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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:

$$Q^S = 2P$$
$$Q^D = 300 - P$$

a. Solve for the equilibrium price and quantity.

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?

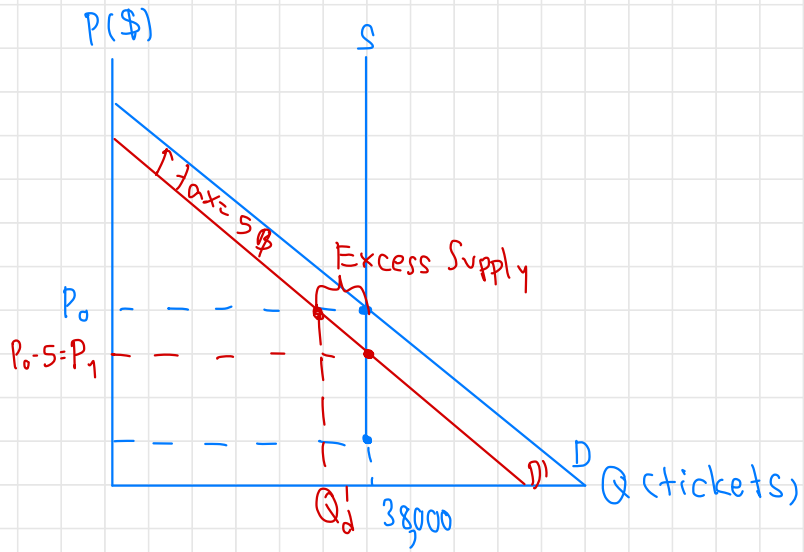
c. If the government imposes a price floor of $90, does a shortage or surplus (or neither) develop? What are the price, quantity supplied, quantity demanded, and size of the shortage or surplus?

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?

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?



The original price and quantity = $\$P_0$ and 38,000 tickets.

The buyers are imposed \$5 per ticket causing D shifts ($D \rightarrow D'$). At P_0, there is an excess supply = $38{,}000 - Q_d'$.

The price decreases $P_0 \rightarrow P_1$. The new equilibrium price is at P_1 (excess supply = 0) where the equilibrium quantity still the same.

According to the graph, the sellers could get the price P_0 before the tax, sellers getting ($P_1 = P_0 - 5$) after the tax.

For the buyers, the price it has to pay is P_0 before tax.

The total amount paid by buyers after tax is $P_1 + 5$.

In terms of the elasticities, the tax burden falls to the seller only because the seller gets the price $5 lower but the buyers pay the same price.

$\therefore \frac{\eta_s}{|\eta_d|}$ and $\eta_s = 0$, the buyers have no tax burden.

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

(a) At equilibrium, $Q^s = Q^d$.

$$2P = 300 - P$$

$$P_E = \$100$$

we have P_E then we can compute Q_E by putting P_E in Demand / Supply equation.

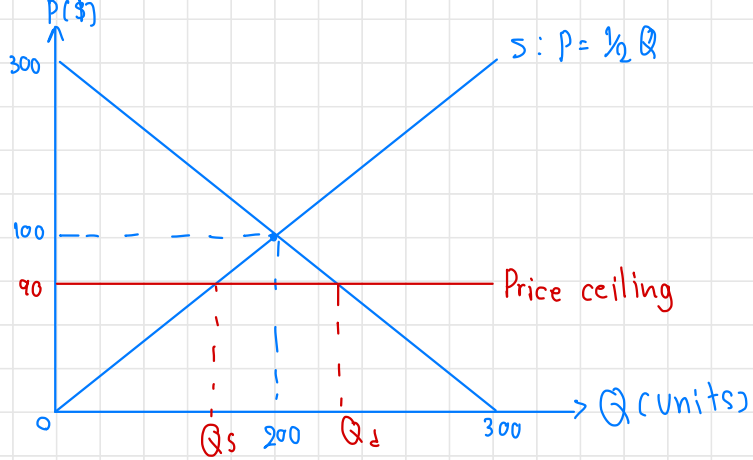
$$Q = 2(P_E)$$

$$Q = 2(100)$$

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

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

(b)



At the price = $90

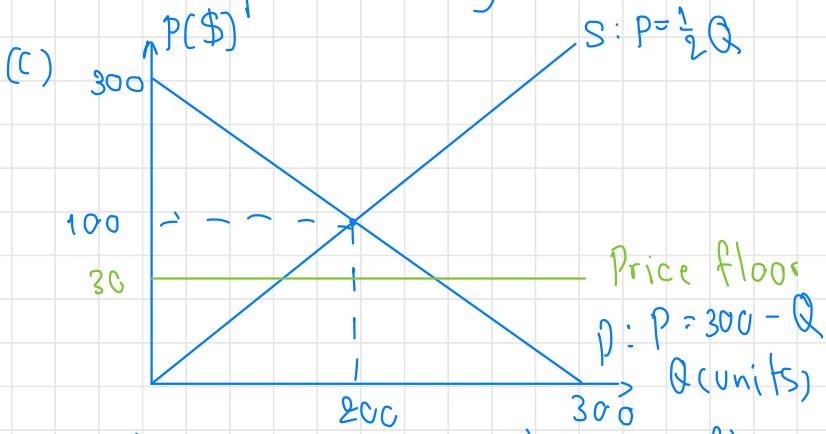
$\Rightarrow Q^s = 2(90) = 180$

$\Rightarrow Q^d = 300 - 90 = 210$

$\therefore$ An excess demand $= Q^d - Q^s = 210 - 180 = 30$ units.

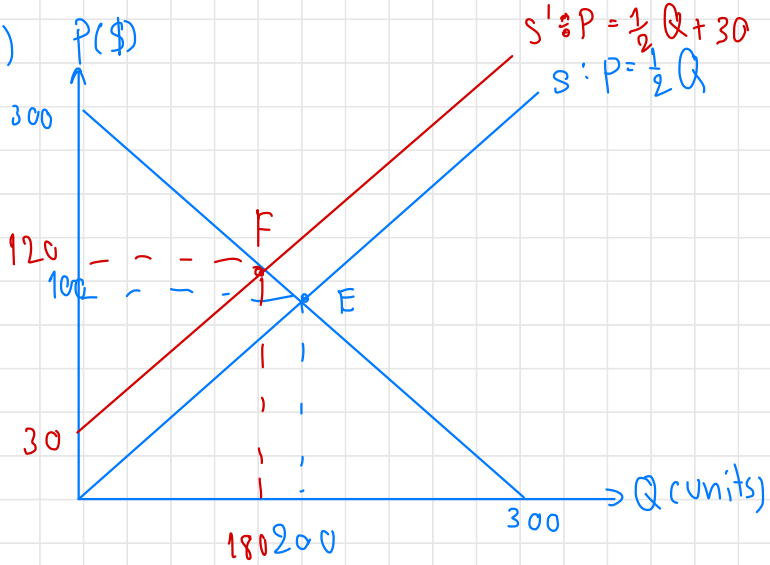
at the price ceiling = $90

(c)



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 the market

(d)



$Q_d = Q_s$

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

$2P-60 = 300-P$

$3P = 360$

$\therefore P = 120$

$\therefore Q = 180$

⇒ The new equilibrium is at 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 $= Q^d - Q^s = 200 - 140 = 60$.

Therefore, price tends to increase until there is no excess demand (at point F) ✱