

McPeak  
Lecture 2  
PAI 723

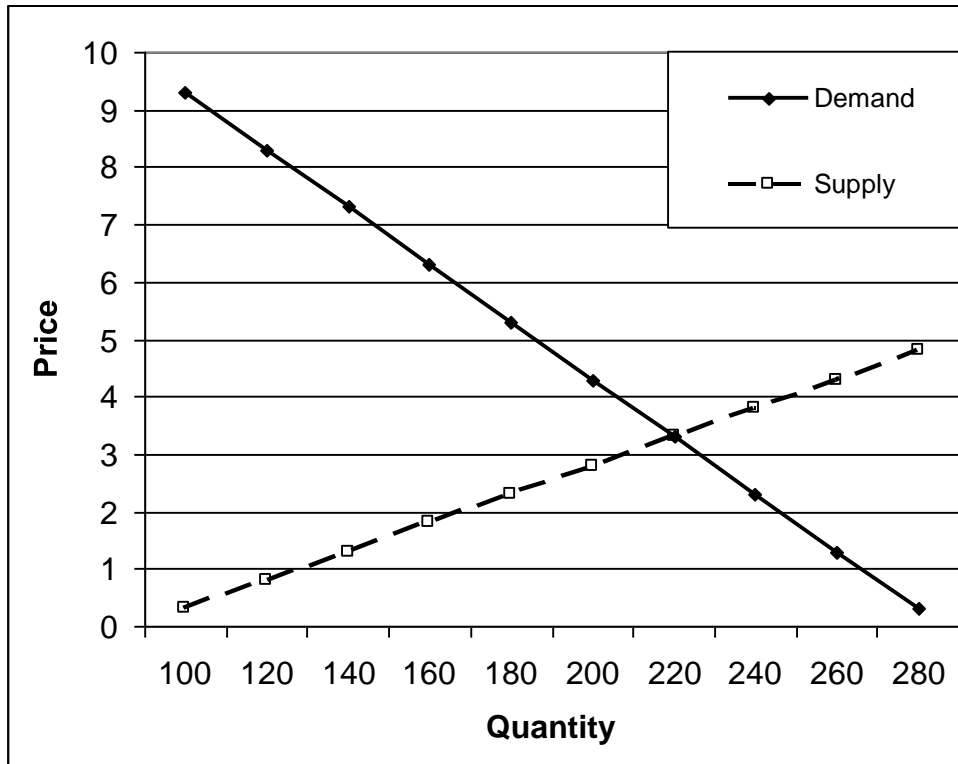
A market is in equilibrium at the point where the demand and supply curves cross.

The equilibrium price is the market price at which consumers can buy as much as they want and sellers can sell as much as they want.

The equilibrium quantity is the quantity demanded / quantity sold at the equilibrium price.

The equilibrium price quantity pair ( $p^*$ ,  $q^*$ ) is the price and quantity at which neither buyers nor sellers have an incentive to change their behavior.

Finding it on a graph:



The price quantity pair where the supply curve crosses the demand curve.

Finding it by algebra:

$$Q^d = 286 - 20 * p$$

$$Q^s = 88 + 40 * p$$

At what price does  $Q^d = Q^s$ ?

$$Q^d = Q^s \text{ where } 286 - 20 * p = 88 + 40 * p, 198 = 60 * p, p = \$3.30$$

What is the implied quantity?  $286 - 20 * 3.30 = 88 + 40 * 3.30 = 220$   
 [Derive inverse, show  $p = (286/20) - (1/20) * Q(d)$ ,  $p = (-88/40) + (1/40) * Q(s)$  is an equivalent statement of the relationship, and is easier to graph –  $y=f(x)$  issue here.]

What happens if we deviate from this equilibrium?

Price above equilibrium: \$4.

We will have excess supply – the amount by which the quantity supplied is greater than the quantity demanded.

The quantity demanded is 206.  $(286 - 20 \cdot 4)$

The quantity supplied is 248.  $(88 + 40 \cdot 4)$

Producers have oversupplied 42 units (excess supply).

These can either be wasted, or stored.

As there are costs to storage, why not lower the price on the excess supply?

Say for simplicity that each firm produces one unit. The first 220 firms to figure out they can lower the price to \$3.30 (the equilibrium price) and not have to store the pork do so.

That leaves 28 firms that moved too slowly.

They have pork at a price that nobody wants to buy (\$4).

The market has moved to its equilibrium.

Or, alternatively, each firm decides to produce slightly less.

Price below equilibrium: \$2.

We will have excess demand – the amount by which quantity demanded exceeds quantity supplied at a given price.

The quantity demanded is 246.  $(286 - 20 * 2)$

The quantity supplied is 168.  $(88 + 40 * 2)$

Consumers want to buy 78 units more at the price of \$2, but are not able to get it at the prevailing market price.

Potential producers notice this, and rush to open factories.

Again, assuming each firm produces one unit, 52 firms open and start selling, driving the price up to \$3.30 and the quantity up to 220.

Why is the price going to go up from \$2 to \$3.30 when there is more being produced?

What is to be made of the statement “supply = demand”?

By definition, quantity supplied and quantity demanded are equal at an equilibrium ‘market clearing’ price.

However, this is only in equilibrium.

In our first example, we had the observed price \$4, and the corresponding consumer demand of 206. If we see a \$4 price, and observe that 206 units were sold, does this tell us supply = demand? No, recall this was a case of excess supply. Quantity supplied > Quantity demanded at going market price of \$4.

Likewise, when we had \$2 and 168 units supplied. This was a case of excess demand. Quantity demanded > Quantity supplied at going market price of \$2.

\$2 and \$4 are not equilibrium market clearing prices in these examples.

In economic terms, supply = demand (more precisely quantity supplied = quantity demanded) only at the equilibrium point (price).

How do we know we are at equilibrium and not in a situation of excess supply or demand?

- No firms entering or leaving the market (expanding or contracting production).
- No shortage of the good / no unsold surplus of the good.
- Price of the good is stable.

Arriving at the equilibrium is an example of moving along a supply curve and along a demand curve to arrive at a stable point.

How do policies influence the intersection of supply and demand?

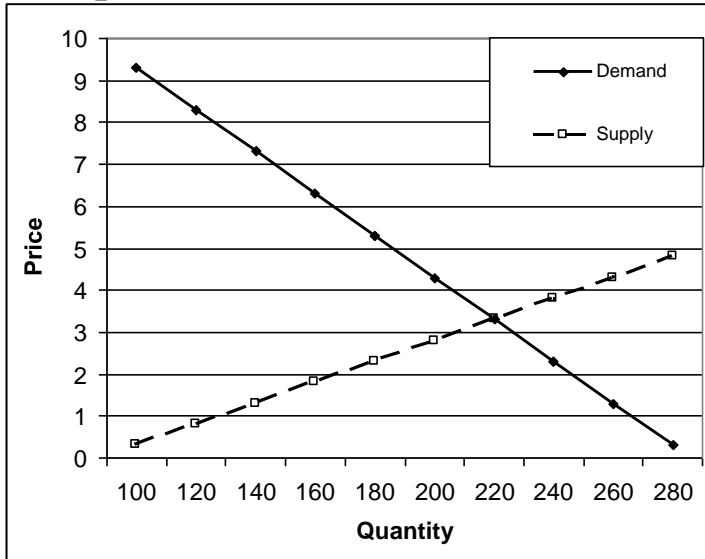
Return to the idea of supply and demand curves shifting as introduced in an earlier lecture.

Now, we want to think about what happens to the market equilibrium when “all else constant” that is in the background experiences a change.

Recall that there are things like prices of complements, prices of inputs, rules and regulations that can lead to shifts in supply or demand curves.

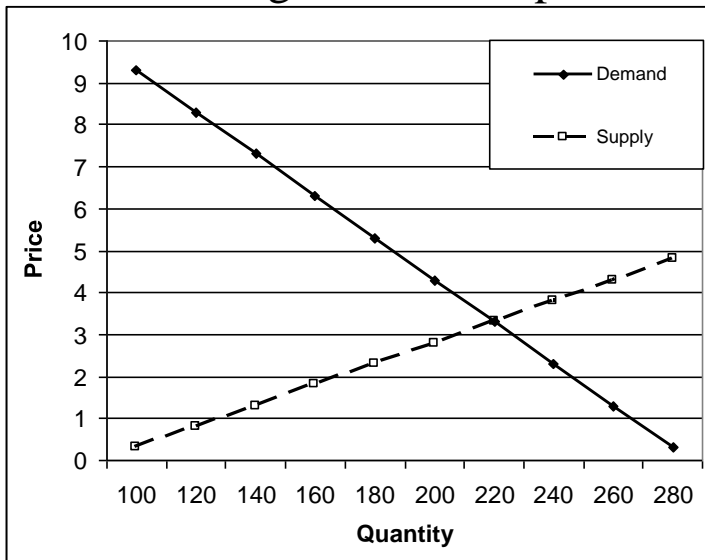
Let's move some supply and demand graphs around:

1) What happens if new environmental regulation is introduced relaxing the restrictions on the disposal of pig waste, thus lowering the cost of production for hog producers?



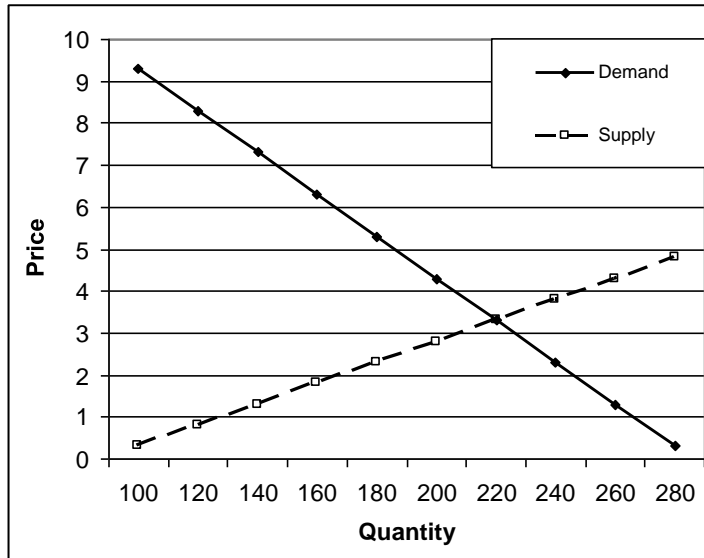
Supply ->

2) What happens if new regulations on pork processing hygiene that are more stringent are introduced, thus increasing the costs of producing processed pork.



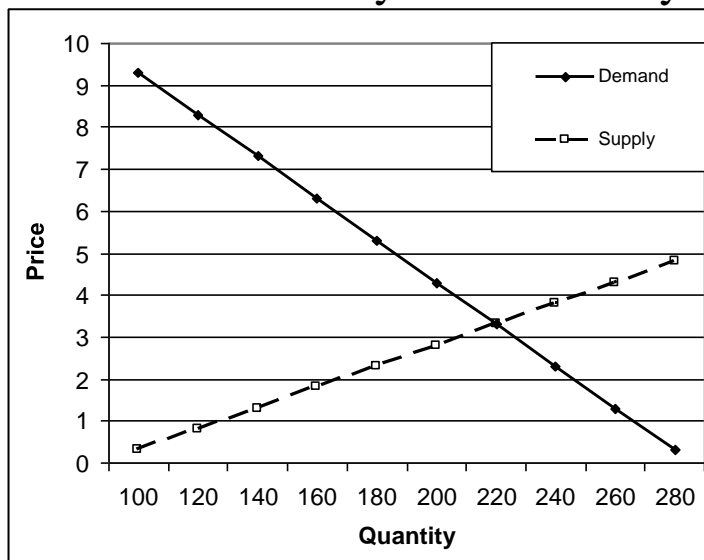
Supply <-

3) What happens if the government funds an advertising campaign “Pork, it whitens teeth and freshens breath” and consumers believe it?



Demand ->

4) What happens if the price of chicken decreases dramatically in response to a new veterinary innovation at Cornell funded by USDA money.

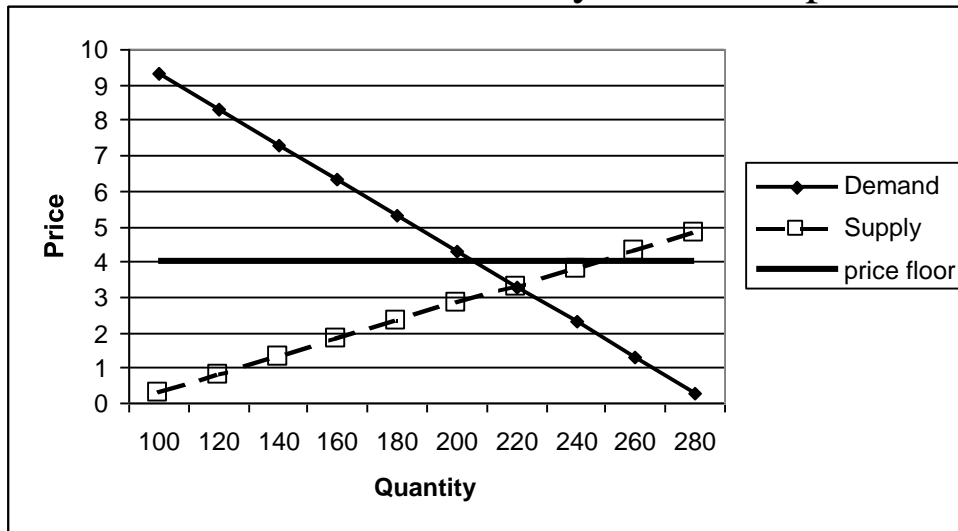


Demand <-



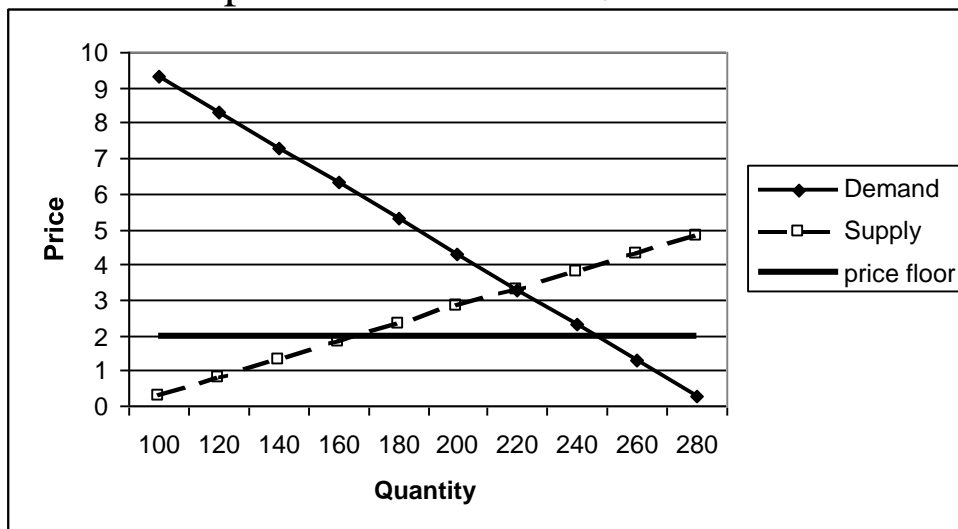
How do policies influence the intersection of supply and demand?

1) Price Floor. There is a minimum price, legally enforced, below which a commodity cannot be purchased.



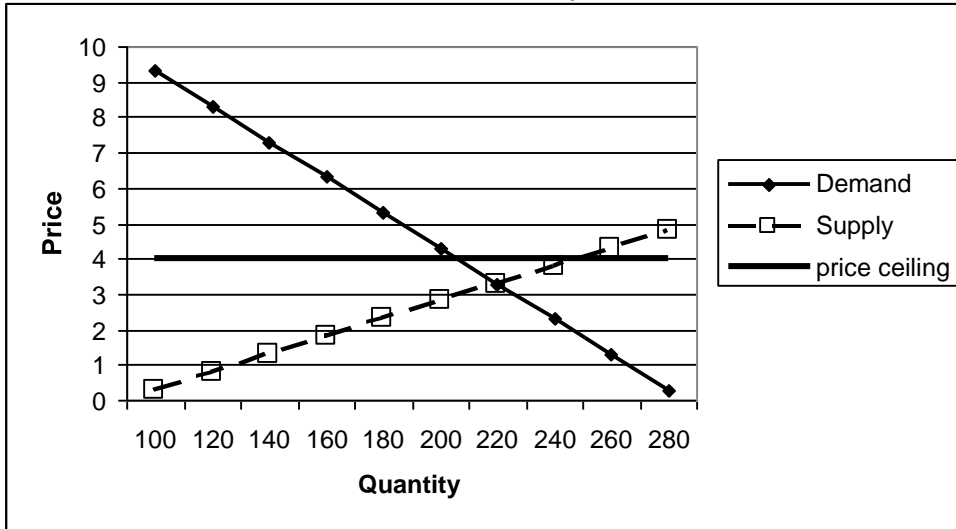
Excess supply – agricultural surplus, unemployment.

What if the price floor is set at \$2?



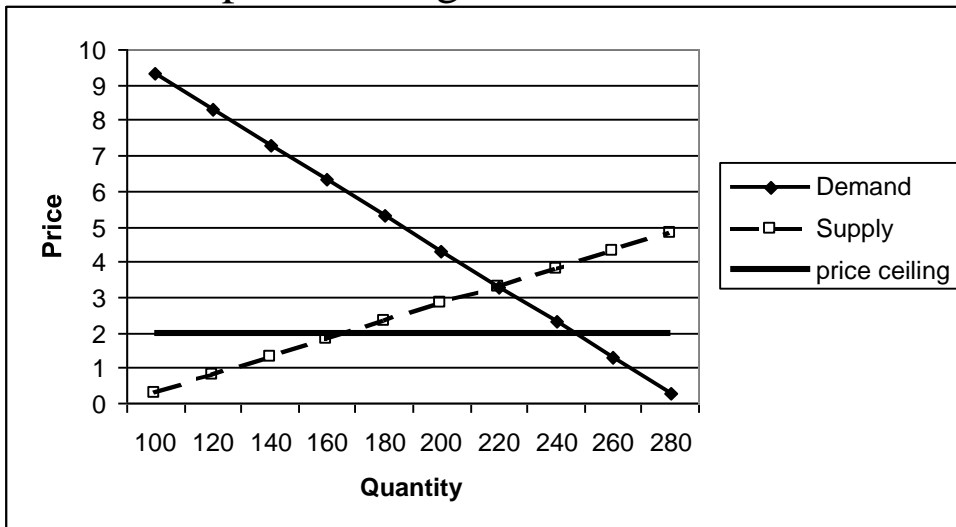
The price floor is non-binding. It is there, but has no effect on the market equilibrium.

2) Price Ceiling. There is a maximum price, legally enforced, above which a commodity cannot be sold.



Non-binding.

What if the price ceiling is set at \$2?



There is excess demand. Waiting in line, black market exchange.