The Firm's Supply Curve

The Key Rule

Set Q where

MC = price

MC = P

Q	TC	MC	AC
0	100		
1	115	15	115
2	126	11	63
3	136	10	45
4	148	12	37
5	165	17	33
6	186	21	31
7	217	31	31
8	256	39	32
9	306	50	34
10	360	54	36

P	Q*	AC
17	5	33
21	6	31
31	7	31
39	8	32
50	9	34
54	10	36

The Supply Curve

Q	TC	MC	AC
0	100		
1	115	15	115
2	126	11	63
3	136	10	5
4	148	12	
9	306	50	4
10	360	54	36

This looks like a supply curve

P	Q*	AC
17	5	33
21	6	31
31	7	31
39	8	32
50	9	34
54	10	36

The Minimum Price

Q	TC	MC	AC
0	100		
1	115	15	115
2	126	11	63
3	136	10	45
4	148	12	37
5	165	17	33
6	186	21	31
7	217	31	31
8	256	39	32
9	306	50	34
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P	Q*	AC
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The Minimum Price

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P	Q*	AC
17	5	33
21	6	31
31	7	31
39	8	32

$P \geq 31$ or $\pi < 0$

A Graphical Interpretation

MC
ATC
AVC
P_1
P_2
Q_2 Q_1
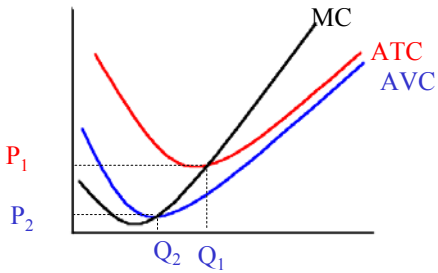
A Graphical Interpretation

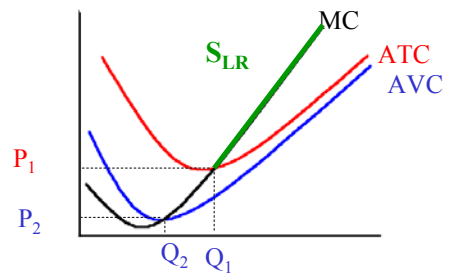*Unless P> P_1, the firm cannot cover ATC*

MC
ATC
AVC
P_1
P_2
Q_2 Q_1
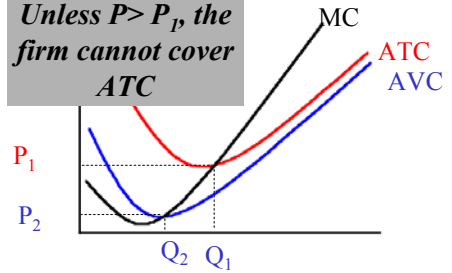
A Graphical Interpretation

Unless P> P_2, the firm cannot cover AVC

MC
ATC
AVC
P_1
P_2
Q_2 Q_1

The Supply Curve

MC
S_{LR}
ATC
AVC
P_1
P_2
Q_2 Q_1

The Supply Curve

MC
S_{LR}
ATC
AVC
P_4
P_3
P_1
P_2
Q_2 Q_1 Q_3 Q_4

A Graphical Interpretation

MC
S_{SR}
ATC
AVC
P_1
P_2
Q_2 Q_1

A Graphical Interpretation

MC
S_{SR}
ATC

The firm's supply curve is its MC curve.

P_1
P_2
Q_2 Q_1

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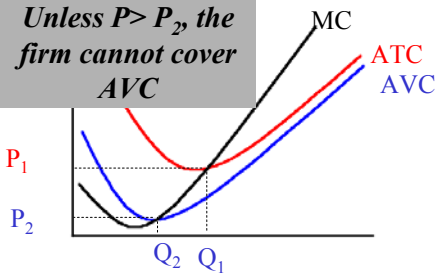
The Firm's Supply Curve

A Graphical Interpretation

MC
S_{SR}
ATC

The firm's supply curve is its MC curve.

The LR supply curve is the portion above the min of AC

The SR supply curve is the portion above the min of AVC

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The Firm's Supply Curve
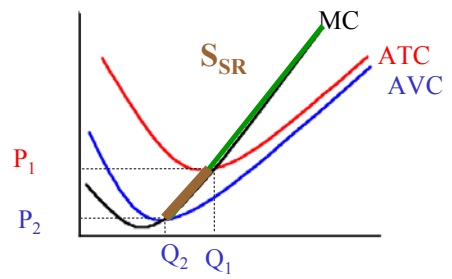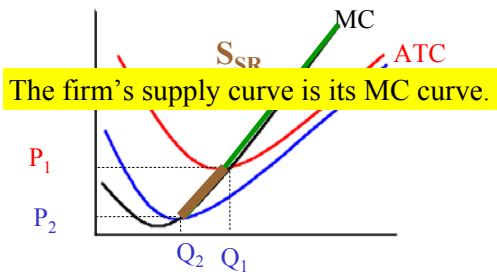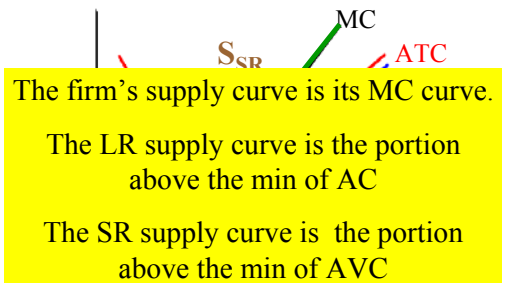
A Mathematical Interpretation

$C = 4 + 5q + q^2$

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The Firm's Supply Curve

Solving for the Supply Curve

$C = 4 + 5q + q^2$
$MC = 5 + 2q$
$q = (½) – 2.5P$

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The Firm's Supply Curve

Now for the Minimum

$C = 4 + 5q + q^2$
$MC = 5 + 2q$
$q = (½) – 2.5P$
$AC = 4/q + 5 + q$

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The Firm's Supply Curve

Now for the Minimum

$C = 4 + 5q + q^2$
$MC = 5 + 2q$
$AC = 4/q + 5 + q$
$MC = AC$

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The Firm's Supply Curve

Finding where MC = AC

$$C = 4 + 5q + q^2$$
$$MC = 5 + 2q$$
$$AC = 4/q + 5 + q$$
$$MC = AC$$
$$5 + 2q = 4/q + 5 + q$$

The Firm's Supply Curve

Finding where MC = AC

$$C = 4 + 5q + q^2$$
$$MC = 5 + 2q$$
$$MC = AC$$
$$5 + 2q = 4/q + 5 + q$$
$$q = 4/q$$

The Firm's Supply Curve

Finding where MC = AC

$$C = 4 + 5q + q^2$$
$$MC = 5 + 2q$$
$$AC = 4/q + 5 + q$$
$$MC = AC$$
$$q = 4/q$$
$$q^2 = 4$$
$$q = 2$$

The Firm's Supply Curve

Finding the Minimum Price

$$C = 4 + 5q + q^2$$
$$MC = 5 + 2q$$
$$AC = 4/q + 5 + q$$
$$MC = AC$$
$$q = 2$$
$$p = MC = 5 + 2(q) = 5 + 2 \ (2) = 9$$

The Firm's Supply Curve

The Short Run Minimum

$$C = 4 + 5q + q^2$$
$$MC = 5 + 2q$$
$$AC = 4/q + 5 + q$$
$$MC = AVC$$
$$5 + 2q = 4/q + 5 + q$$

The Firm's Supply Curve

The Short Run Minimum

$$C = 4 + 5q + q^2$$
$$MC = 5 + 2q$$
$$AC = 4/q + 5 + q$$
$$MC = AVC$$
$$5 + 2q = \cancel{4/q} + 5 + q$$
$$5 + 2q = 5 + q$$

The Firm's Supply Curve

The Short Run Minimum

$$C = 4 + 5q + q^2$$
$$MC = 5 + 2q$$
$$AC = 4/q + 5 + q$$
$$MC = AVC$$
$$5 + 2q = \cancel{4/q} + 5 + q$$
$$5 + 2q = 5 + q$$
$$q = 0$$

The Short Run Minimum P

$$C = 4 + 5q + q^2$$
$$q = 0$$
$$p = MC = 5 + 2(0) = 5$$

The General Rules

- **Produce widgets until the marginal cost equals the market price.**

The General Rules

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- If I cannot cover my variable costs, shut down immediately

The General Rules

- Produce widgets until the marginal cost equals the market price.
- If I cannot cover my variable costs, shut down immediately
- If I cannot cover my variable and fixed costs, continue producing but start shedding my fixed costs. Then shut down.
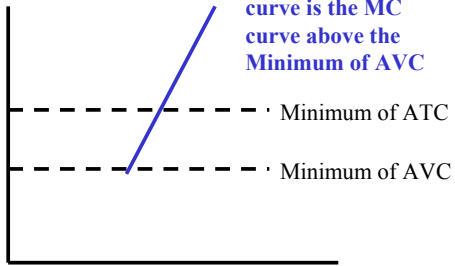
The Supply Curve

The long run supply curve is the MC curve above the Minimum of ATC

· Minimum of ATC
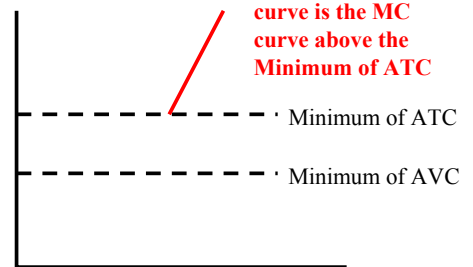
· Minimum of AVC

The Supply Curve

The short run supply curve is the MC curve above the Minimum of AVC

- - - - - - - - - · Minimum of ATC

- - - - - - - - - · Minimum of AVC

End