Microeconomic Theory — ECON 323 503
Chapter 11: Monopoly and Monopsony

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Outline

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4. Government actions that reduce market power: regulate the price or the help other firms enter the market.
5. Monopsony: single buyer rather than single seller.

Monopoly profit maximization

Remember: at quantity Q,

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In other words:

$$MR(Q) = MC(Q)$$

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We'll see that MR is downward sloping.

Marginal revenue and demand curves

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Differentiating with respect to Q,

$$MR(Q) = \frac{dR(Q)}{dQ} = p(Q) + \frac{dp(Q)}{dQ}Q$$

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The firm must consider the effect on the price of increased output.

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So MR curve is *below* the demand curve.

Comparison with competitive firm

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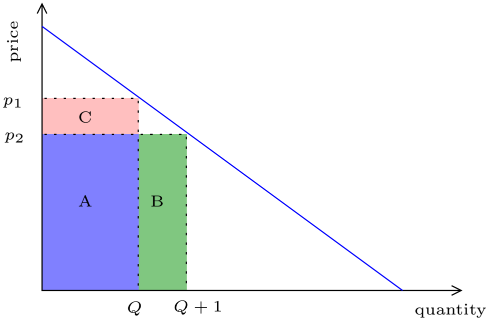
So for a competitive firm MR curve coincides with the demand curve.

Graphical illustration



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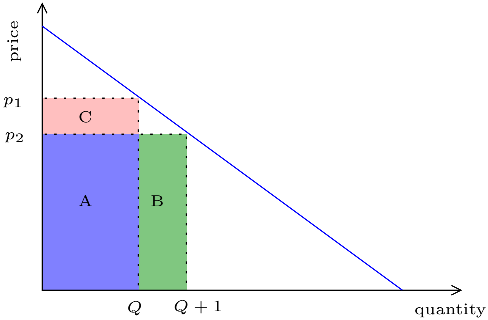
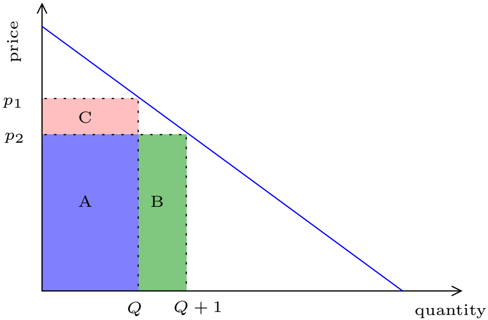


C — lost revenue on the first Q units.

Graphical illustration



C — lost revenue on the first Q units.

B — revenue gained by selling the last unit.

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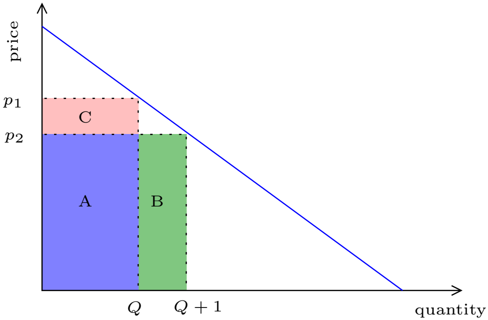

C — lost revenue on the first Q units.

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$$MR = (A + B) - (A + C)$$

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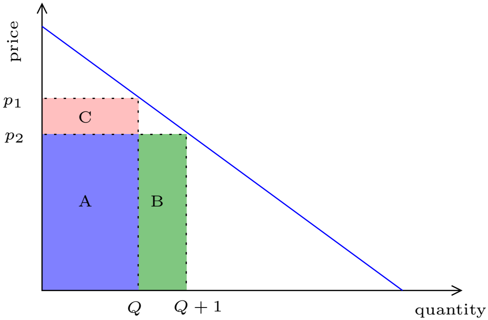

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$$MR = (A + B) - (A + C) = B - C$$

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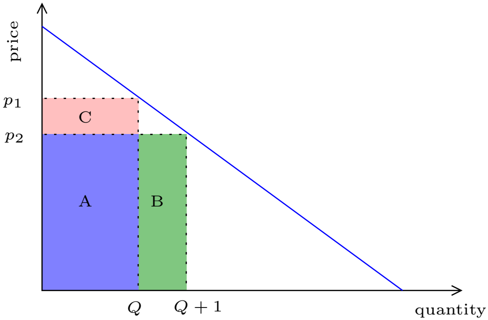

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$$MR = (A + B) - (A + C) = B - C = p_2 - C$$

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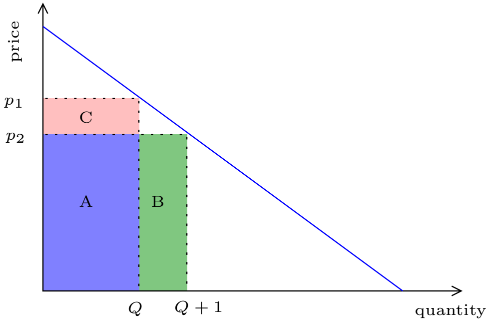

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$$MR = (A + B) - (A + C) = B - C = p_2 - C = p_2 - \frac{dp}{dQ}Q$$

Marginal revenue and the elasticity of demand

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$$\begin{aligned} MR &= p + \frac{dp}{dQ}Q \\ &= p\left(1 + \frac{dp}{dQ}\frac{Q}{p}\right) \end{aligned}$$

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Again, as $\varepsilon \to -\infty$ (competitive firm), $MR \to p$.

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Notice that except when $Q > 0$, $MR(Q) < P(Q)$.

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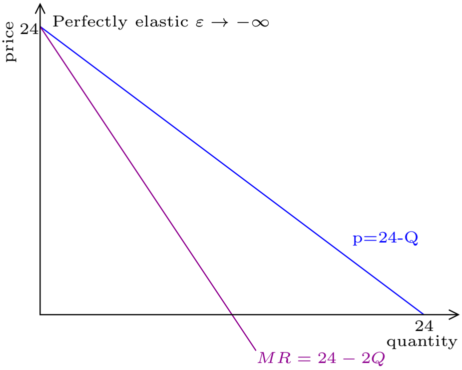

When $Q = 0$, $\varepsilon = -\infty$ so $MR(Q) = p(Q) = 24$.

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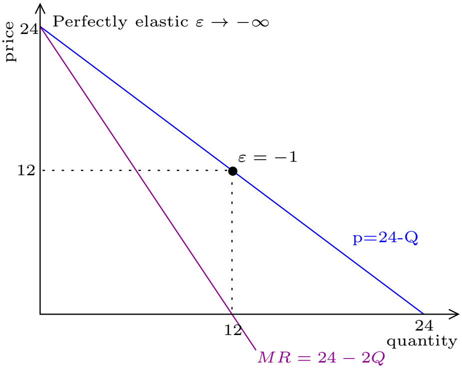

When $Q = 12$, $\varepsilon = -1$ so $MR(Q) = 0$!

Implication of elastic demand

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Implication: A monopolist *never* produces a quantity where demand is inelastic!

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Recall that the firm picks Q^* so that

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Solving this,

$$Q^* = 6.$$

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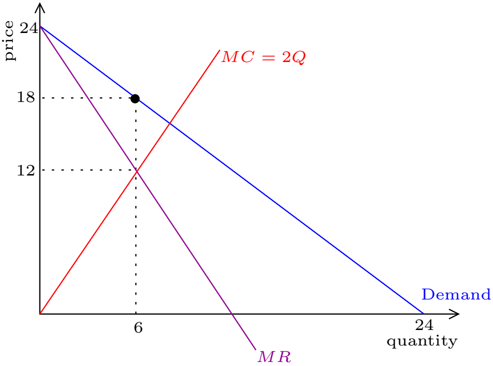

Demand not perfectly elastic so MR curve is not horizontal.

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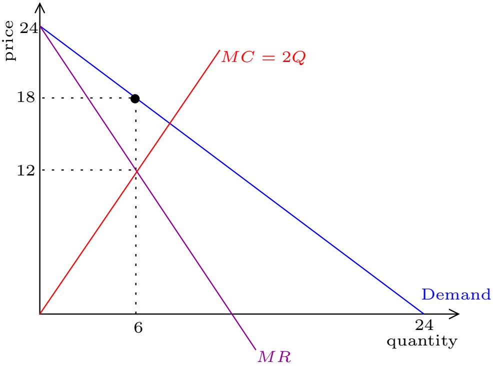

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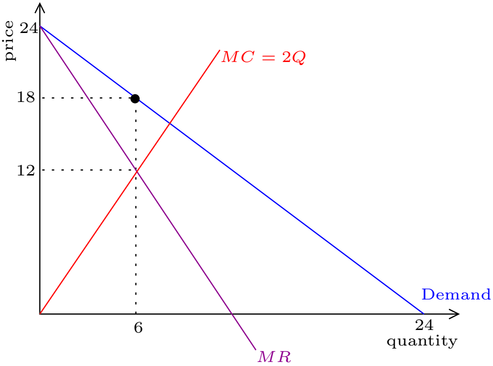

Demand not perfectly elastic so MR curve is not horizontal.
Determine Q by equating MR and MC.
Demand curve gives us the price.

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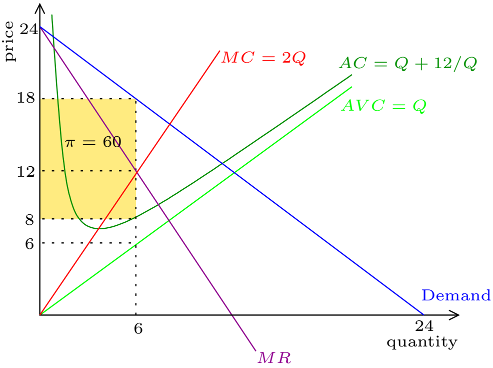

$$AC(Q) = \frac{C(Q)}{Q} = Q + \frac{12}{Q}.$$

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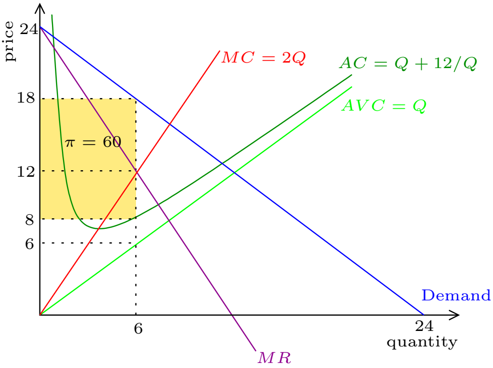

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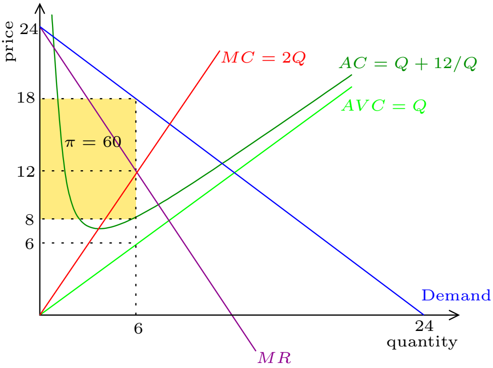

$AC(Q) = \frac{C(Q)}{Q} = Q + \frac{12}{Q}$.

$AVC(Q) = \frac{VC(Q)}{Q} = Q$. Since $AC(Q^*) = 8 < 18 = p^*$, firm makes a positive profit.

Shut down decision

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Short run: shut down if monopoly price less than AVC.

Long run: shut down if monopoly price less than AC.

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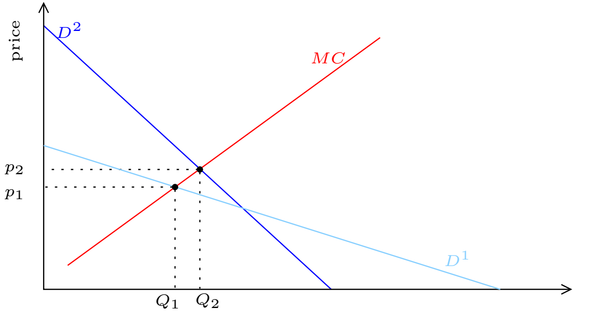
Remember that we can derive the function $p()$ from the function $Q()$ and vice versa.

What happens if demand shifts?



Competitive firms: MC curve is the supply curve.
So there's a one-to-one relationship between equilibrium prices and quantities.

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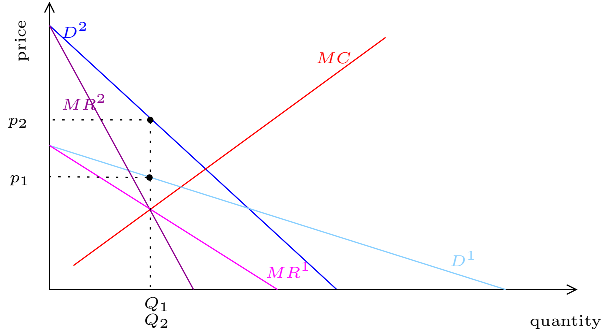

Monopolist: No well-defined supply curve. When demand shifts, quantity remains the same, but price increases. No one-to-one relationship between price and quantity.

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The higher this ratio, the more the firm is paid above its marginal cost.

The Lerner Index

The Lerner index is the markup in the price of a good: the proportion of the price that goes towards profits of the firm as opposed to costs: $\frac{p-MC}{p}$.

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Effect of market power on welfare

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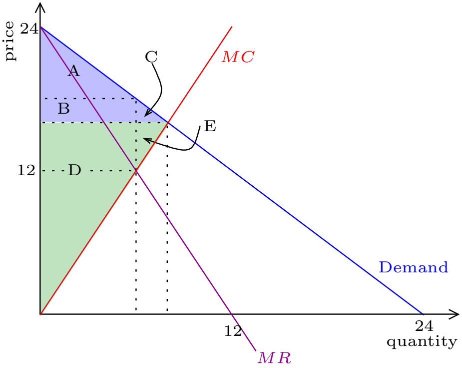
The monopolist produces too little of the good.

Deadweight loss from monopoly



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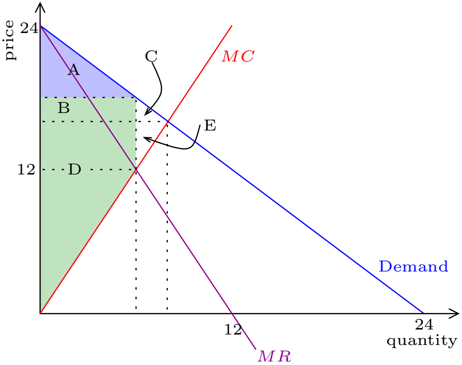

	Competition	Monopoly	Change
CS	A+B+C	A	
PS	D + E	D+ B	
W	A+B+C+D+E	A+B+D	

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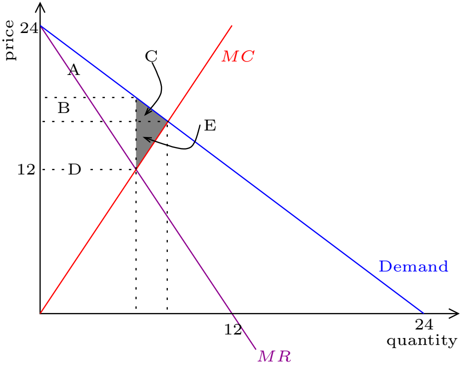

	Competition	Monopoly	Change
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PS	D + E	D+ B	B-E
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4. It's a "natural monopoly."

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$$Q = q_1 + q_2 + \dots q_n$$

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It's cheaper for one firm to produce all of it than for several firms to produce parts of it.

Utilities

Common example of natural monopoly: utilities.

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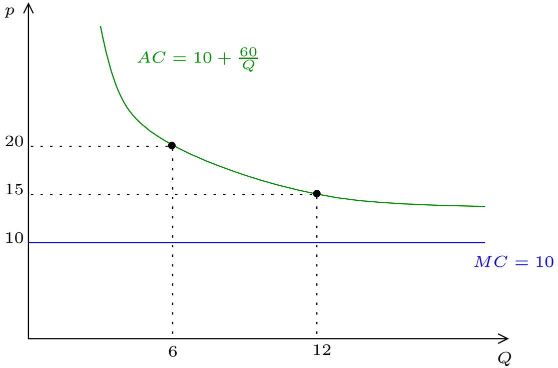
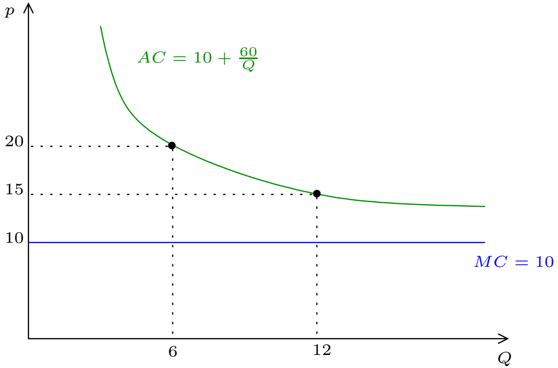
AC is diminishing in Q

Utilities



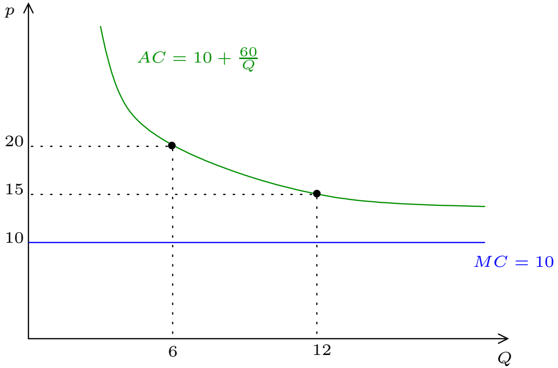
MC is the same no matter how many firms. So the most efficient way to produce is to have only one firm.

Utilities



AC for one firm producing 12 units is 15.
AC for two firms each producing 6 units is 20.

Utilities



If the firm sets its price at MC, it can't stay in business in the long run.

Government actions to redue market power

Optimal price regulation:

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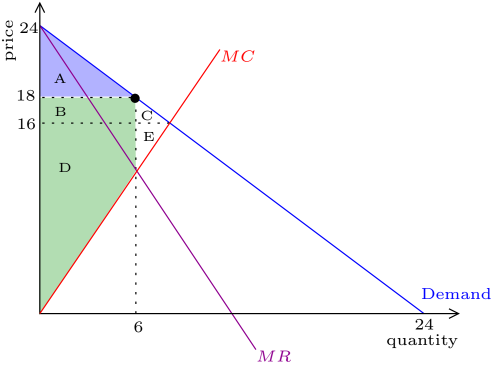
Just set the price ceiling at the equilibrium price if there market *had been* competitive: where $D = MC$.

Optimal price regulation



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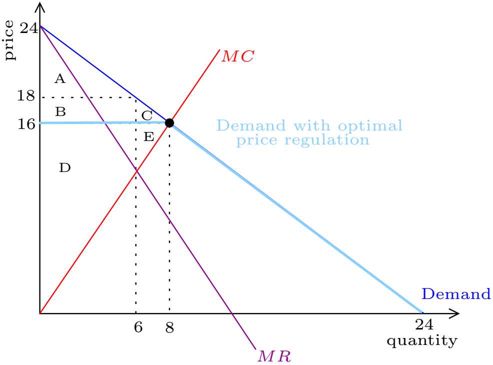

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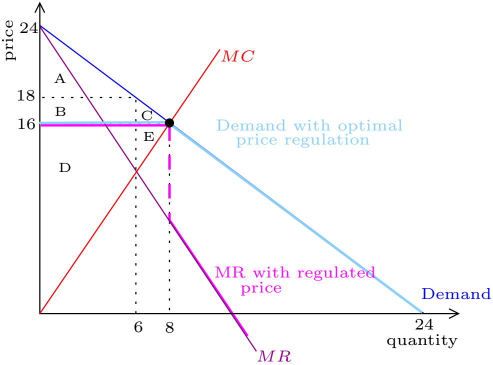

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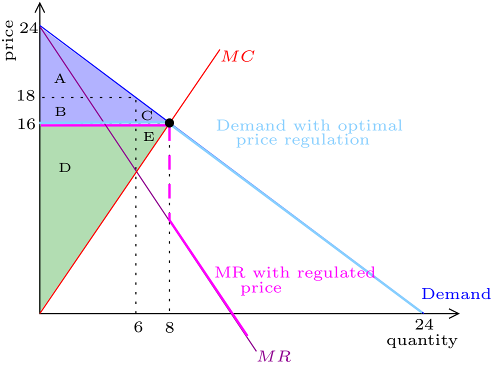

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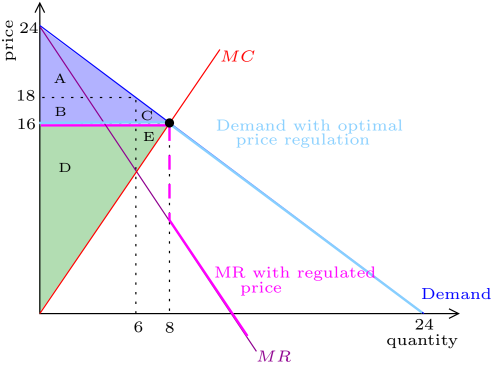

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- If the regulated price is really low (below the firm's minimum AC), the firm goes out of business causing a high deadweight loss.

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2. Regulator's are often *captured.* Unfortunately the industry being regulated is often able to influence regulators.
3. If the monopoly can't be subsidized, setting the price equal at MC can cause firms to go out of business or not enter.

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Either way, quantity too low so deadweight loss.

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$$ME = \underbrace{w(L)}_{\text{price of extra unit}} + \underbrace{\frac{dw}{dL}L}_{\text{increased wages paid for existing units}}.$$

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So, the less elastic supply is, the more the deadweight loss because of a monopsony.