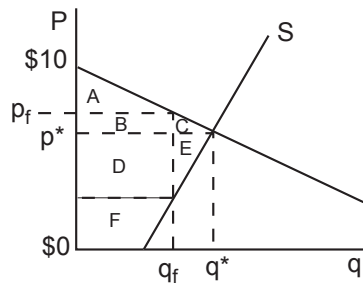


ECON 110, Prof. Hogendorn

Problem Set 3 Answers

1. *JFK_a.*

- (a) The equilibrium point must be on the upper half of the demand curve, and the supply curve must intercept the horizontal axis.



- (b) Demand must be the governing curve because it is not possible to sell more than people are willing to buy. CS is reduced by $B + C$ and PS is reduced by E but increased by B . $C + E$ is the deadweight loss.
- (c) First, note that we are talking about just your firm, while the curves represent all firms. *Some* firm(s) will lose customers under the price floor, since the quantity sold falls. If you are concerned that your firm will suffer a disproportionate share of this reduction, you might not favor the price control.

Also, these curves are probably short-run curves. In the long run, elasticity of demand is likely to rise, as consumers find new airports and new alternatives for shipping air freight. Thus the gains today may be smaller or even turn to losses in the future.

2. *Dollar-sales-tax_a.*

(a) Setting demand equal to supply gives us:

$$\begin{aligned}40 - 3p &= 2p \\40 &= 5p \\p &= 8 \quad q = 16\end{aligned}$$

The choke price is $0 = 40 - 3p$, or $p = 13.3$. The supply curve runs through the origin. Then consumer and producer surplus are:

$$CS = \frac{1}{2}(13.3 - 8)16 = 42.7 \quad PS = \frac{1}{2}(8 - 0)16 = 64$$

(b) Assuming the sales tax is collected from the suppliers, the tax effectively shifts the supply curve to $s(p - 1) = 2(p - 1) = -2 + 2p$. The new equilibrium is

$$\begin{aligned}40 - 3p &= -2 + 2p \\42 &= 5p \\p &= 8.4 \quad q = 14.8\end{aligned}$$

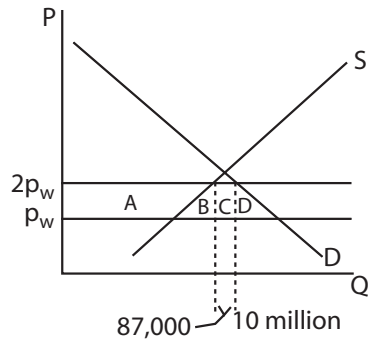
The choke price is unchanged, and the PS is the area between the net price of 7.4 and the true supply curve:

$$CS = \frac{1}{2}(13.3 - 8.4)14.8 = 36.3 \quad PS = \frac{1}{2}(7.4 - 0)14.8 = 54.8$$

The tax revenue is $1 \cdot 14.8 = 14.8$. The difference between the total surplus of $42.7 + 64 = 106.7$ before the tax and $36.3 + 54.8 + 14.8 = 105.9$ with the tax is the deadweight loss, equal to 0.8.

3. *Sugar_a.*

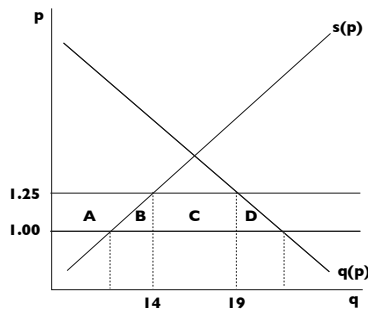
(a)



(b) The effect of the tariff is to reduce consumer surplus by $A + B + C + D$. A is an increase in producer surplus, C is the tariff revenue, and B and D are deadweight losses. The sugar industry gains a great deal from the tariff, since A is quite large, but for the country as a whole the tariff is bad. True, A and C are just transfers between the government's various constituents, but B and D are lost entirely to the U.S. economy. The country as a whole is better off with no tariff.

4. *ChinaAutoPartsTariff_a.*

(a) The Chinese auto parts market looks like:



Areas B and D are deadweight losses from the tariff. Area D is straightforward – it is the lost consumer surplus from Chinese

firms and consumers having to pay extra for auto parts. Area B is part of the extra costs that Chinese firms incur when producing an extra amount of auto parts domestically. It is the portion of those costs that are greater than the costs in the rest of the world. Therefore, these costs are a waste of China's resources. With perfectly competitive markets, these resources could be put to work in other industries within China.

- (b) The tariff is 25%, so the price in China is \$1.25. Chinese demand is $q(1.25) = 40.25 - 17 \cdot 1.25 = 19$. Since imports are 5, Chinese supply must be 14.
- (c) The current price/quantity point for supply is (1.25,14). If China dropped the tariff, the price would fall to \$1, a 20% decrease. This would cause a 24% decrease in Chinese supply according to the elasticity estimate. Thus, the new Chinese supply would be 10.64. The change in Chinese producer surplus would be area A , which is composed of a rectangle showing the fall in price on the 10.64 units that are produced no matter and a triangle that represents the lost producer surplus on the units that were produced above the world price: $10.64 * 0.25 + 0.5 * 0.25 * (14 - 10.64) = 3.08$.