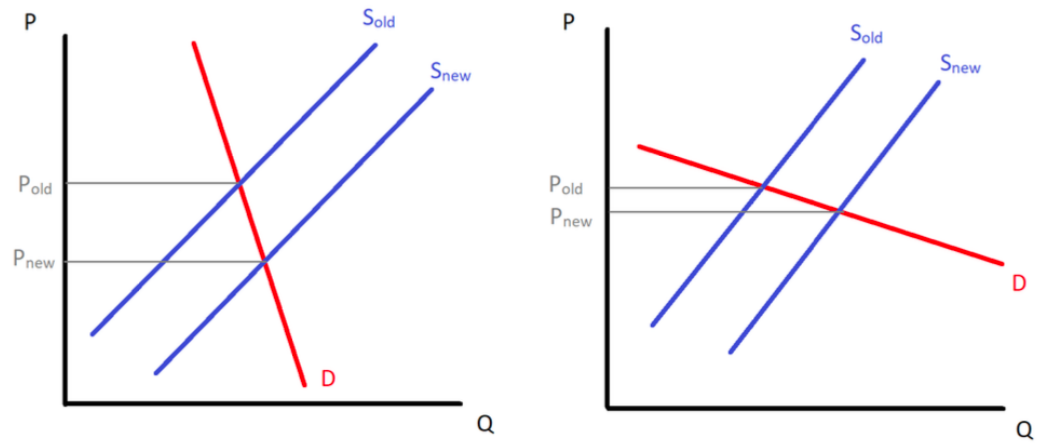
Section Exercise 4

1)

Consider the market for fish tacos in a seaside town. For the sake of argument, let's assume that the market is perfectly competitive. Say that there is bigger than usual fish catch this month, so that the price of fish (a key input in fish tacos) falls substantially.

a) Let's analyze this in a supply and demand model. How and to what extent is this shock likely to change the price of fish tacos, according to the model? How would this depend on price elasticities? Answer with diagram(s) and a few sentences of explanation.

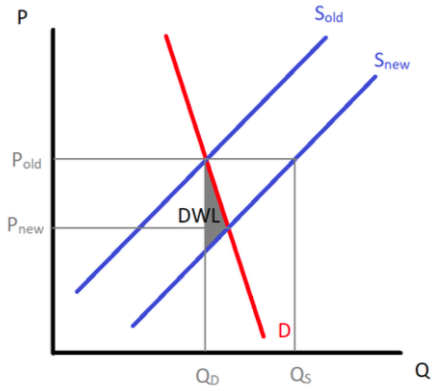


The reduction in the input price for fish tacos is a positive supply shock: producers are willing and able to supply more fish tacos at every price. The supply curve shifts to the right. The model therefore predicts a decrease in the price of fish tacos (assuming that we reach equilibrium in each case). (You don't need this in your answer necessarily, but one possible story of the 'market forces' here: at the original price, the shift in the supply curve means we'd have excess supply of fish tacos, and so producers would have incentive to lower prices to get their excess supply sold.)

How big the increase in price is depends on the price elasticity of demand. In the left hand diagram, we see relatively inelastic demand leading to a bigger decrease in price; on the right, we see relatively elastic demand leading to a smaller decrease in price. Intuitively, when demand is elastic, price doesn't have to fall by very much to get the excess supply sold, since even a small price drop induces quite a big increase in demand.

(You may have chosen to talk about long run vs. short run effects as well; that's fine as long as your discussion was clear and sensible!)

b) If the price of fish tacos had been restricted to stay at its original level even after the shock, what would the supply and demand model predict then? Again, please answer with diagram(s) and explanation of the relevant changes.



At the original price, there would be excess supply after the shift in the supply curve. In the diagram we see that $Q_S > Q_D$. In a really great answer you might have gone on to think about things like surpluses. For example, we see that there is deadweight loss, since some units that could have been traded at a mutually beneficial price between buyer and seller were not traded at P_{old}. The amount of deadweight loss also depends on price elasticity of demand: there would be more deadweight loss if demand was more elastic, since the discrepancy in quantity would be bigger. Consumers are worse off than they would be at P_{new} since they are paying more for less quantity: their consumer surplus is lower.

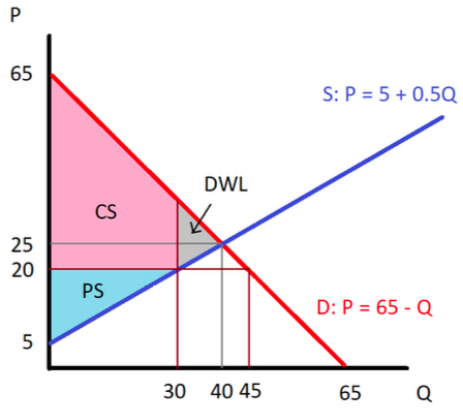
2)

Consider a perfectly competitive market in which demand is given by $Q_D = 65 - P_D$ and supply is given by $Q_S = 2P_S - 10$.

a) What is the equilibrium price and quantity traded in this market? Explain in words what we mean by 'equilibrium' in this context.

Equilibrium is a situation where the quantity that sellers are willing and able to sell is equal to the quantity that buyers are willing and able to buy. Mathematically, then, in this example, a price would be an equilibrium price if it resulted in $Q_D = Q_S \Rightarrow 65 - P_D = 2P_S - 10$. Buyers and sellers face the same price here, so $65 - P = 2P - 10 \Rightarrow 3P = 75 \Rightarrow P^* = 25$. Quantity is $65 - 25$ or $2(25) - 10$ (from either the demand or supply relationship) which is 40 units. At the price of 25, consumers demand 40 units and producers supply 40 units.

b) Say that a price ceiling of $20 is imposed (that is, this good cannot be traded at a price above $20). How many units are traded? Sketch a diagram of this situation. Your diagram should show the demand and supply curves, including their intercepts, the coordinates of any relevant points, and consumer surplus, producer surplus, and, if applicable, deadweight loss. (You don't have to calculate these, just show them on the diagram).

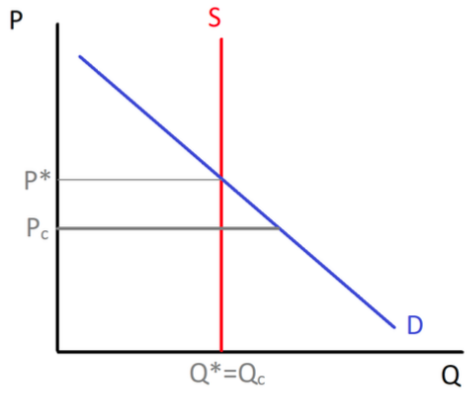


30 units are traded. There is excess supply of 15 units, since at the price of 20 sellers are willing to sell 30 units while buyers are willing to buy 45 units.

3)

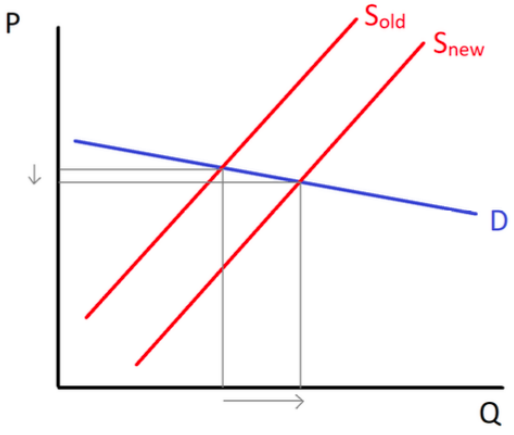
Two questions about perfectly competitive markets with a downward-sloping demand curve. Assume that the markets reach equilibrium when possible.

a) The market for product X is initially in equilibrium. Then a price ceiling (below the equilibrium price) is imposed, but the quantity traded does not change. What must the supply curve look like? Sketch a diagram that illustrates this situation. Is there deadweight loss or not, and why?



The supply curve must be vertical (perfectly inelastic). In the diagram, P^* and Q^* are the equilibrium values before the price ceiling P_c is imposed. We see excess demand at P_c, but because the supply curve is vertical, the quantity traded does not change. There is no deadweight loss here: deadweight loss would occur if there were units that could have been traded for mutual benefit of buyer and seller (in the sense of surpluses) that are now not traded because of the change in conditions. This has not happened here: quantity traded is the same as before. Sellers were (and still are) unwilling or unable to sell more than Q^* units, and so no trade has been precluded.

b) In the market for product Y there is a sudden fall in the marginal cost of production. The price of product Y falls, but by a very small amount, much smaller than the fall in costs. What must the demand curve look like and what does that mean in words? Sketch a diagram that illustrates this situation.



The demand curve must have a very flat slope—that is, very price elastic, so that buyers have a big change in quantity demanded for relatively small changes in price. In the diagram we see that the fall in production costs has caused a shift to the right in the supply curve, since now at each possible price sellers are willing to sell more than before. Since the demand curve is so elastic, the shift translates to a big increase in equilibrium quantity but only a very small fall in price.