Microeconomic Theory — ECON 323 503
Chapter 9: Properties and applications of the competitive model

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Outline

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3. Competition maximizes welfare: welfare, the sum of consumer and producer surpluses, is maximal in equilibrium.
4. Policies that shift the supply curve: limiting entry and exit.
5. Policies that create a wedge between supply and demand curves: taxes, price ceilings, price floors, and tariffs.

Zero profit for competitive firms in the long run

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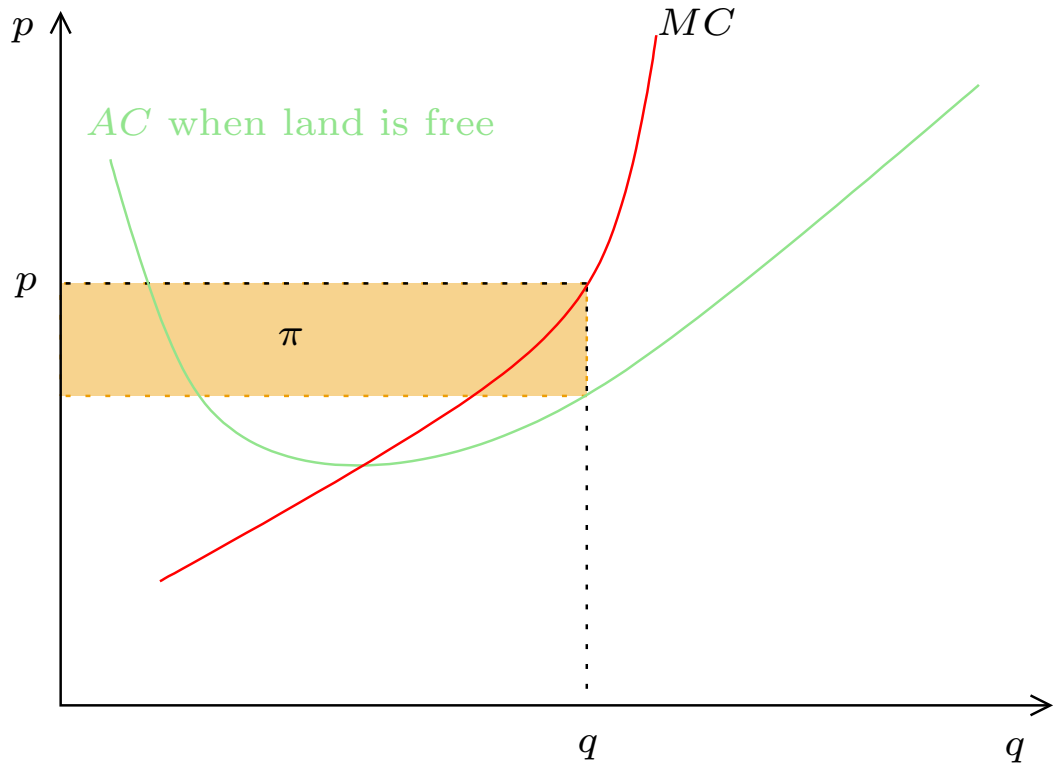
What if entry is limited?

Example: land. There's only so much of it.

Zero profit for competitive firms in the long run



Land use is free: profit is $\pi = pq - C(q) = pq - qAC(q)$.

Zero profit for competitive firms in the long run

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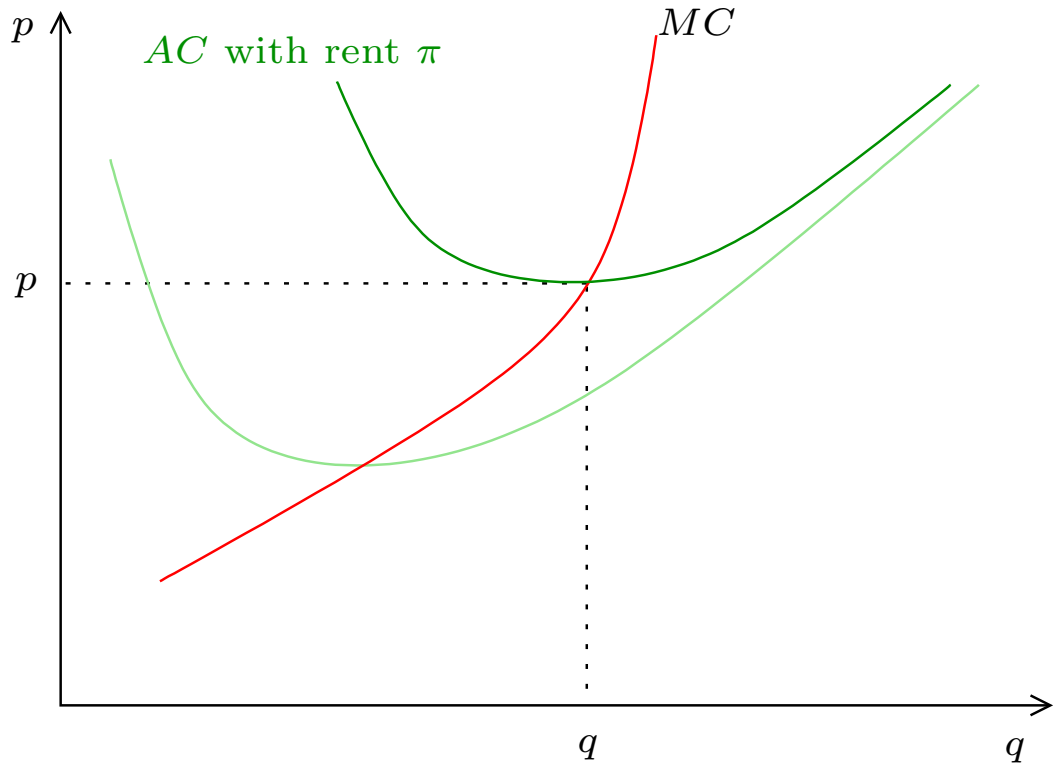
AC curve shifts up.

Zero profit for competitive firms in the long run



If rent is π, profit (after paying rent) is zero.

An implication of zero profit

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So firms that do not maximize profit go out of business in the long run.

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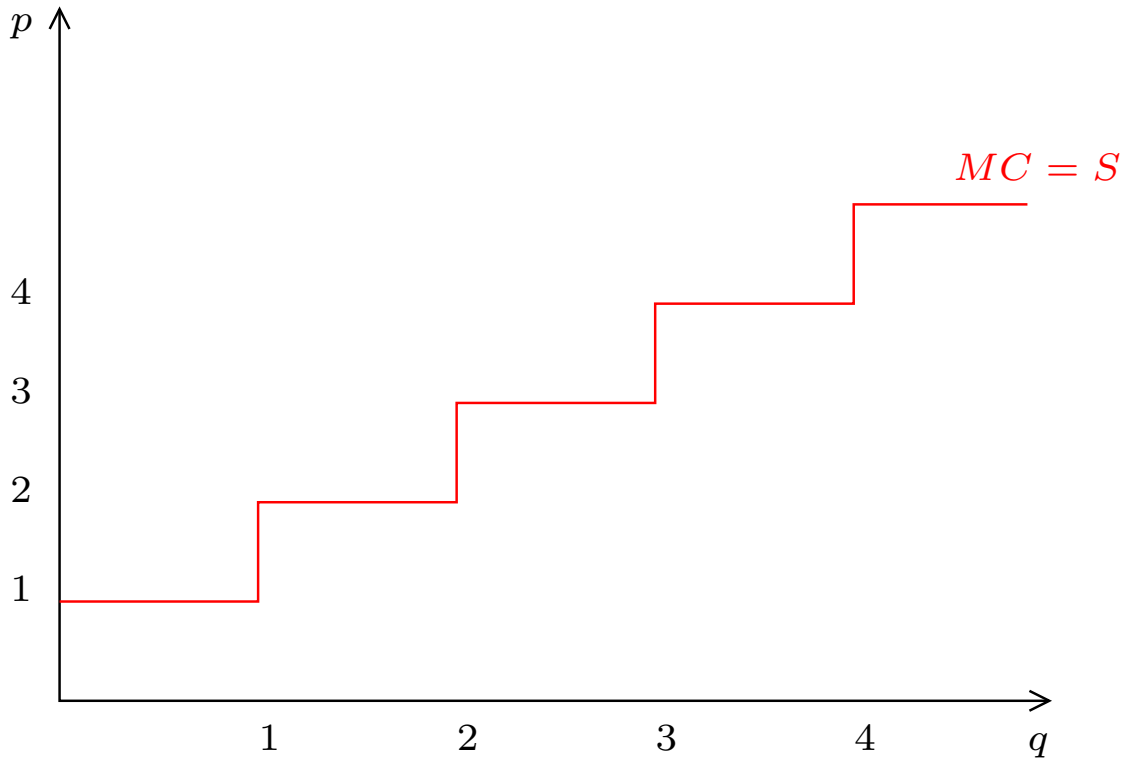
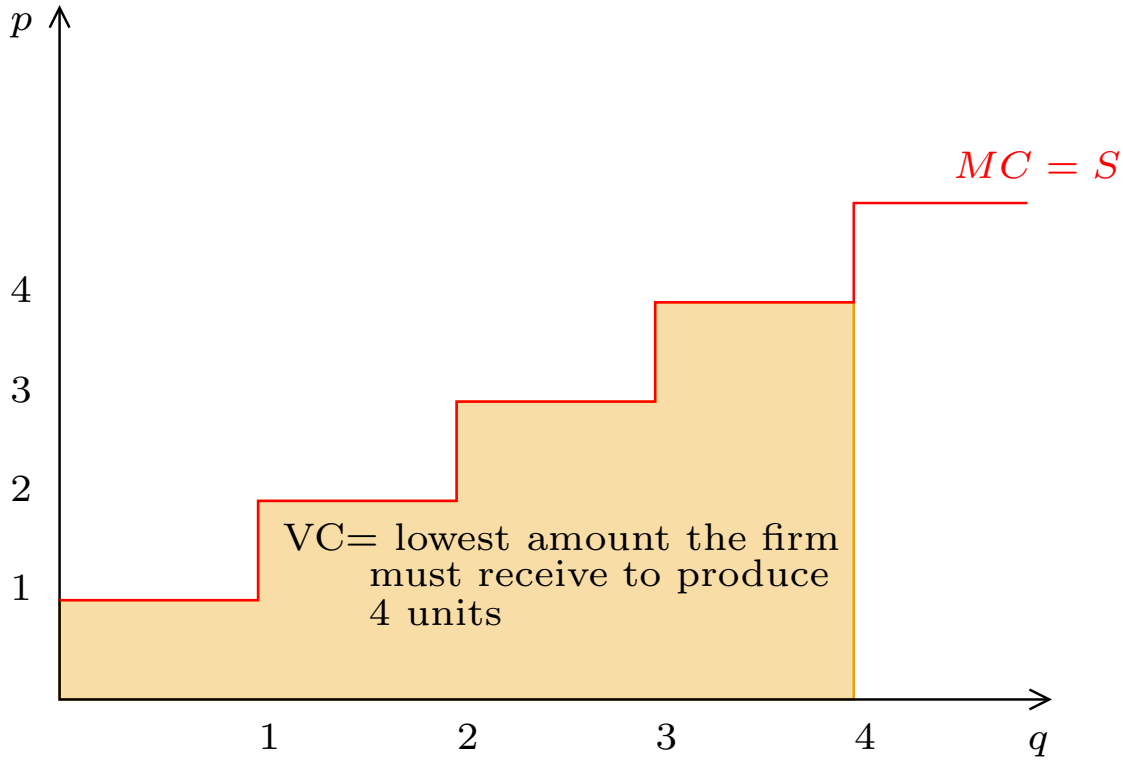
Analog of consumer surplus.

Producer surplus



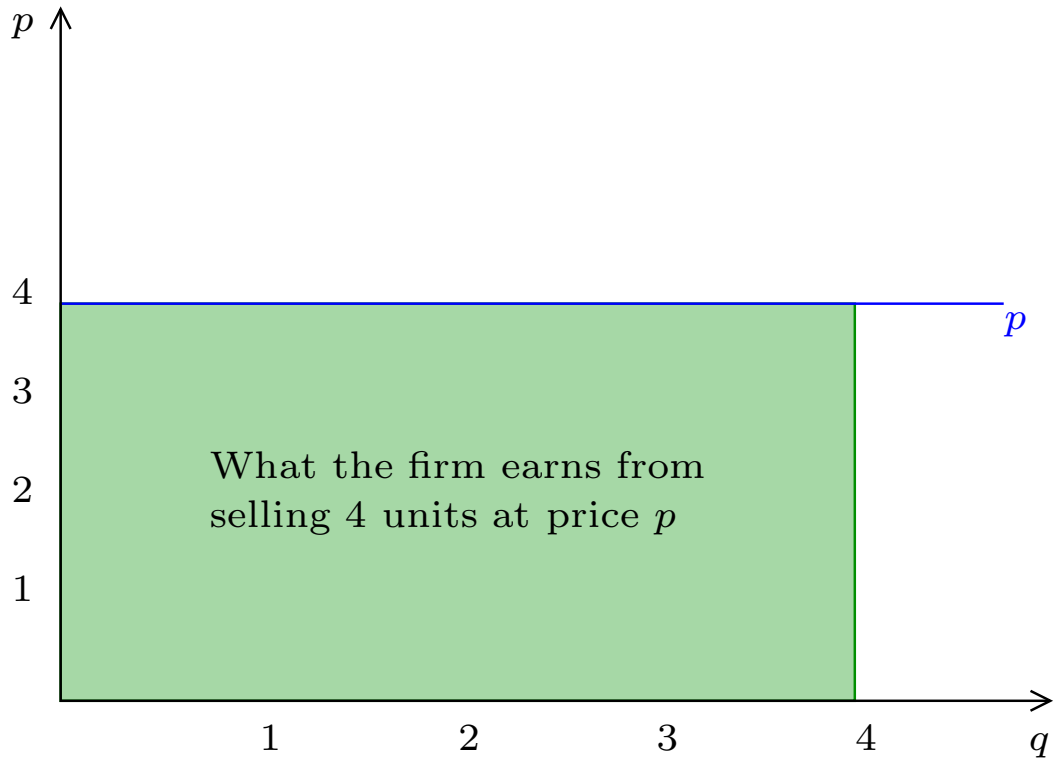
MC/supply curve tells us how much it costs the firm to produce the first unit, the second unit, and so on.

Producer surplus



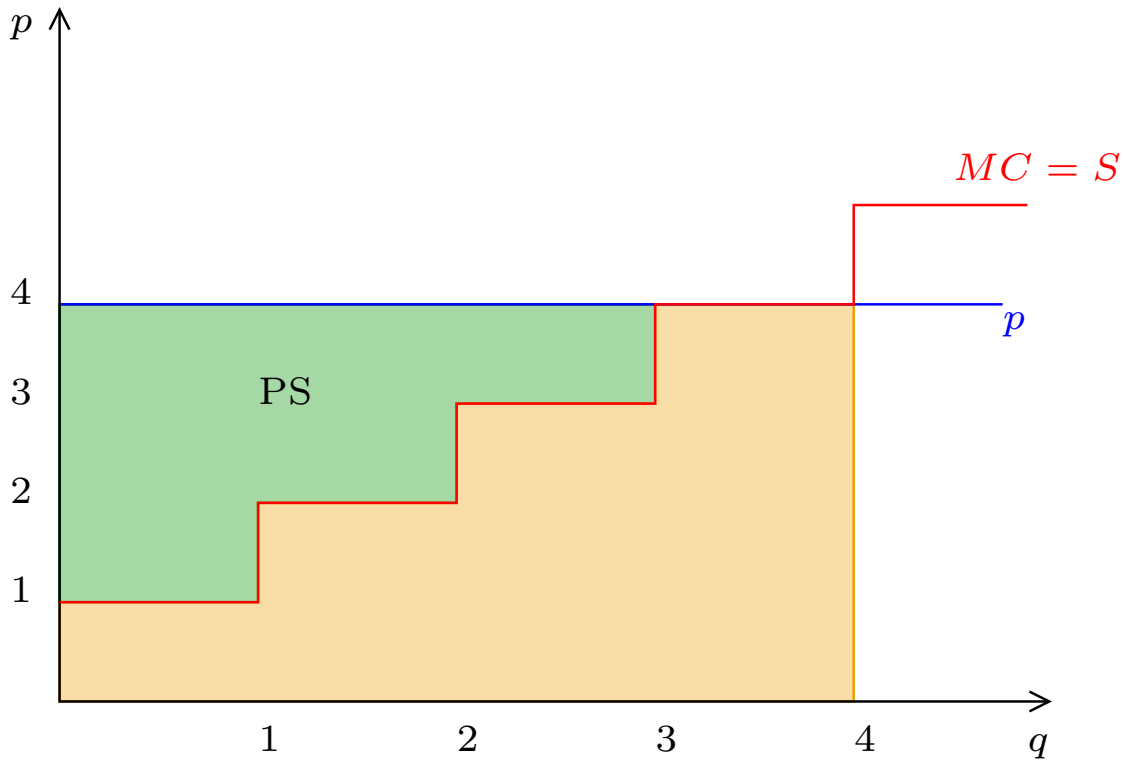
From this we learn minimum amount that the firm needs to produce q units of the good. This is just $VC(q)$.

Producer surplus



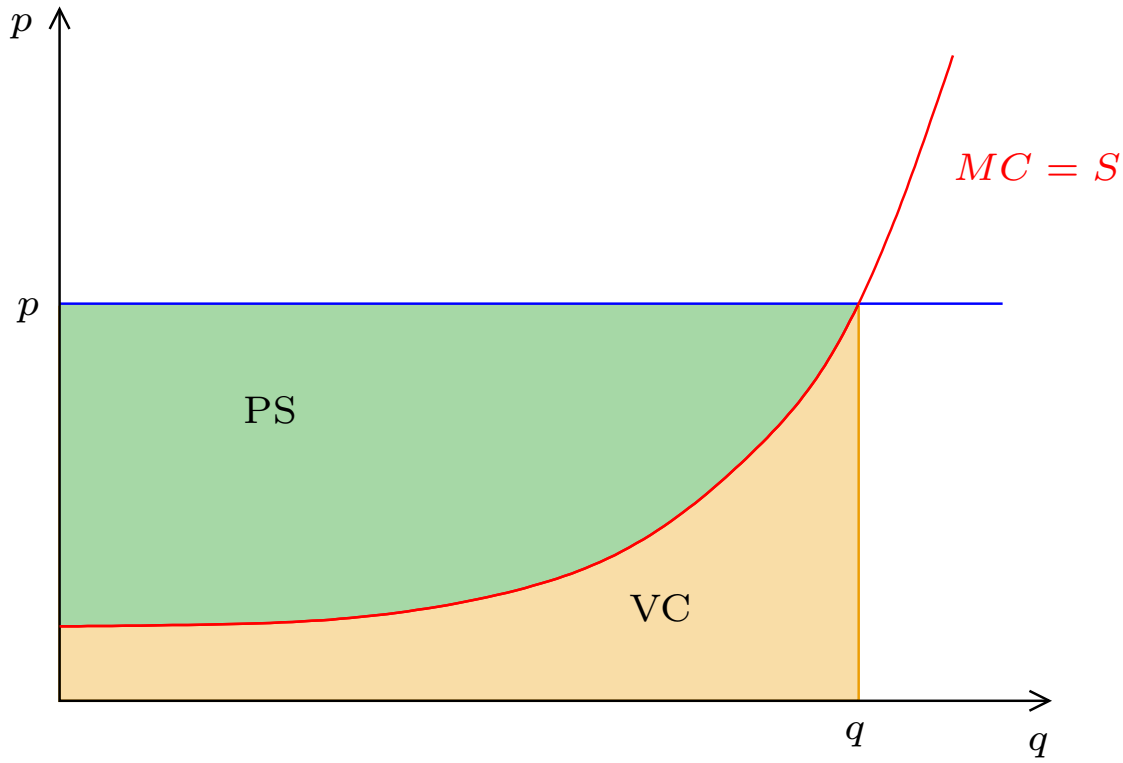
If the price is p, the firm earns pq from selling q units of the good.

Producer surplus



PS = What you earn selling q − minimum you need to supply q.

Producer surplus



In general, PS is the area *above* the supply curve and below the line at the price.

Producer surplus vs profit

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The difference between PS and profit is just fixed cost.

Measuring society's welfare

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$$W = PS + CS.$$

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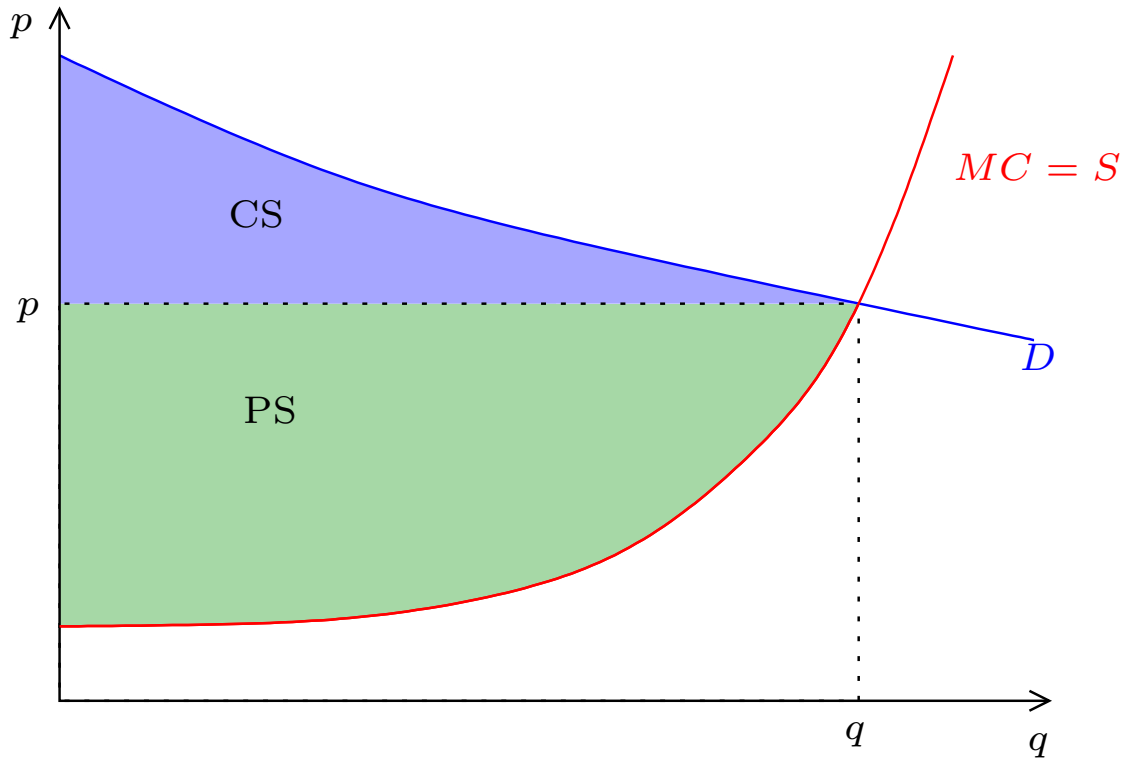
W is the total gains from the market being allowed to operate: the producers' gains(PS) and the consumers' gains (CS).

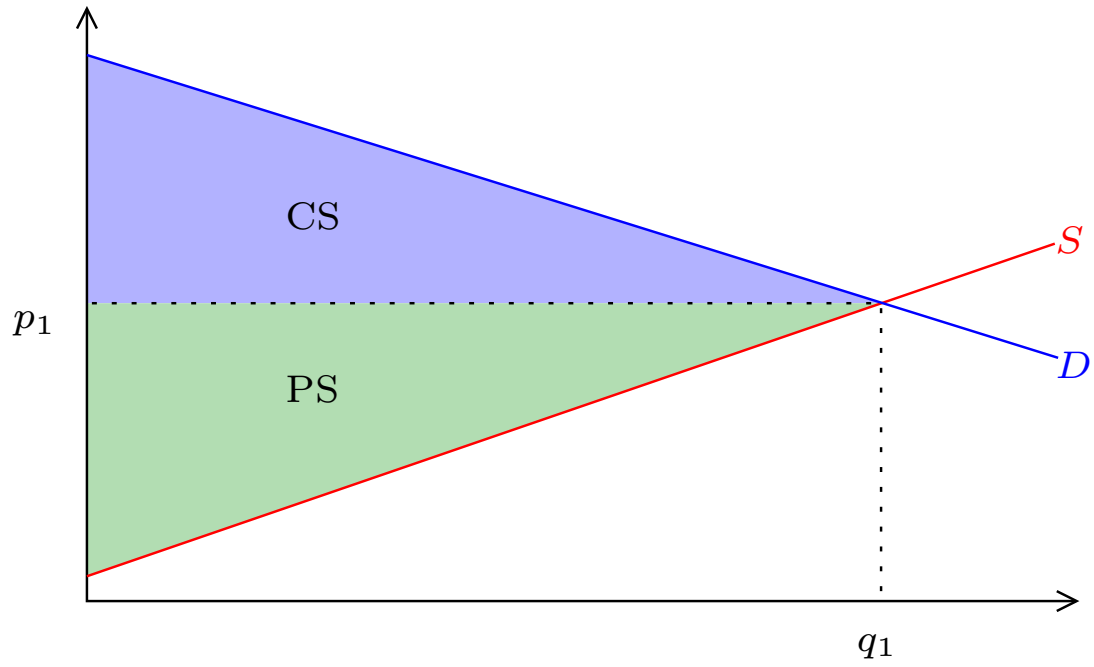
Note: This is one particular way of measuring welfare. It's weights everyone (producer and consumer) equally and adds up their welfare. It's as though welfare of two different actors are *perfect substitutes.*

Graphically



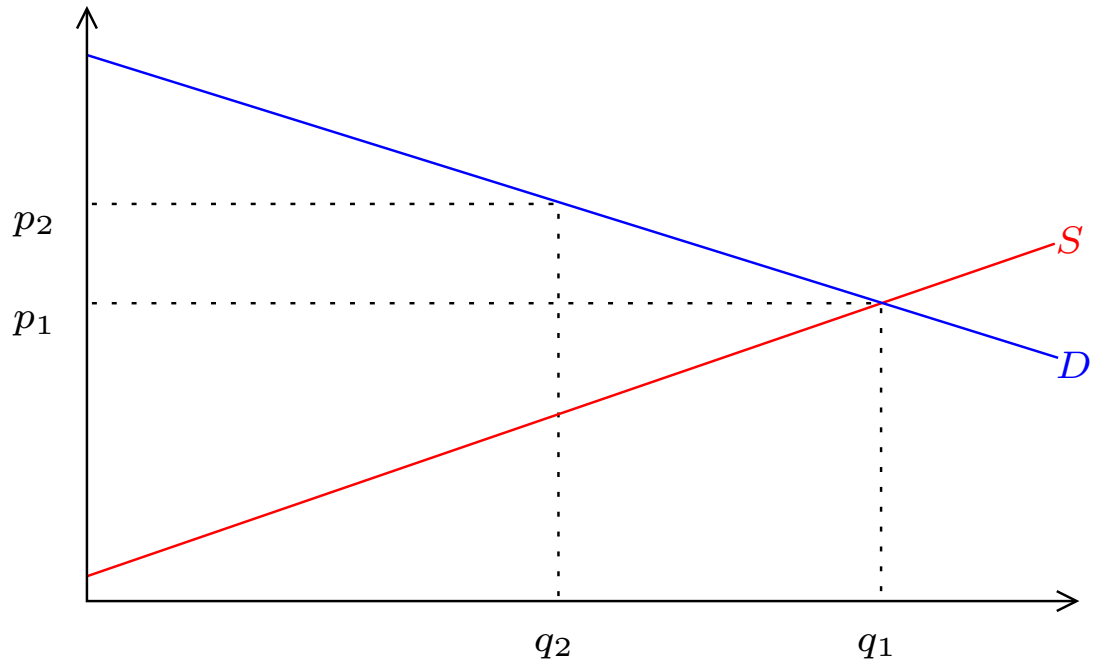
Total welfare, the sum of consumer and producer surpluses is the area above the supply curve and below the demand curve.

Producing less than the competitive output reduces W



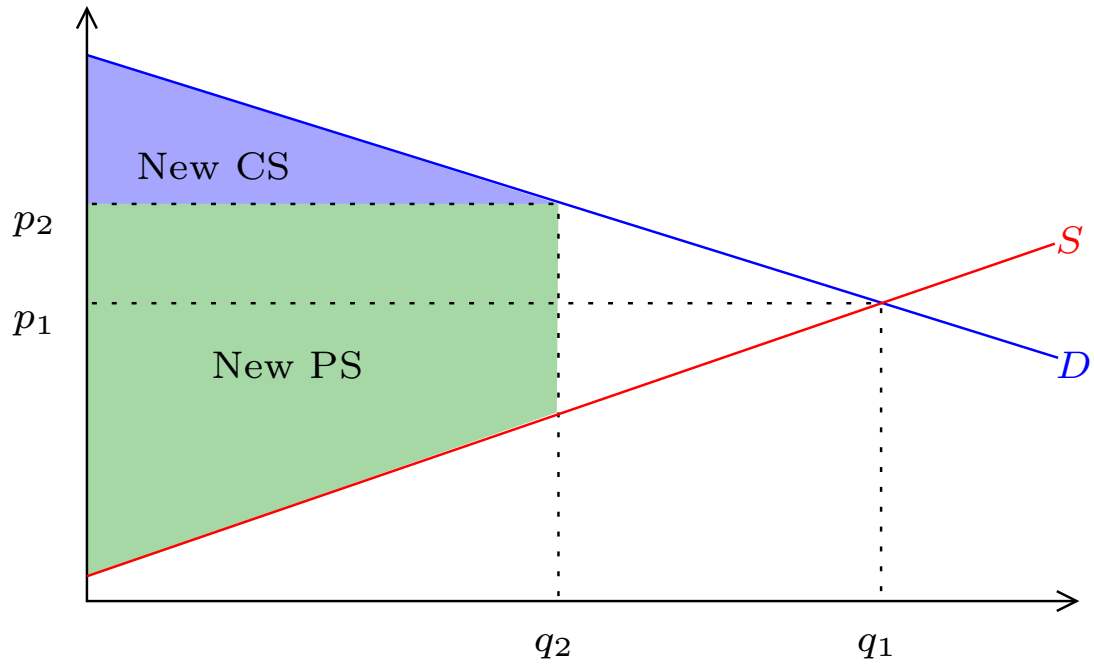
Start with the equilibrium price and quantity.

Producing less than the competitive output reduces W



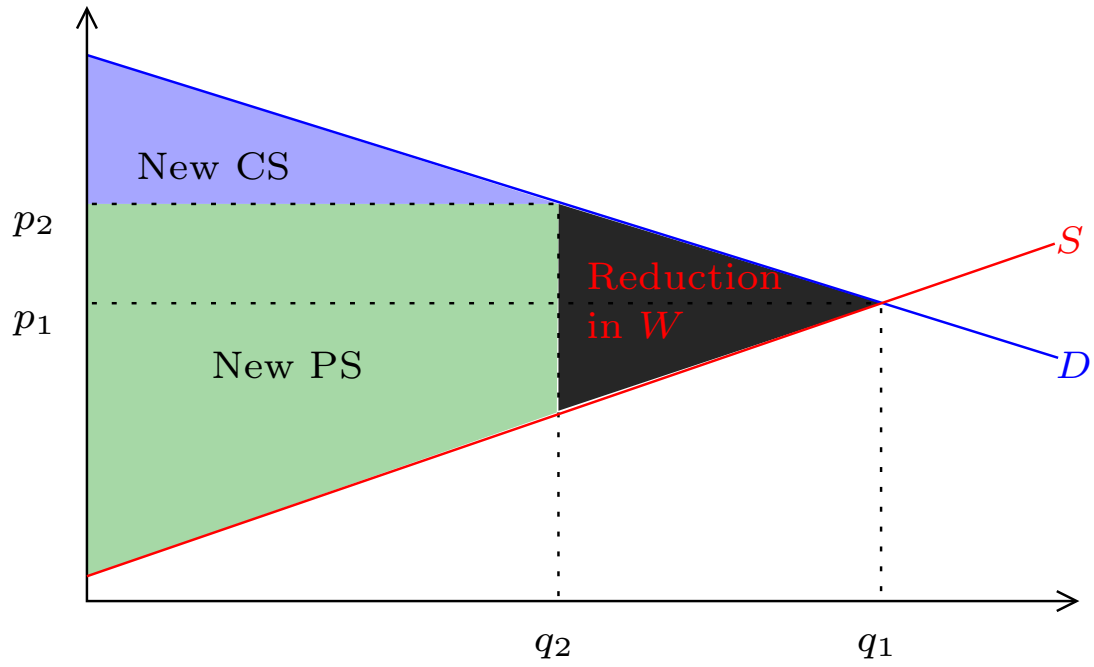
Suppose that quantity falls to q_2 and price rises to p_2.

Producing less than the competitive output reduces W



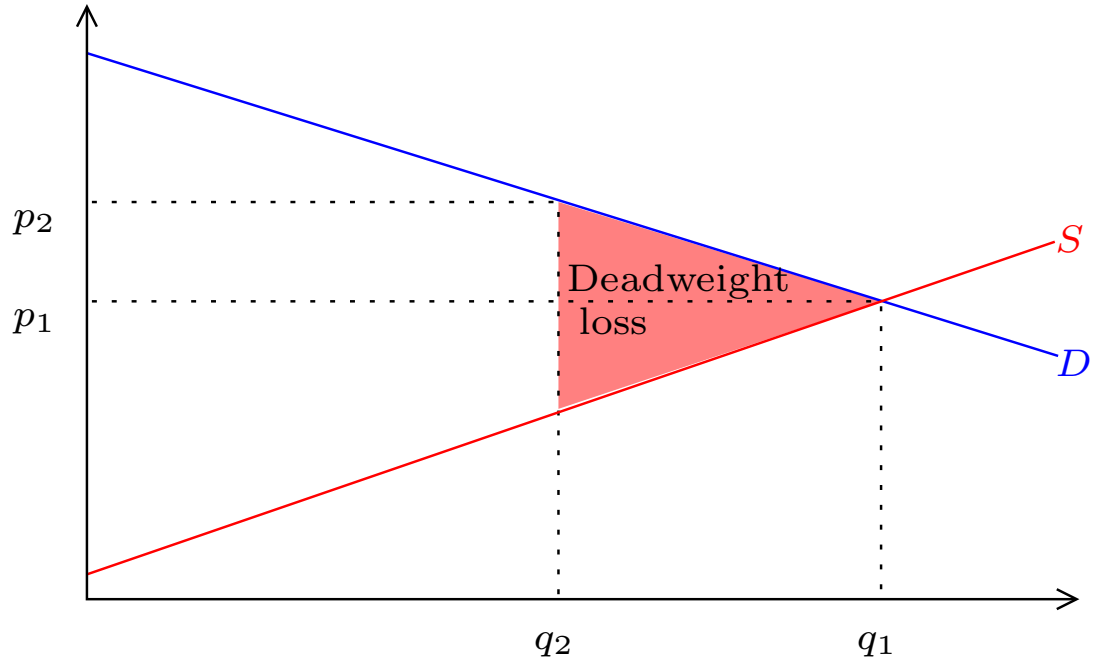
PS and CS change.

Producing less than the competitive output reduces W



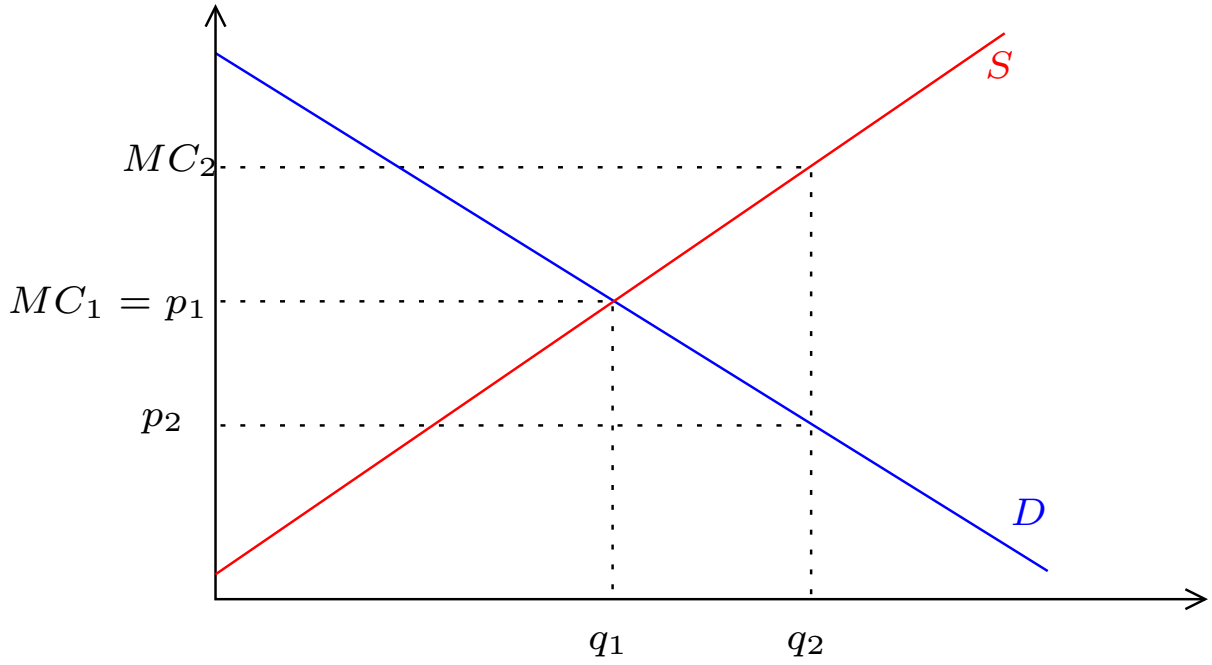
There is a loss of welfare when this happens.

Deadweight loss



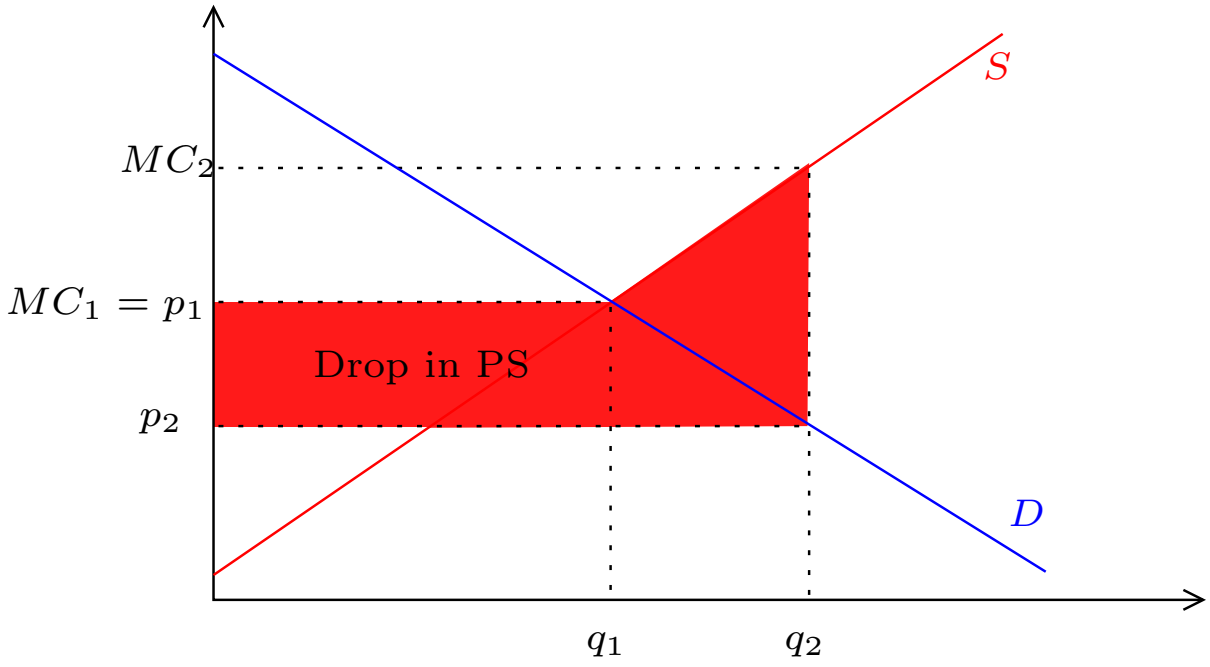
Deadweight loss: The loss of surplus by one group that is not offset by a gain to another group.

Producing more than the competitive output reduces W



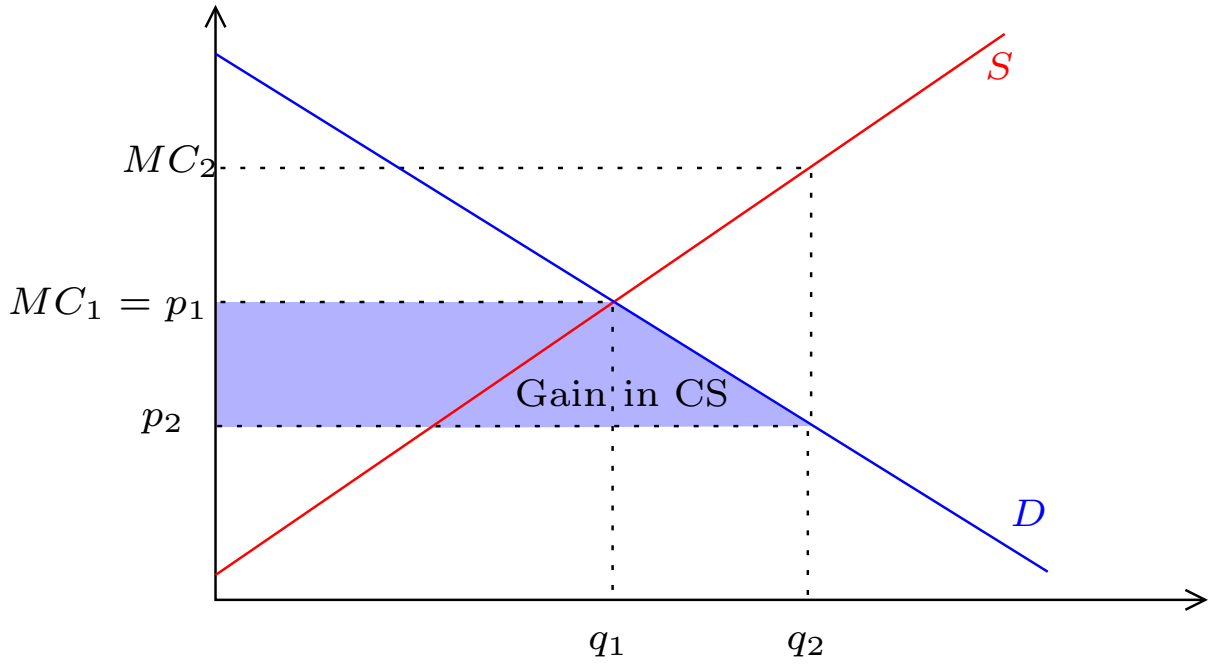
Start with q_1 at price p_1 and think about what happens when we move to q_2 at p_2.

Producing more than the competitive output reduces W



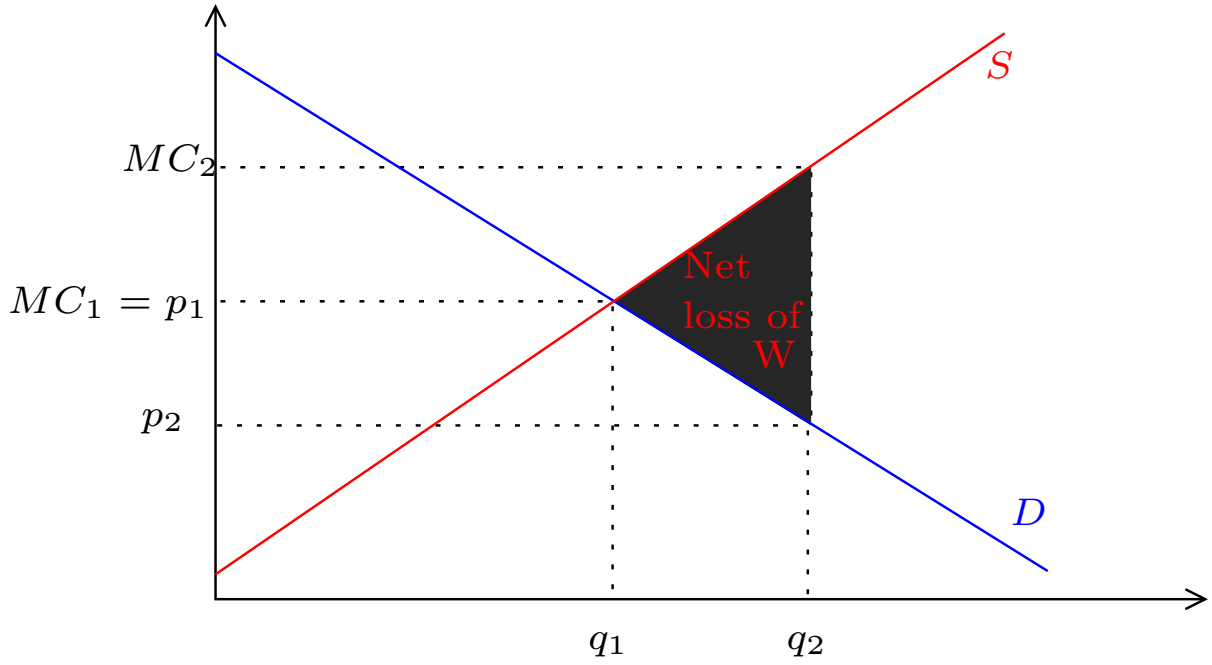
Firms receive a lower price ($p_2 < p_1$) *and* their marginal cost rises. So there's a loss of PS.

Producing more than the competitive output reduces W



Consumers pay less and consume more. So there's a gain in CS.

Producing more than the competitive output reduces W



The firms' loss isn't entirely offset by the consumers' gain. So overproducing leads to a deadweight loss too.

Policies that shift the supply curve

Two simple ways of doing this:

1. Entry barriers: if firms cannot enter freely, the market supply curve shifts to the left.

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1. Entry barriers: if firms cannot enter freely, the market supply curve shifts to the left.
2. Exit restrictions: short-run number of firms would be high. In the long run, fewer firms would enter the market.

Policies that create a wedge between S and D

We'll consider two kinds of policies:

1. Sales tax: specific tax on the good. Government raises revenue of T. So $W = PS + CS + T$.

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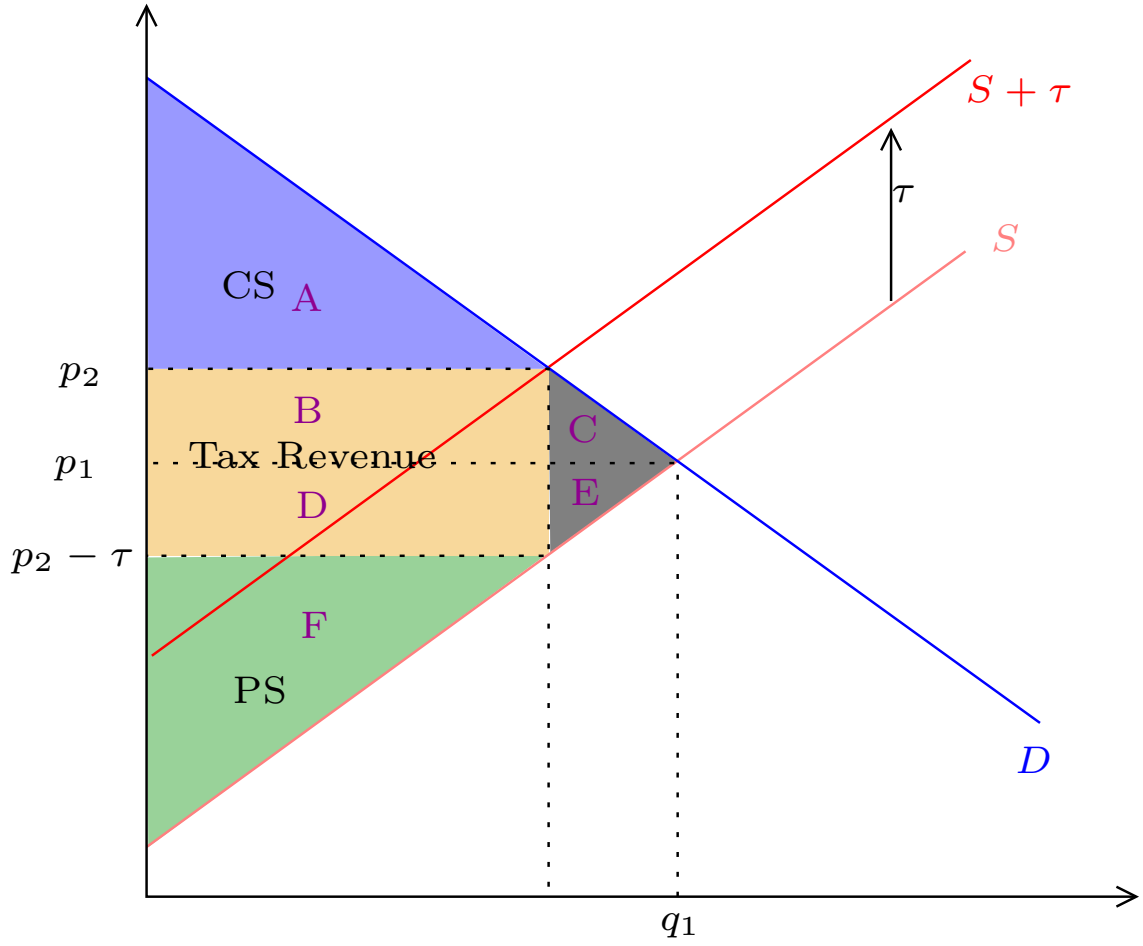
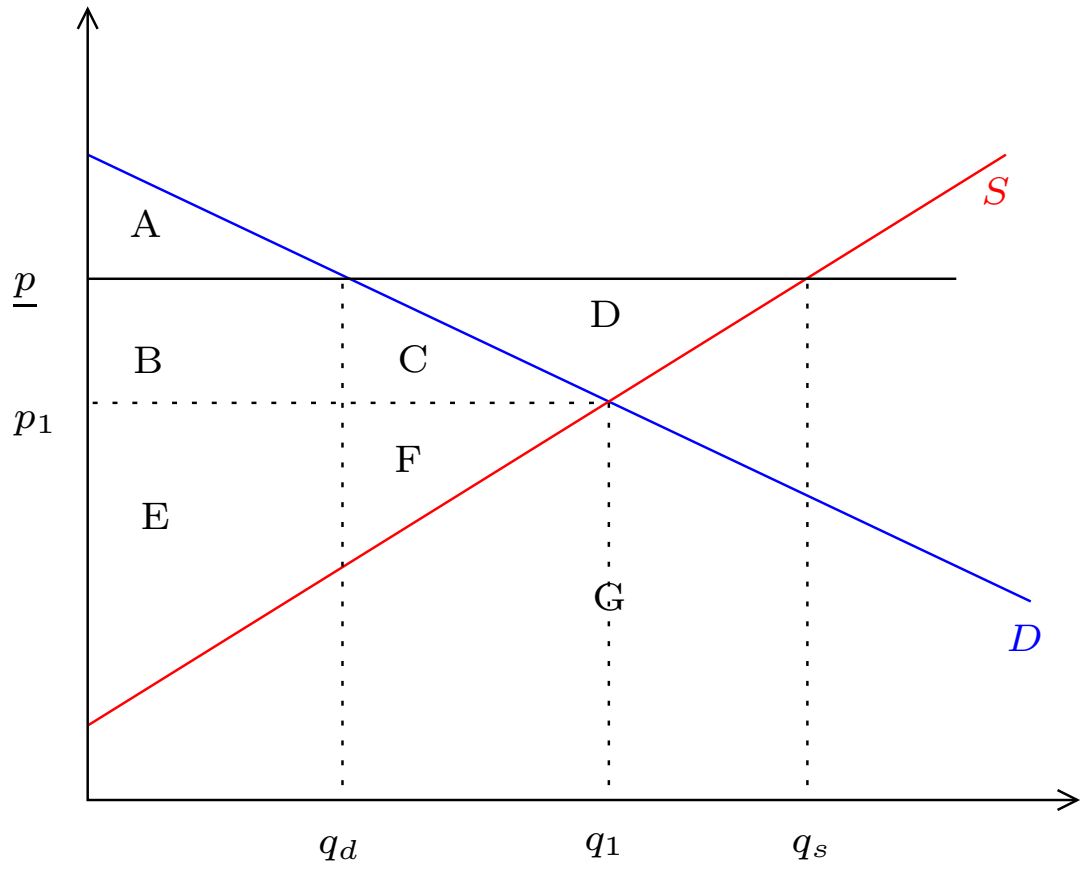
1. Sales tax: specific tax on the good. Government raises revenue of T. So $W = PS + CS + T$.
2. Price floor: guarantee that the price won't be below $\underline{p}$. Government spends X to keep price at $\underline{p}$. So $W = PS + CS - X$.

Sales tax



	Without tax	With tax
CS	A+B+C	A
PS	D+E+F	F
Tax revenue	0	B+D

Price floor



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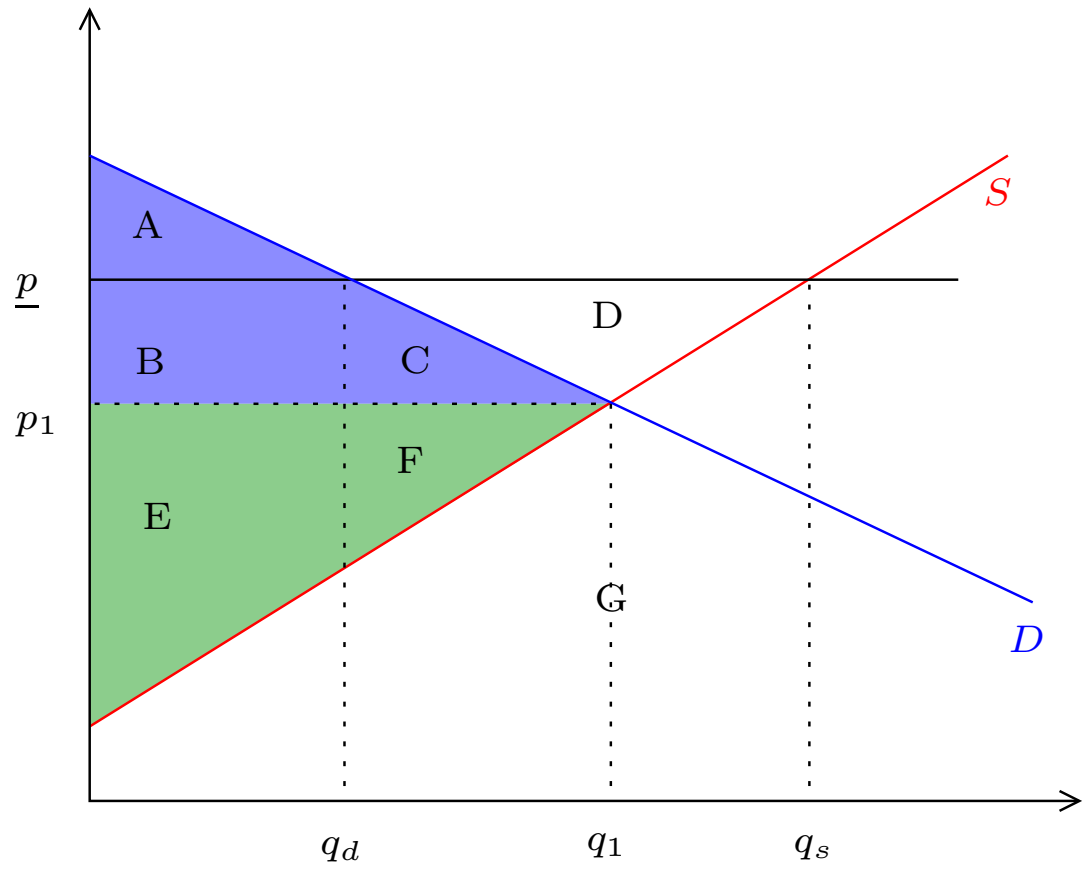
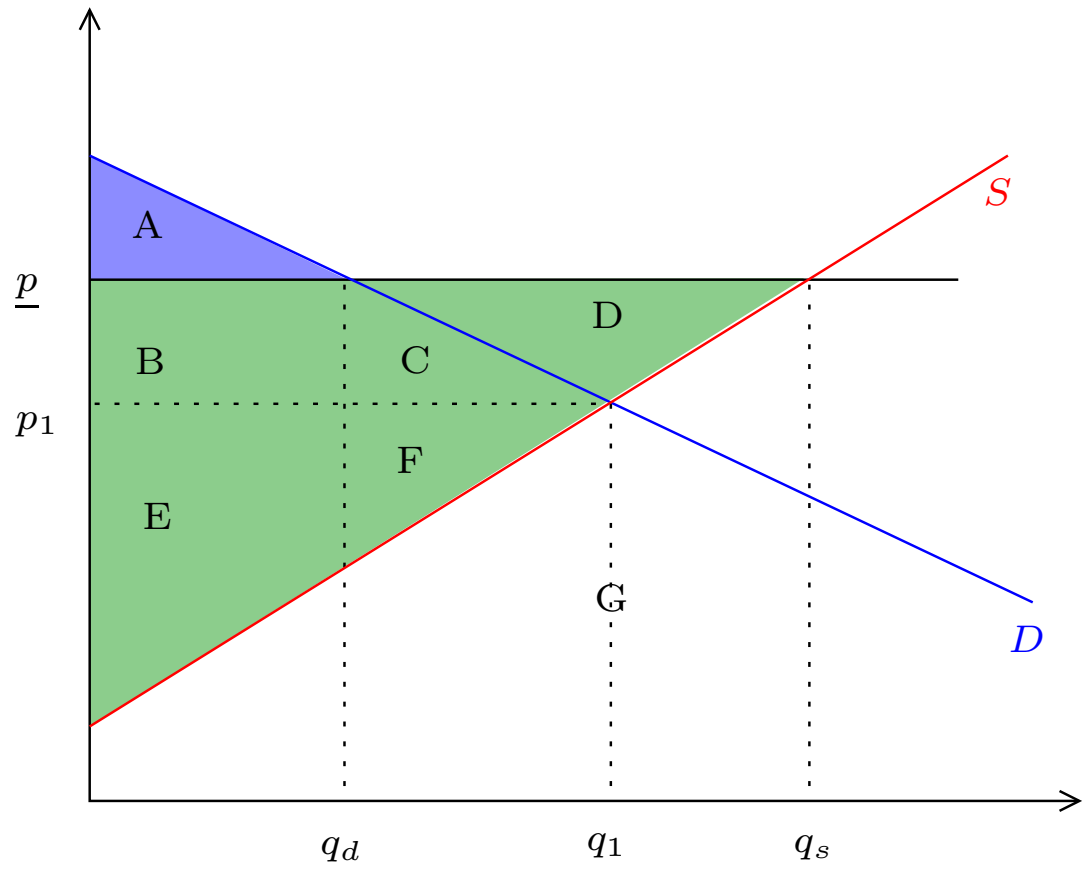


	Without tax	With tax
CS	A+B+C	
PS	E+F	
Government expense	0	

Price floor



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PS	E+F	B+C+D+E+F
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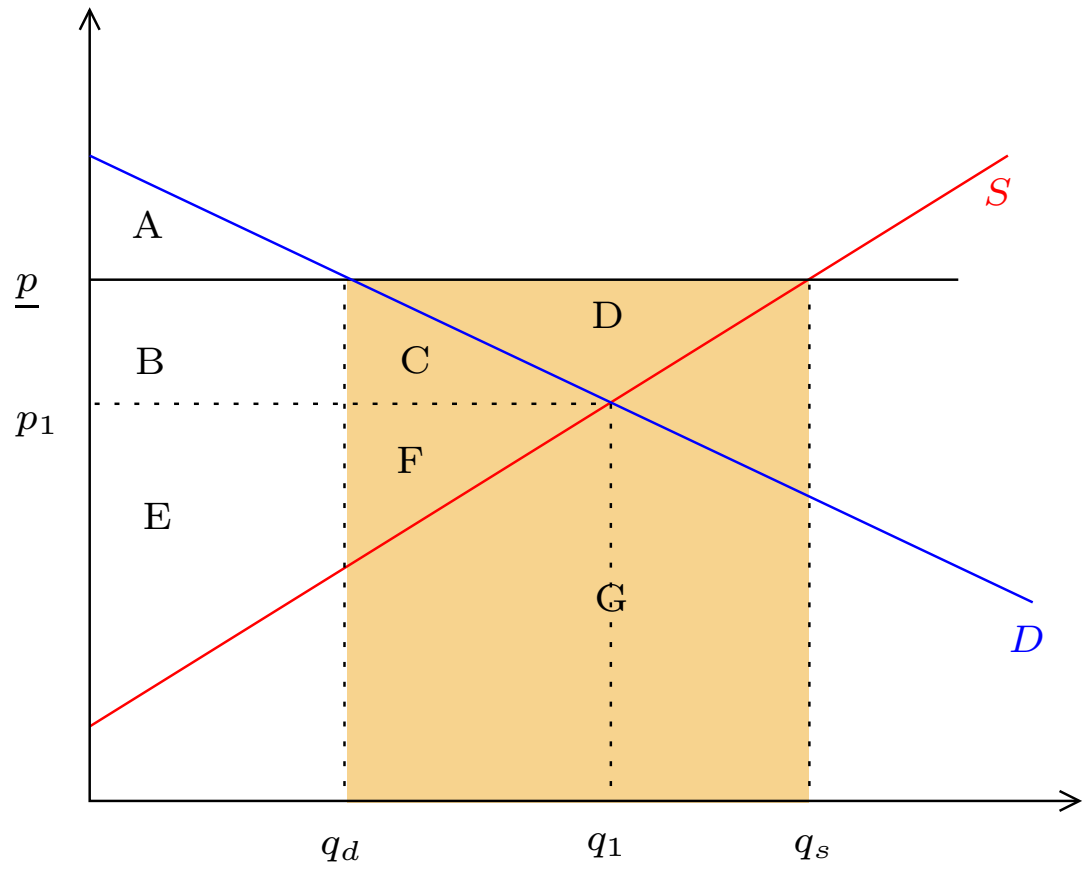

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PS	E+F	B+C+D+E+F
Government expense, X	0	C+D+F+G

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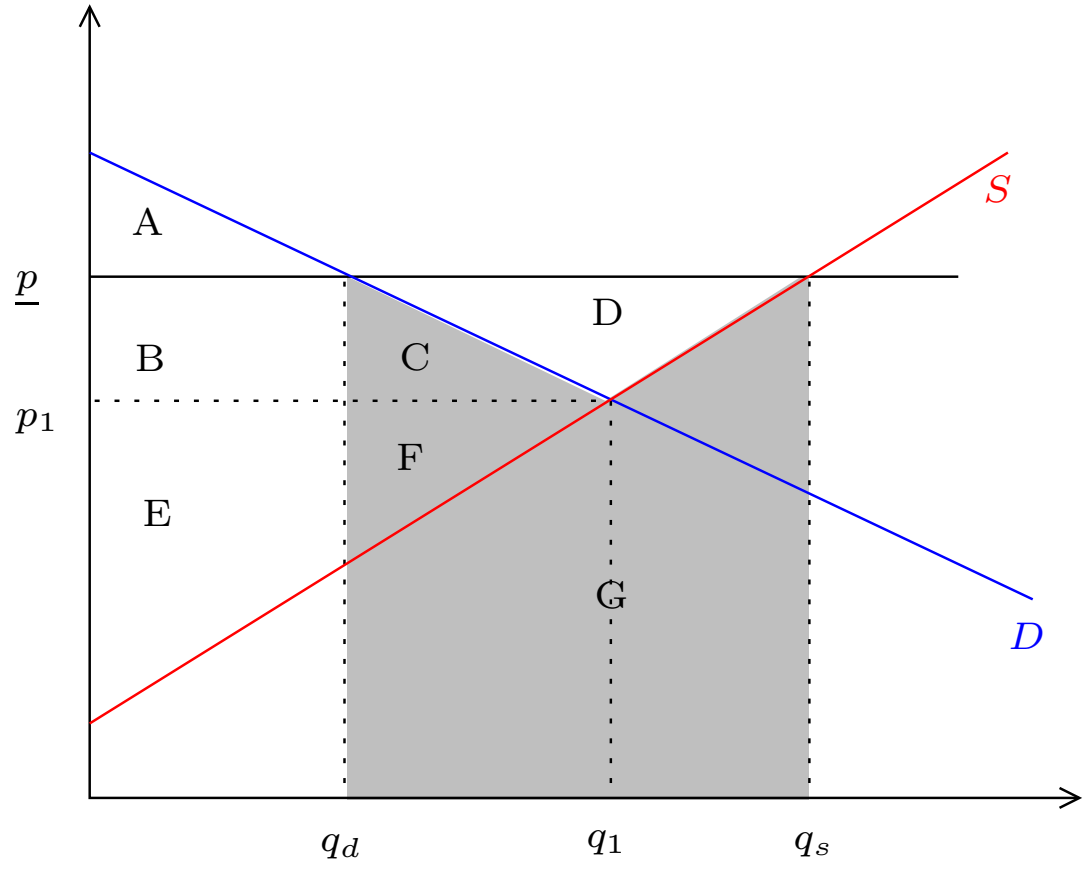

	Total welfare, $W = CS + PS - X$
With price floor	A+B+C+E+F
Without price floor	A+B+E-G

Total welfare Deadweight loss is C+F+G.

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This is *rent seeking* behavior.