

HW#8 Due March 1, 2022

9. At Fenway Park, home of the Boston Red Sox, seating is limited to about 38,000. Hence, the number of tickets issued is fixed at that figure. Seeing a golden opportunity to raise revenue, the City of Boston levies a per ticket tax of \$5 to be paid by the ticket buyer. Boston sports fans, a famously civic-minded lot, dutifully send in the \$5 per ticket. Draw a well-labeled graph showing the impact of the tax. On whom does the tax burden fall—the team's owners, the fans, or both? Why?
10. A market is described by the following supply and demand curves:

$$Q^S = 2P$$

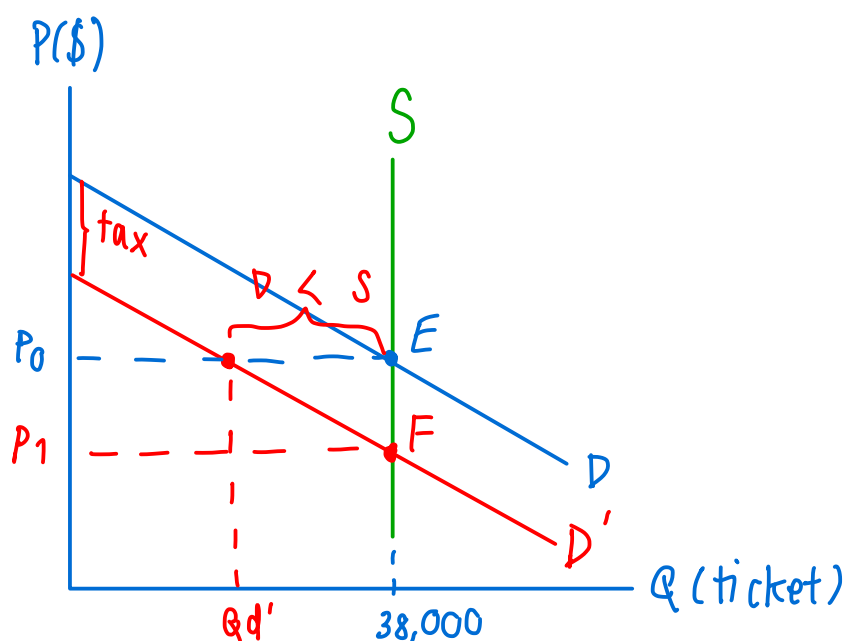
$$Q^D = 300 - P$$

- Solve for the equilibrium price and quantity.
- If the government imposes a price ceiling of \$90, does a shortage or surplus (or neither) develop? What are the price, quantity supplied, quantity demanded, and size of the shortage or surplus?
- If the government imposes a price floor of \$90, does a shortage or surplus (or neither) develop? What are the price, quantity supplied, quantity demanded, and size of the shortage or surplus?
- Instead of a price control, the government levies a tax on producers of \$30. As a result, the new supply curve is:

$$Q^S = 2(P - 30).$$

Does a shortage or surplus (or neither) develop? What are the price, quantity supplied, quantity demanded, and size of the shortage or surplus?

9. At Fenway Park, home of the Boston Red Sox, seating is limited to about 38,000. Hence, the number of tickets issued is fixed at that figure. Seeing a golden opportunity to raise revenue, the City of Boston levies a per ticket tax of \$5 to be paid by the ticket buyer. Boston sports fans, a famously civic-minded lot, dutifully send in the \$5 per ticket. Draw a well-labeled graph showing the impact of the tax. On whom does the tax burden fall—the team's owners, the fans, or both? Why?



According to the graph, At first price P_0
 Q_{d0}

Then, the buyers are levied \$5 per ticket. It makes D shift to D' . There is excess supply as the supply is more than demand. Excess supply = $38,000 - Q_{d'} > 0$, so the price has to be lowered to P_1 . Also, the equilibrium shifts from E to F and the excess supply = 0

As there is excess supply, the seller will have tax burden and the buyers get price lower by 5 \$

$$\frac{\eta_s}{|\eta_D|} = \frac{\text{tax burden on buyers}}{\text{tax burden on sellers}}$$

Since η_s is 0 it is perfectly inelastic, buyers don't have tax burden ✖

10. A market is described by the following supply and demand curves:

$$Q^S = 2P$$

$$Q^D = 300 - P$$

a. Solve for the equilibrium price and quantity.

At equilibrium E , $Q_s = Q_d$

$$2P = 300 - P$$

$$P_E = 100$$

We have P_E then we can compute Q_E by put P_E in D, S

$$Q = 2P$$

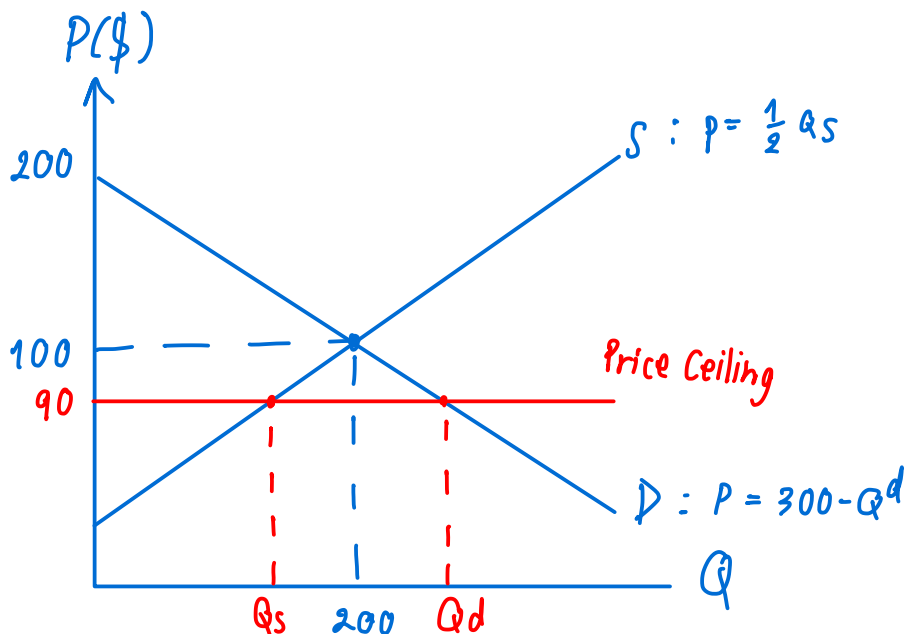
$$Q = 2(100)$$

$$Q_E = 200 \text{ units}$$

Thus, equilibrium point $(P, Q) = (100, 200)$

b. If the government imposes a price ceiling of \$90, does a shortage or surplus (or neither) develop?

What are the price, quantity supplied, quantity demanded, and size of the shortage or surplus?



If the government sets price ceiling below the equilibrium price, there will be excess demand or shortage.

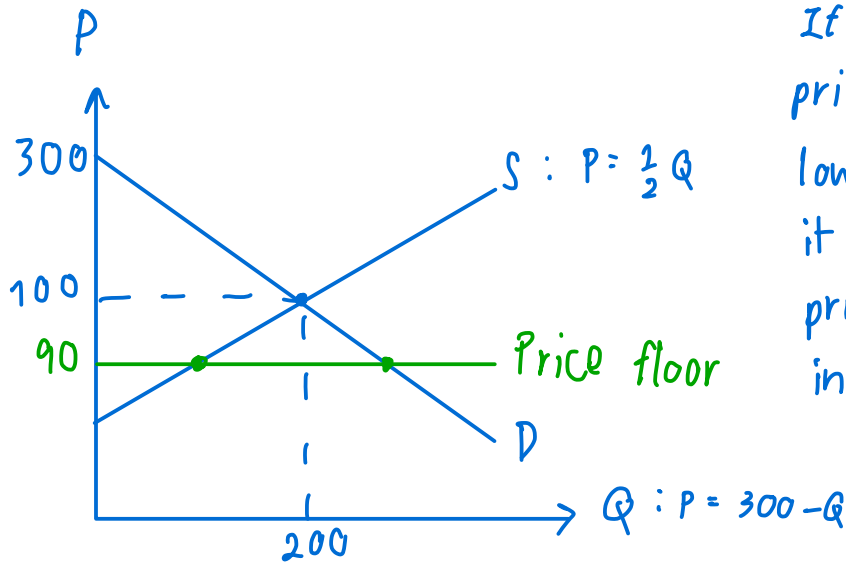
At price \$90

$$\Rightarrow Q_s = 2(90) = 180$$

$$\Rightarrow Q_d = 300 - 90 = 210$$

$\therefore$ We can see that there is an excess demand or shortage
 $Q_d - Q_s = 210 - 180 = 30 \text{ units at ceiling price } 90 \$$

- c. If the government imposes a price floor of \$90, does a shortage or surplus (or neither) develop? What are the price, quantity supplied, quantity demanded, and size of the shortage or surplus?

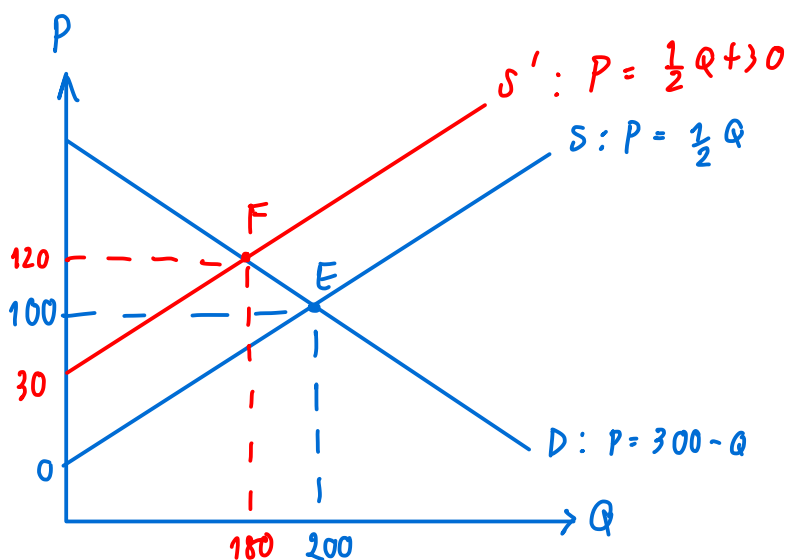


If the government sets price floor at \$90 which is lower than the equilibrium price, it creates no effect because price floor minimum price traded in market, lower than the price that is normally traded. *

- d. Instead of a price control, the government levies a tax on producers of \$30. As a result, the new supply curve is:

$$Q^S = 2(P - 30).$$

Does a shortage or surplus (or neither) develop? What are the price, quantity supplied, quantity demanded, and size of the shortage or surplus?



To find point F ($Q_d = Q_s$)

$$2(P - 30) = 300 - P$$

$$2P - 60 = 300 - P$$

$$2P + P = 300 - 60$$

$$3P = 360$$

$$P = \frac{360}{3} = 120$$

$$Q = 180$$

⇒ The new equilibrium is F where $(P, Q) = (120, 180)$

⇒ At the original price 100\$, $Q_s = 2(100 - 30) = 140$ while $Q_d = 300 - 100 = 200$

There is an excess demand $= Q_d - Q_s = 200 - 140 = 60$, so the price will increase until there is no excess demand.