Econ 200
Module 5
Lecture 13

UNIVERSITY of WASHINGTON

Outline

1. The firm's shut down decision
2. Deriving firm and market supply
3. Long run responses to profit and loss
4. Efficiency

Reading: Ch 13.4-13.8, second half

Identifying Whether a Firm Can Make a Profit

Once we have determined the quantity where $MC=MR$, we can immediately know whether the firm is making a profit, breaking even, or making a loss. At that quantity,

- If $P > ATC$, the firm is making a profit
- If $P = ATC$, the firm is breaking even
- If $P < ATC$, the firm is making a loss

Short Run Responses of Perfectly Competitive Firms to Losses

Suppose a firm in a perfectly competitive market is making a loss. It has two options:

1. Continue to produce, or
2. Stop production by shutting down temporarily

If the firm shuts down, it will still need to pay its *fixed costs.*

The firm's fixed costs should be treated as **sunk costs** in the short run, *but sunk costs should be irrelevant to the firm's decision-making.*

The Firm's Shut Down Decision in the Short Run

Another way of writing firm profits in the short run:

Profit = (P-ATC)*q = (P-AVC-AFC)*q

Profit = (P-AVC)*q – FC (because FC paid regardless of q)

Then, examine two cases:

1. P>AVC → Profit > -FC
2. P<AVC → if q>0, then Profit < -FC
   if q=0, then Profit = -FC

→Firm better off not producing anything!

The Supply Curve of a Firm in the Short Run

The firm's shut down decision is based on its *variable costs*; it should produce nothing only if:

$$P < AVC$$

Or… Multiplying by Q:

$$(P \times Q) < AVC \times Q$$

Total Revenue < Variable Cost

The Supply Curve of a Firm in the Short Run

Therefore, the firm's output decision at every price can be given by:

Q(P) =

- *0 if P < AVC*
- *The quantity Q where P=MC(Q)*

→The marginal cost curve (above the min AVC curve – why?) gives us the relationship between price and quantity supplied: *it is the firm's supply curve!*

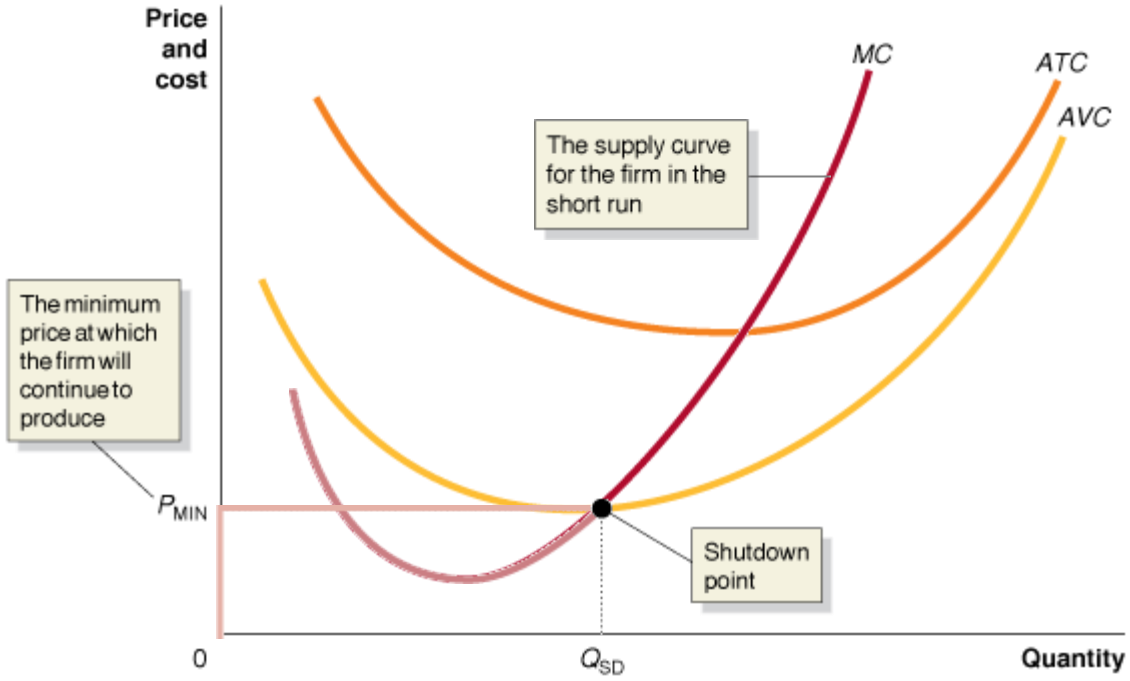
The Firm's Short-Run Supply Curve

The firm will produce at the level of output at which *MR = MC*.

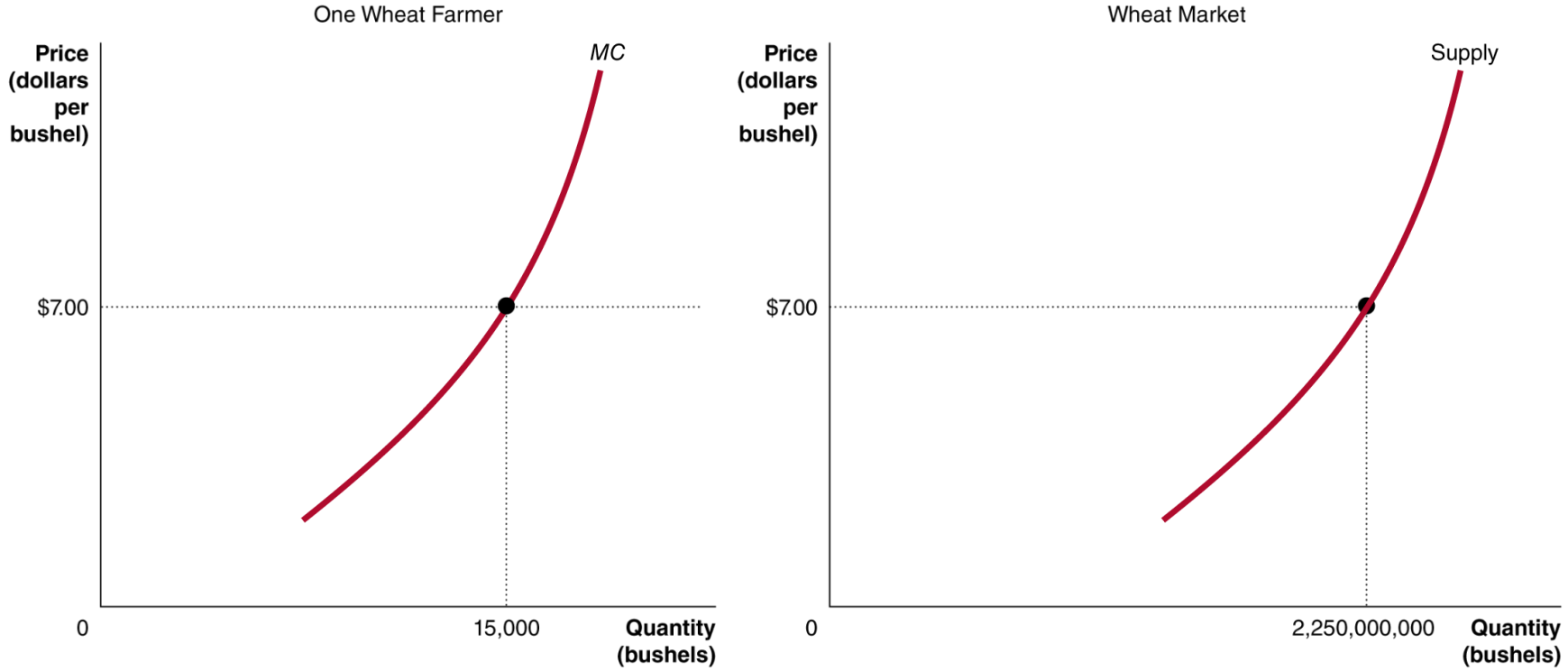
Because P=MR in a PC market, the firm will produce where *P = MC*.

And the quantity supplied is zero below the point where

P< min AVC



Short-Run Market Supply Curve



Firm supply and market supply

Individual wheat farmers take the price as given…

…and choose their output according to the price.

The collective actions of the individual farmers determine the market supply curve for wheat.

Will Firms Stay Shut Down Forever?

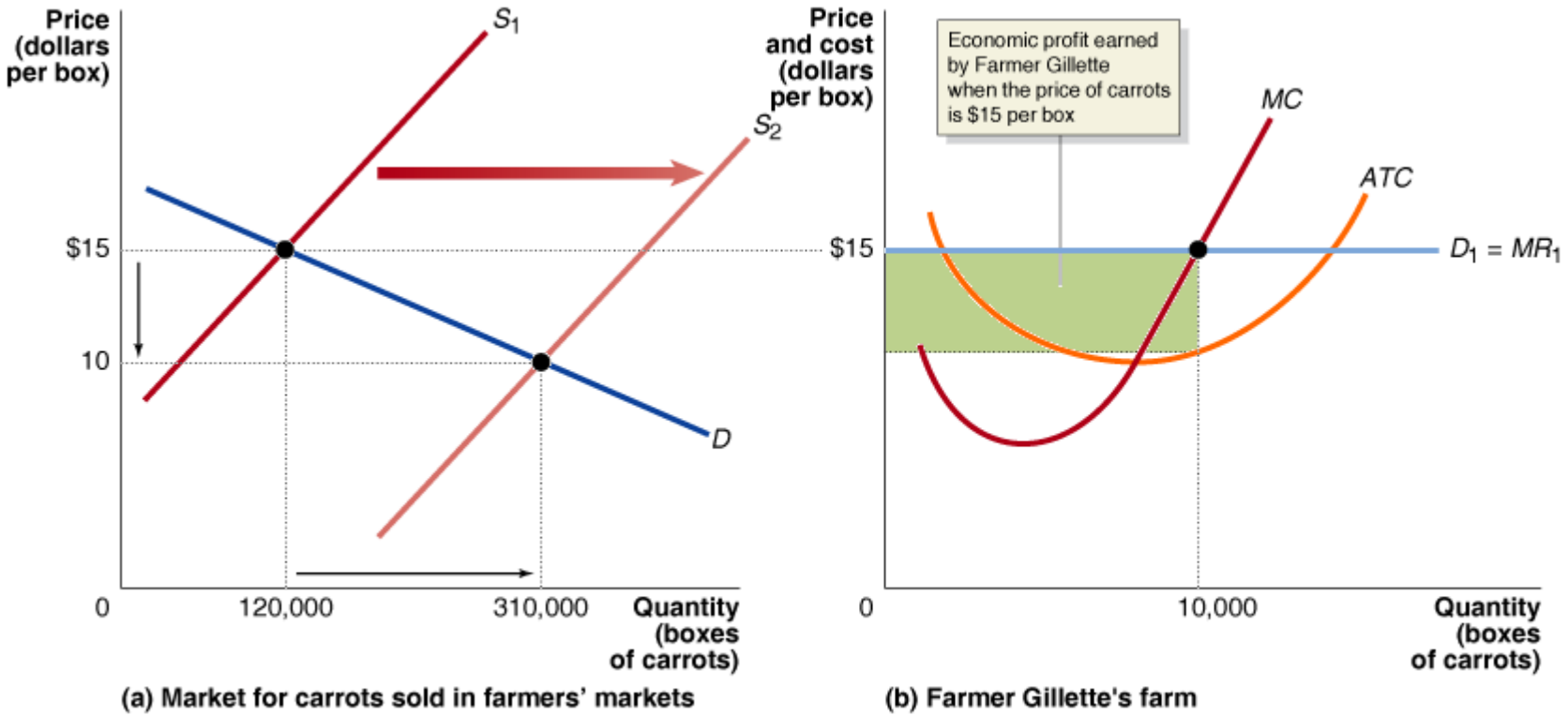
In the long run, firms making profit < 0 (whether or not they are “shut down”) can leave the market permanently.

Remember: In the long run, all inputs are variable, so the firm can get rid of its capital and move on to a market with more demand.

On the other hand, if existing firms are making profit > 0, new firms will decide to enter the market.

(Perfect Competition assumes that there is free entry and exit into the market in the long run)

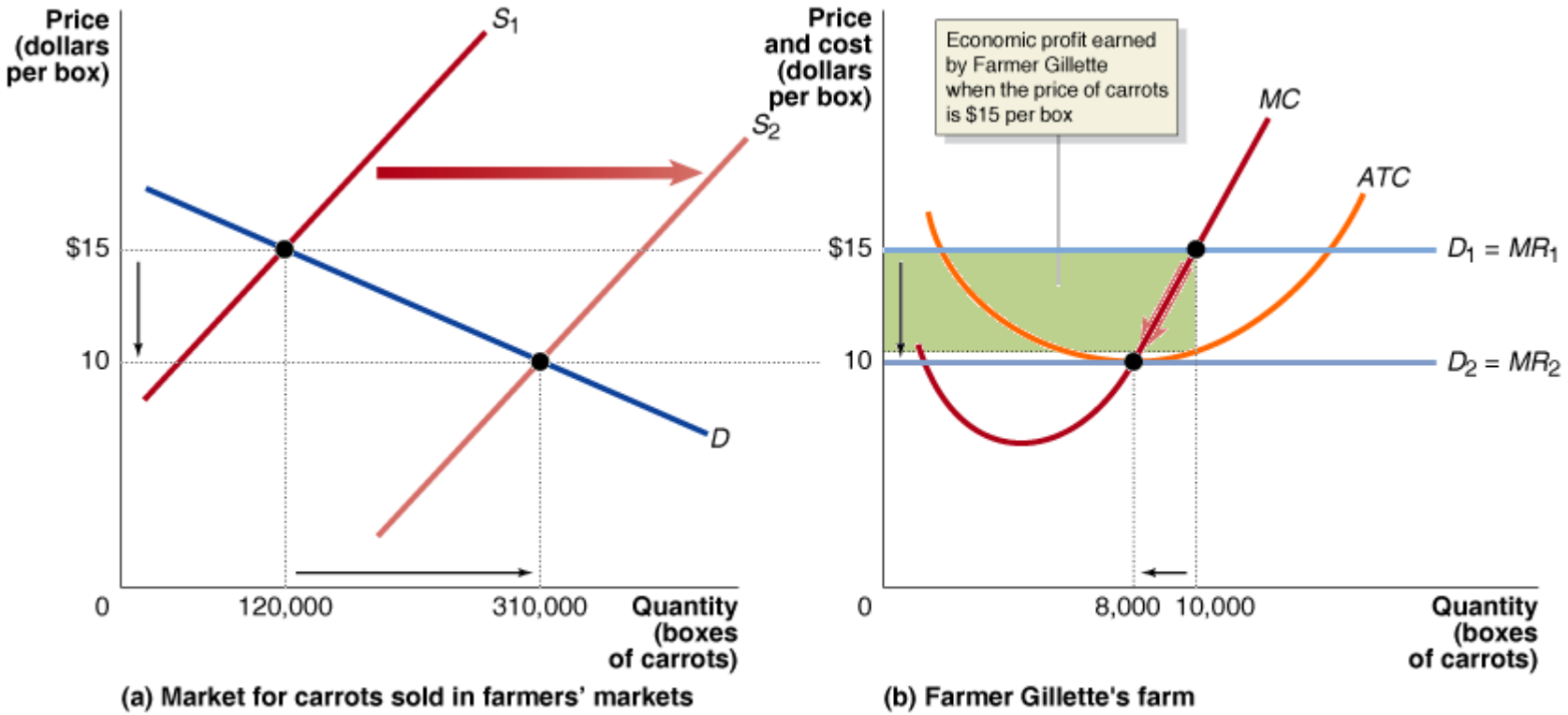
The Effect of Entry on Economic Profit



The farmer makes an economic profit when the price is $15.

The profit attracts new firms, which increases supply → Mkt price falls.

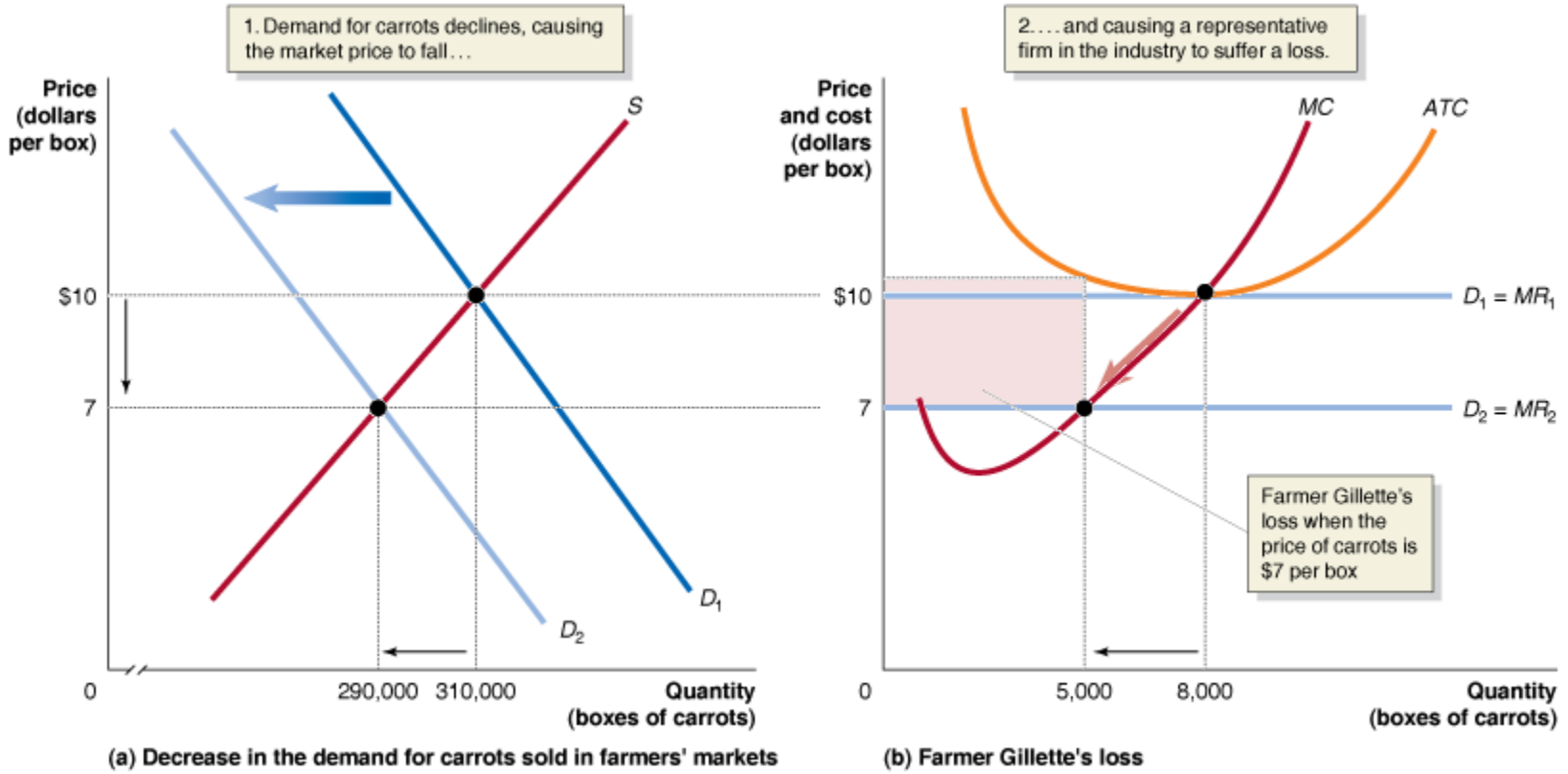
The Effect of Entry on Economic Profit—continued



P falls until there is no incentive for further firms to enter the market (profit = 0).

For this to be true, the price must be equal to *ATC*; but since *P=MC*, that means all three must be equal.

The Effect of Economic Losses

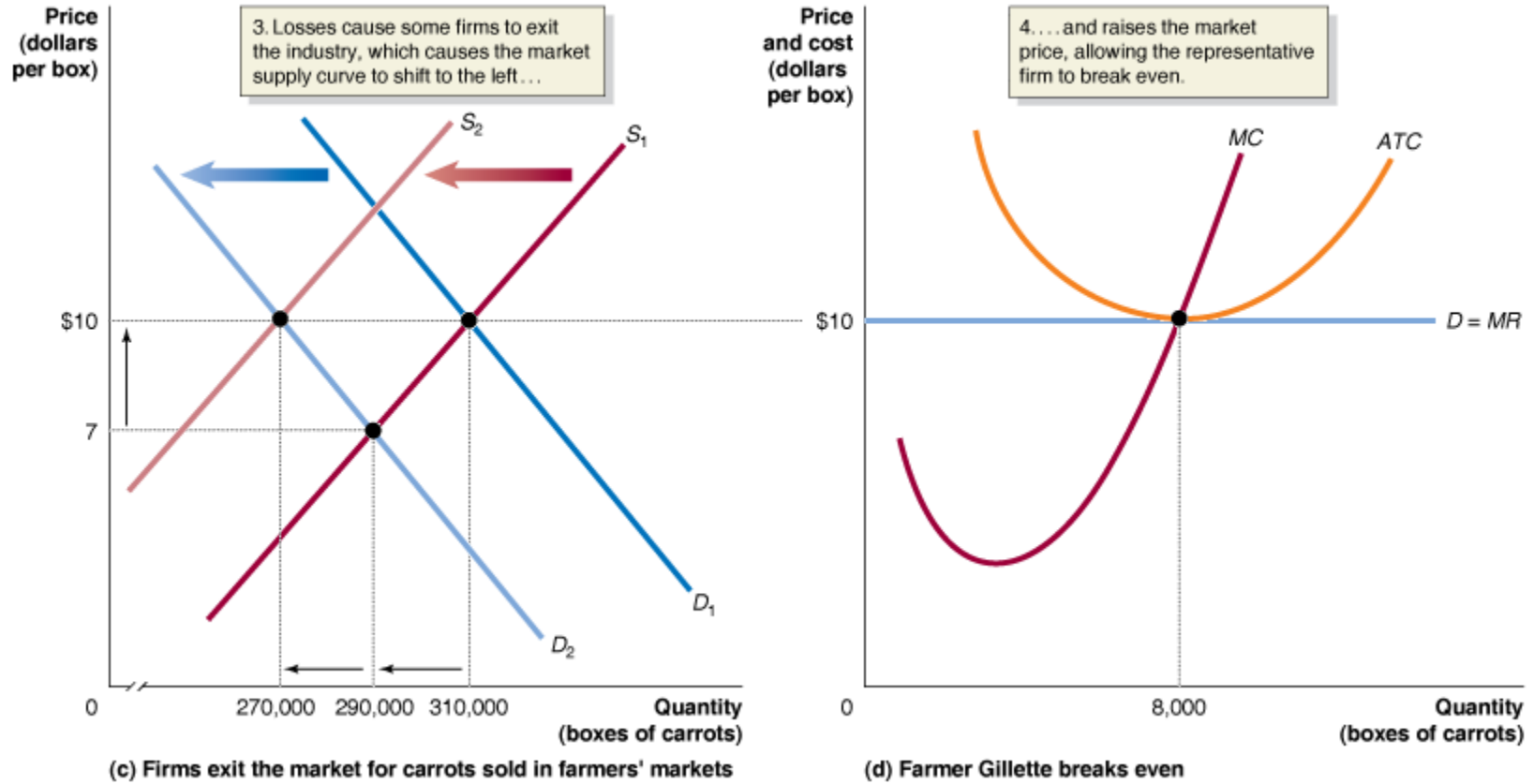


Now price is $10 per box, and carrot farmers are breaking even.

Then demand for carrots falls. Price falls to $7 per box.

Sacha can no longer make a profit; she makes the smallest loss possible by producing 5000 carrots: where MC = MR.

The Effect of Economic Losses—continued



Discouraged by the losses, some firms will exit the market.

The resulting decrease in supply causes prices to rise.

Firms continue to leave until price returns to the break-even price of $10 per box.

Long-Run Equilibrium in a Perfectly Competitive Market

If profit>0:

→additional firms enter the market, price falls to the break-even level.

If profit<0:

→Existing firms exit the market, price rises to the break even level.

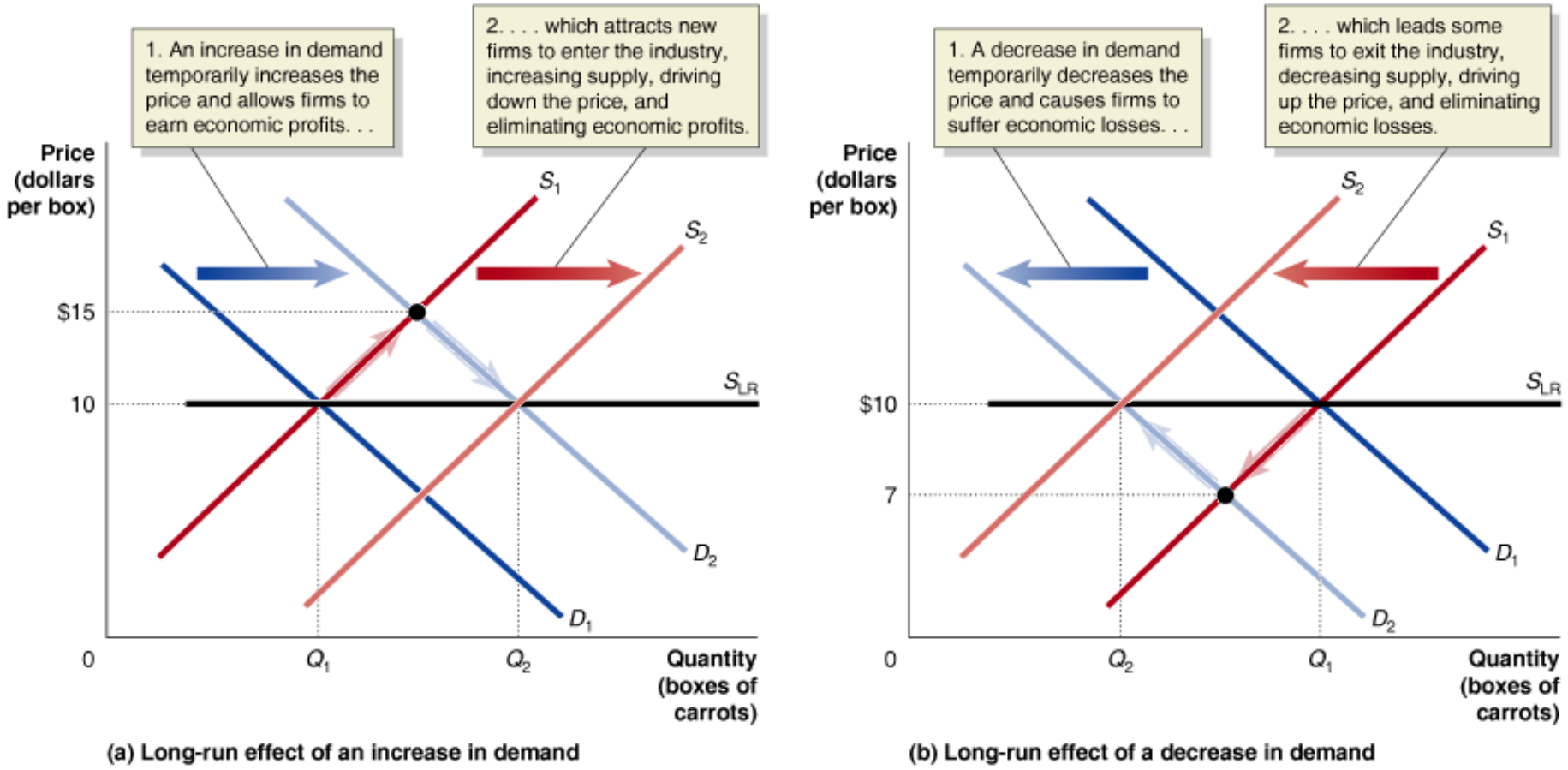
Long-run competitive equilibrium: The situation in which the entry and exit of firms has resulted in the typical firm breaking even (receiving zero economic profit).

Long-Run Supply in a Perfectly Competitive Market

This means that in the long run, the market will supply any demand by consumers at a price equal to the minimum point on the typical firm's average cost curve.

Hence, in many industries, the *long-run supply curve* is horizontal at P= min ATC.

Long-Run Supply



The panels show how price always returns to the long-run (break-even) level.

Increasing-Cost and Diminishing-Cost Industries

Examples of non-horizontal long run supply curves:

1. If some factor of production cannot be replicated, additional firms may have higher costs of production.

2. On the other hand, sometimes additional firms might generate benefits for other firms in the market, leading additional firms to have lower costs of production.

Types of Efficiency

Efficiency in economics really refers to two separate but related concepts:

Productive efficiency is a situation in which a good or service is produced at the lowest possible cost.

Allocative efficiency is a state of the economy in which production represents consumer preferences; in particular, every good or service is produced up to the point where the last unit provides a marginal benefit to consumers equal to the marginal cost of producing it.

Are Perfectly Competitive Markets Efficient?

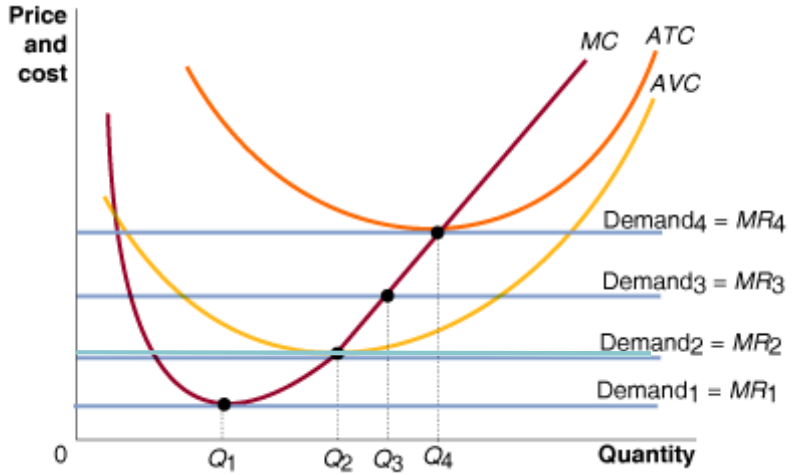
We have shown that in the long run, perfectly competitive markets are *productively efficient*.

But they are *allocatively efficient* also:

1. P=Marginal Benefit of last unit sold
2. P=Marginal Cost of last unit sold in PC markets
3. Therefore, firms produce up to the point where MB=MC for last unit produced.

Productive and allocative efficiency are useful benchmarks against which to measure the actual performance of other markets.

Refer to the figure below. Which demand curve would result in the firm shutting down?



a. $Demand_1$
b. $Demand_2$
c. $Demand_3$
d. $Demand_4$

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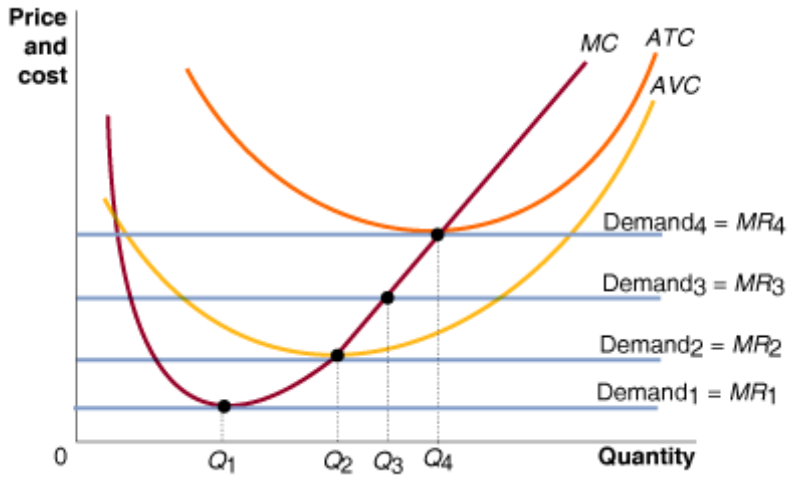

a. $Demand_1$

According to the table below, what is the firm's shut down price?

Quantity of Workers	Quantity of Ovens	Quantity of Pizzas	Cost of Ovens (fixed cost)	Cost of Workers (variable cost)	Total Cost of Pizzas	*ATC*	*AFC*	*AVC*	*MC*
0	2	0	$800	$0	$800	—	—	—	—
1	2	200	800	650	1,450	$7.25	$4.00	$3.25	$3.25
2	2	450	800	1,300	2,100	4.67	1.78	2.89	2.60
3	2	550	800	1,950	2,750	5.00	1.45	3.54	6.50
4	2	600	800	2,600	3,400	5.67	1.33	4.33	13.00
5	2	625	800	3,250	4,050	6.48	1.28	5.20	26.00
6	2	640	800	3,900	4,700	7.34	1.25	6.09	43.33

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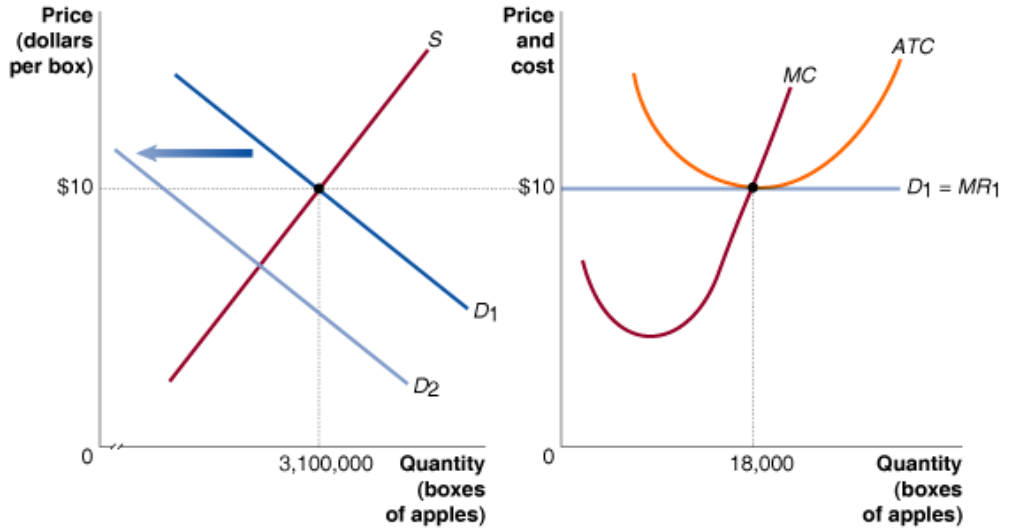
Ps = min ATC = $2.89

After the shift in market demand, how will the firm react?



a. The firm will adjust its output upward in search of higher profit.
b. The firm will have to adjust its output downward and suffer losses.
c. The firm will maintain output constant but suffer losses.
d. The firm will adjust its output downward and earn higher profit.

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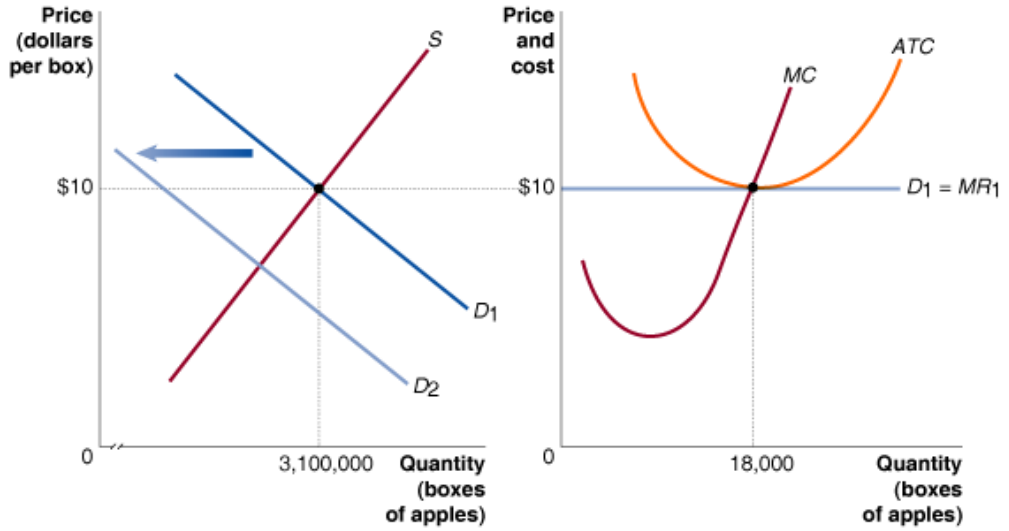
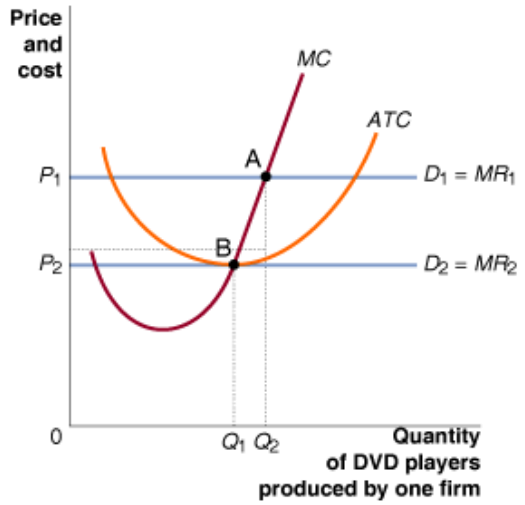


b. The firm will have to adjust its output downward and suffer losses.

The graph below describes a typical firm in the competitive DVD player industry. Which point represents the combination of price and output levels that prevail when the DVD industry experiences *productive efficiency*?



a. Point A.
b. Point B.
c. Both points reflect productive efficiency.
d. Neither point reflects productive efficiency.

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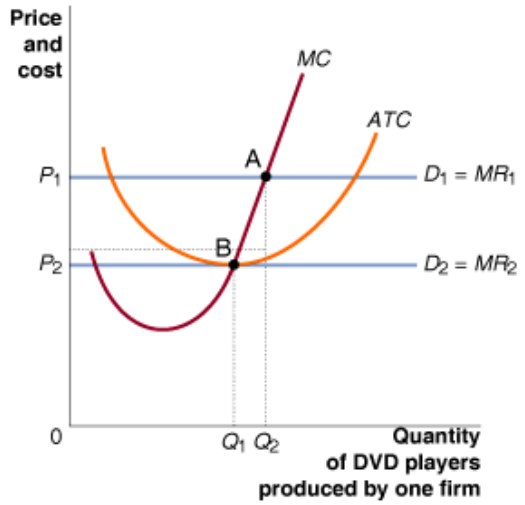

b. Point B.