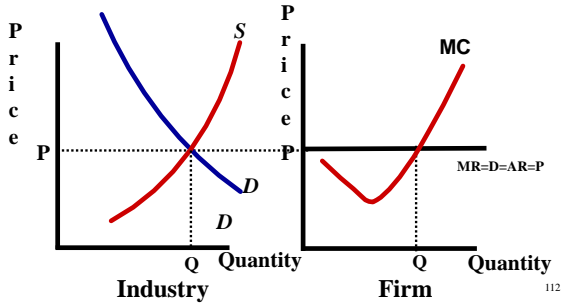
Back to Long-Run Equilibrium

The only thing that changed from long-run to long-run is quantity in the industry



Practice

Draw this three times



Micro 2011 B

1. Suppose that roses are produced in a perfectly competitive, increasing-cost industry in long-run equilibrium with identical firms.
 - (a) Draw correctly labeled side-by-side graphs for the rose industry and a typical firm and show each of the following.
 - (i) Industry equilibrium price and quantity, labeled P_m and Q_m , respectively
 - (ii) The firm's equilibrium price and quantity, labeled P_f and Q_f , respectively
 - (b) Is P_m larger than, smaller than, or equal to P_f ?
 - (c) Assume that there is an increase in the demand for roses. On your graphs in part (a), show each of the following.
 - (i) The new short-run industry equilibrium price and quantity, labeled P_{m2} and Q_{m2} , respectively
 - (ii) The new short-run profit-maximizing price and quantity for the typical firm, labeled P_{f2} and Q_{f2} , respectively
 - (d) As the industry adjusts to a new long-run equilibrium,
 - (i) what will happen to the number of firms in the industry? Explain.
 - (ii) will the firm's average total cost curve shift upward, shift downward, or remain unchanged?
 - (e) In the long run, compare the firm's profit-maximizing price to each of the following.
 - (i) P_f in part (a)(ii)
 - (ii) P_{f2} in part (c)(ii)

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Efficiency

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PURE COMPETITION AND EFFICIENCY

In general, efficiency is the optimal use of societies scarce resources

- Perfect Competition forces producers to use limited resources to their fullest.
- Inefficient firms have higher costs and are the first to leave the industry.
- Perfectly competitive industries are extremely efficient

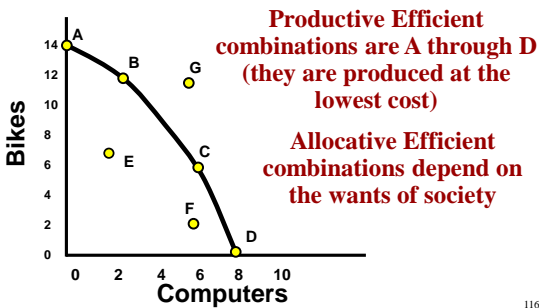
There are two kinds of efficiency:

- 1. Productive Efficiency**
- 2. Allocative Efficiency**

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Efficiency Revisited

Which points are productively efficient?
Which are allocatively efficient?



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Productive Efficiency

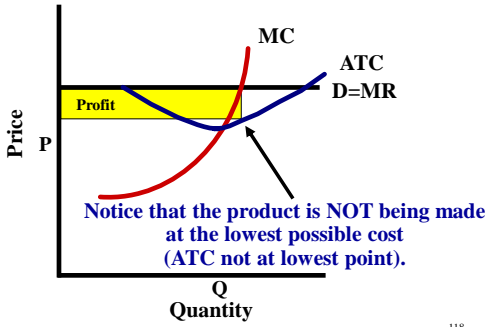
The production of a good in a least costly way. (Minimum amount of resources are being used)

Graphically it is where...

Price = Minimum ATC

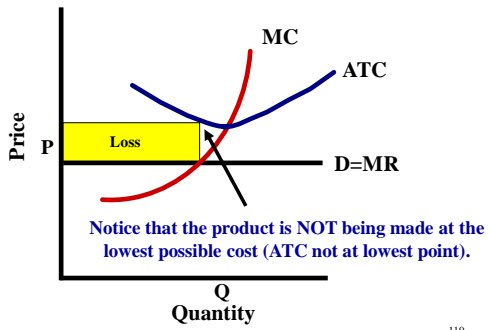
117

Short-Run



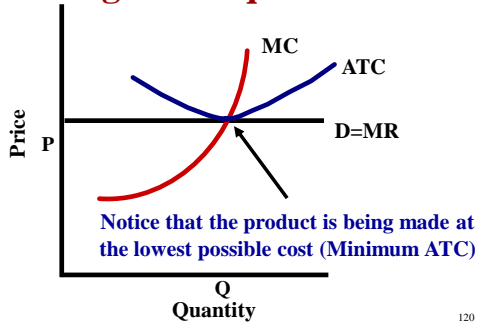
118

Short-Run



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Long-Run Equilibrium



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Allocative Efficiency

Producers are allocating resources to make the products most wanted by society.

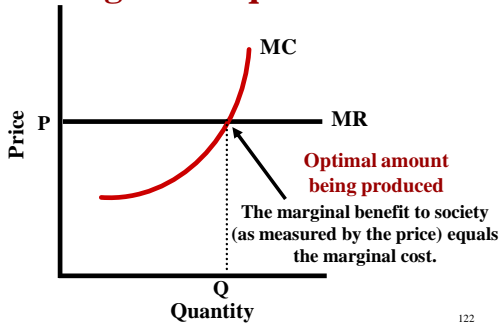
Graphically it is where...

$$\text{Price} = \text{MC}$$

Why? Price represents the benefit people get from a product.

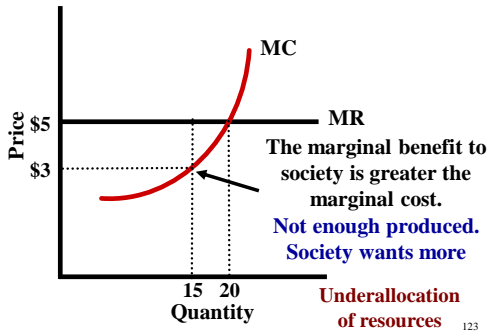
121

Long-Run Equilibrium



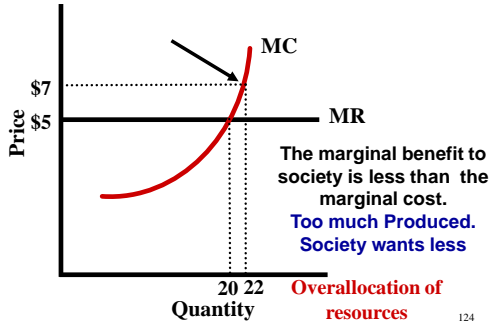
122

What if the firm makes 15 units?

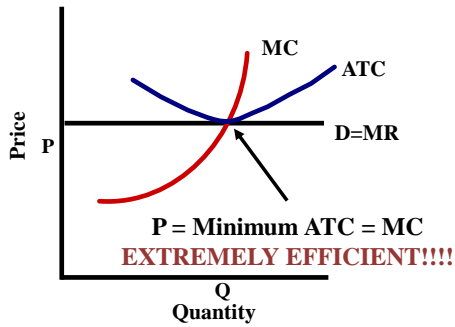


123

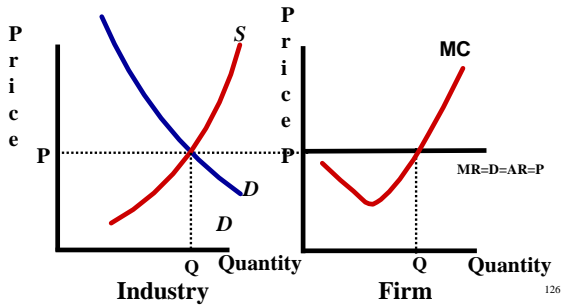
What if the firm makes 22 units?



Long-Run Equilibrium

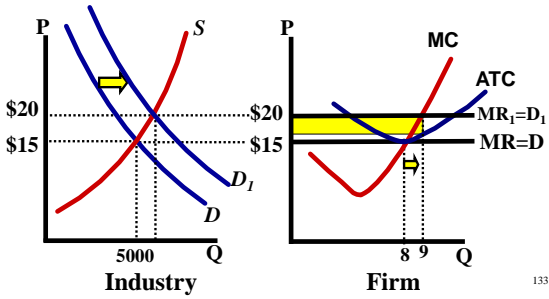


Practice Draw this three times



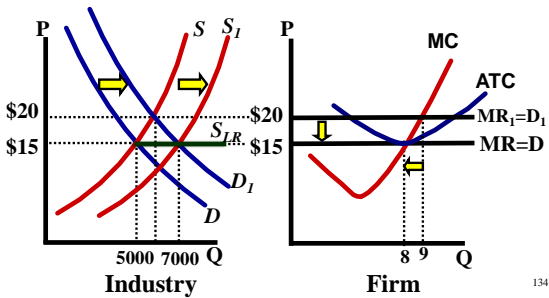
Constant Cost Industry

Demand increases causing the firm to show profits



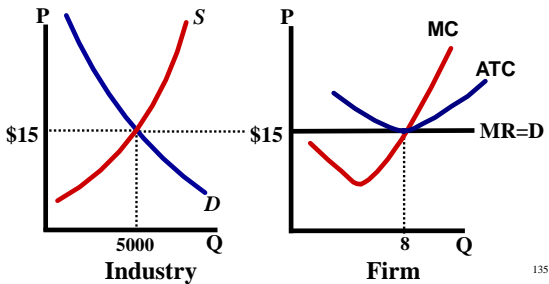
Constant Cost Industry

Firms enter, dropping the market price back down to the original price.



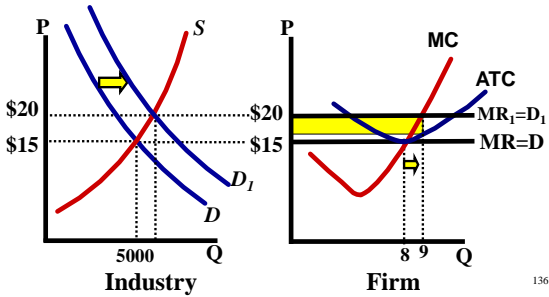
Increasing Cost Industry

Long Run Equilibrium has the Market Price of \$15



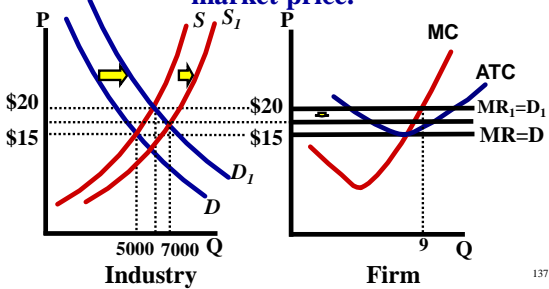
Increasing Cost Industry

Demand increases causing the firm to show profits



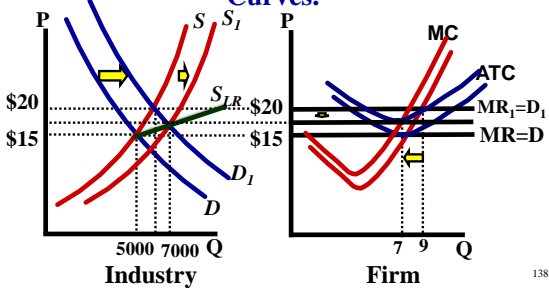
Increasing Cost Industry

Firms enter, dropping the market price down, but not the full distance of the original market price.



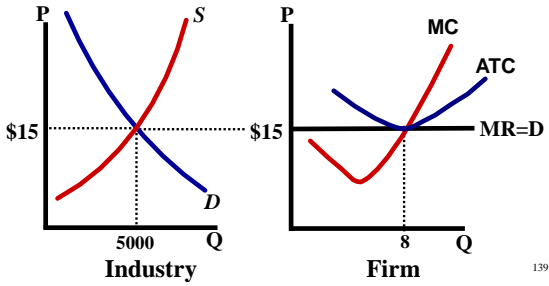
Increasing Cost Industry

Costs get bid up and increase all firms Marginal Cost curves and Average Total Cost Curves.



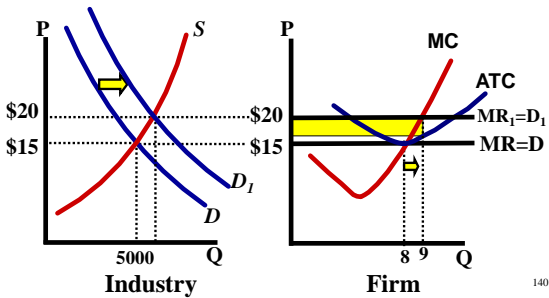
Decreasing Cost Industry

Long Run Equilibrium has the Market Price of \$15



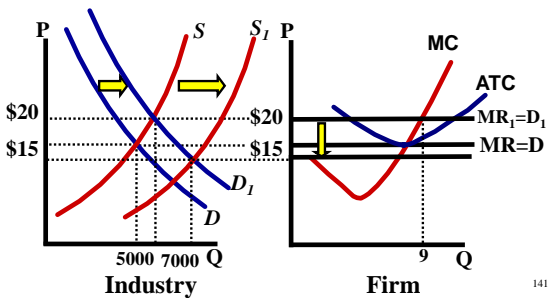
Decreasing Cost Industry

Demand increases causing the firm to show profits



Decreasing Cost Industry

Firms enter, dropping the market price below the original market price.



Do we continue producing in the short-run even though we are making losses?

Per Unit vs. Lump Sum

Per Unit Tax – A tax that increases variable costs

Per Unit Subsidy – A subsidy that decreases variable costs

Lump Sum Tax – A tax that increases fixed costs

Lump Sum Subsidy – A subsidy that decreases fixed costs

-How do Per Unit taxes/subsidies affect cost curves?

-How do Lump Sum taxes/subsidies affect cost curves?

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Things to Know for the Test

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- 1. Explicit & Implicit Costs and Accounting & Economic Profit
- 2. Calculating MP and AP and explaining relationship.
- 3. The Law of Dim. Marg. Returns and causes of 3 Stages
- 4. Graphing TP, MP, and AP and 3 Stages of Returns
- 5. Examples between Fixed and Variable and difference between short-run and long-run.
- 6. Calculating ATC, AVC, AFC, and MC
- 7. Graphing ATC, AVC, AFC, and MC (Explain relationship)
- 8. Shifting Costs Curves (Changing Variable and Fixed Costs)
- 9. Why is MC "U" Shaped?
- 10. Explain Long-Run and Economies and Diseconomies of Scale
- 11. Graphing Long-Run Average Cost Curves (Economies and Diseconomies of Scale)
- 12. Characteristics of Perfect Competition with examples of each
- 13. Explain Industry, Firm, Price Taker, TR, MR, Profit, and Profit Max. Rule

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- 14. Calculating TR, TC, and Profit from a firm graph
- 15. Shut Down Point and short-run supply curve
- 16. Drawing a firm making profit
- 17. Drawing a firm making a loss
- 18. Going from short-run profits to long-run equilibrium (Firm and Industry)
- 19. Going from short-run losses to long-run equilibrium (Firm and Industry)
- 20. Productive and Allocative Efficiency
