

Exercise 1

1. You are considering the number of hamburgers that you plan to order. Based on the following table, complete the table and answer the following questions.
 - a. How many units of hamburgers should you order? Why?
 - b. Suppose you decide to order 2 hamburgers. Is this underallocation or overallocation? Explain.
How much is your deadweight loss?
 - c. Suppose you decide to order 5 hamburgers. Is this underallocation or overallocation? Explain.
How much is your deadweight loss?

Quantity	Total Benefit	Marginal Benefit	Total Cost	Marginal Cost	Total Net Benefit
1 st	80	80	20	20	60
2 nd	140	60	40	20	100
3 rd	180	40	60	20	120
4 th	200	20	80	20	120
5 th	200	0	100	20	100

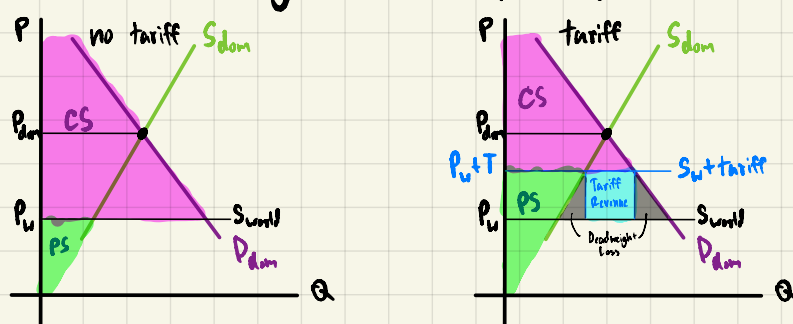
2. With diagrams, explain the differences between tariff and quota. Also, explain the impact on domestic stakeholders (consumers, producers, and government), i.e., who is better off and who is worse off? Why?
3. Consider an exporting country. Analyze welfare effect on all stakeholders when its government impose "Export Tax", i.e., per-unit tax imposed on the exported good. Draw a diagram(s) and provide complete analysis on who gain(s) and who lose(s).
4. A "small", open economy is engaging in international trade. Its domestic demand curve is given by $P = 100 - Q$ and its domestic supply curve is given by $P = Q$. The world price of the good is 20\$. Answer the following questions.
 - a. What does it mean for a country to be "small"? What implication of being "small" has on the world supply curve?
 - b. Is this economy either an exporting or important country? Why? How many units of the goods is the country is currently importing or exporting?
 - c. Now suppose the government decides to intervene. If the country is importing, the government will impose import tariff of 10\$ per unit. If the country is exporting, the government will impose export subsidy of 10\$ per unit. Calculate
 - i. Domestic consumer and producer surplus after the intervention
 - ii. Either subsidy cost or tariff revenue
 - iii. Deadweight loss from the intervention.

Question I

- a) We should order 4 hamburgers to maximize utility because the 4th hamburger satisfies the maximizing utility condition, $MC = MR$.
- b) It is underallocated when ordering just for 2 burgers since this does not satisfy the optimal condition yet. The amount of deadweight is 20 from the difference between total benefit of ordering 4 hamburgers and just 2 burgers.
- c) It is overallocated to order 5 hamburgers because the 5th burger does not give marginal benefits anymore. Therefore, the deadweight loss is counted for 20, the difference between ordering 5 burgers and the optimum amount, which is 4 hamburgers.

Question II

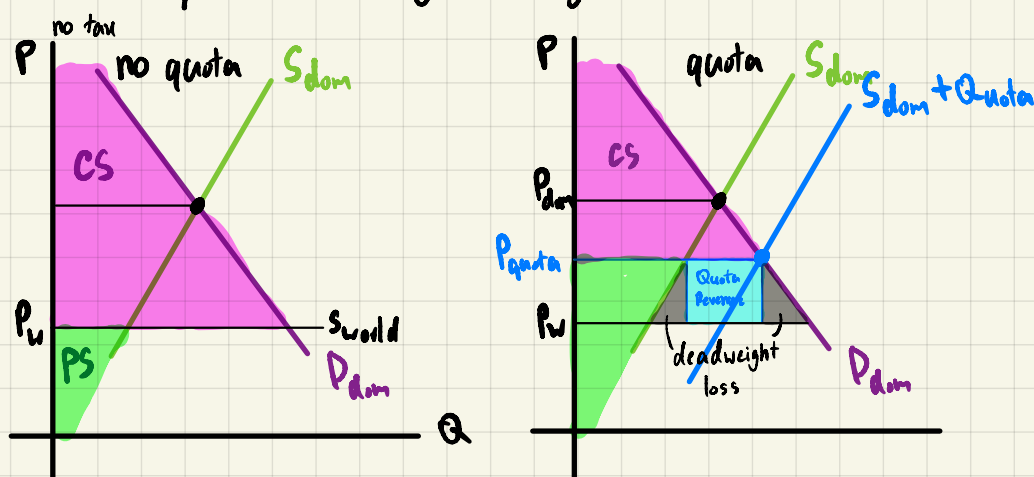
Tariff: imposing tax on imported goods $\rightarrow$ Price increases to $P_u + t$.



Imposing tariff makes society as a whole worse-off because it creates deadweight loss. However, it makes domestic producers better-off because domestic producers can sell more. Producer surplus is extended. Thus, it gives the government a tariff revenue while domestic consumers are worse-off because they must pay a higher price and consumer surplus decreases.

Quota: setting limit of imported goods. $\rightarrow Q_s$ shifts to $S_{dom} + Q_{quota}$

The importers must have 'licences' issued by the government to buy goods at P_w and sell at P_{quota} . The margin belongs to the license owner.

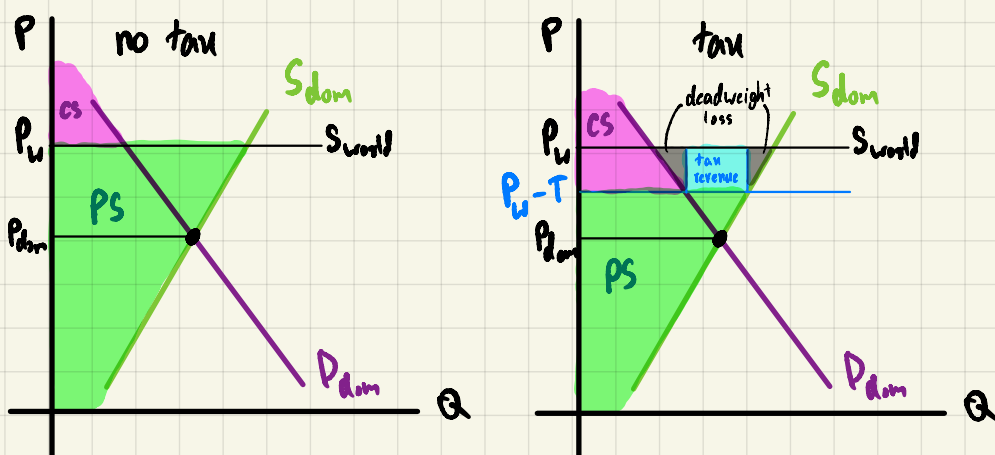


Quota, like tariff, makes society worse-off because it creates deadweight loss.

Also, It makes domestic producers better-off because domestic producers can sell more, increasing producer surplus, while domestic consumer are better-off since they must pay higher price, decreasing consumer surplus. However, quota is different from tariff since quota still let market mechanism run while tariff is just a set price and the margin between P_w and P_{quota} belongs to the license owners, which could be beneficial if the license owners are domestic firm, while tariff belongs to the government.

Question III

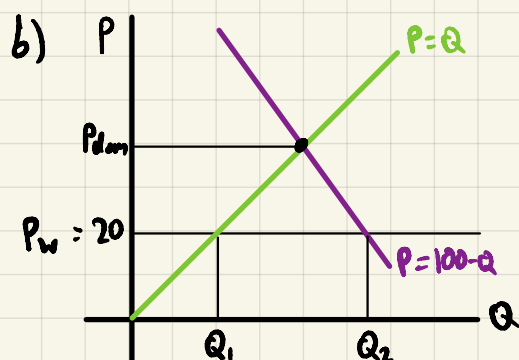
Export tax: tax on export goods $\rightarrow P_w$ decreases to $P_w - T$



Export tax, as a whole, makes society worse-off because there is deadweight loss. However, domestic consumers are better-off because they can buy goods at lower price. Consume surplus increases. Also, the government are better-off because this creates tax revenue while producers are worse-off since they can sell at the lower price and producer surplus decreases.

Question IV

a) The phrase 'small country' implies that anything this country does, buying or selling goods, does not affect the global price and supply curve at all. This means a small country is not a powerful country, neither control the global supply nor price after all.



$$\begin{aligned}
 P_{dom}: \quad S_{dom} &= D_{dom} \\
 Q &= 100 - Q \\
 2Q &= 100 \\
 Q^* &= 50 \\
 P^* &= 50
 \end{aligned}$$

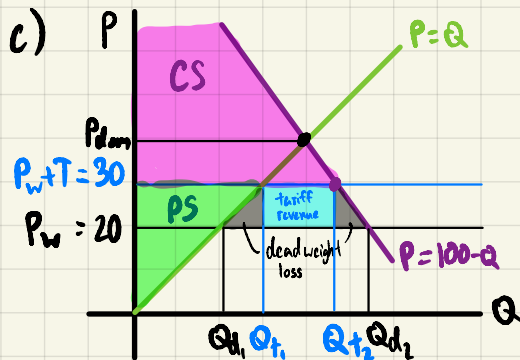
$\therefore$ Since $P^* > P_w$,
this country is not
good at producing
goods. Therefore,

This country is importing country.

They must import

$$M = Q_2 - Q_1 = 80 - 20 = 60 \text{ units.}$$

$$Q_2: 20 = 100 - Q \quad Q_1: Q_1 = 20 \\ Q_1 = 80$$



(i) Consumer Surplus:

$$\text{purple area} = \frac{1}{2} \times (100 - 30) \times Q_{t_2}$$

$$Q_{t_2}: 100 - Q = 30 \\ Q = 70$$

$$\text{purple area} = \frac{1}{2} \times 70 \times 70 \\ = 2,450 \text{ £}$$

Producer Surplus:

$$\text{green area} = \frac{1}{2} \times 30 \times Q_t$$

$$Q_t: P = 30 \therefore Q_t = 30 \quad \therefore \text{green area} = \frac{1}{2} \times 30 \times 30 = 450 \text{ £}$$

(ii) No subsidy revenue. There is tariff revenue.

Tariff Revenue:

$$\begin{aligned} \text{blue area} &= 10 \times (Q_{t_2} - Q_{t_1}) \\ &= 10 \times (70 - 30) \\ &= 400 \text{ £} \end{aligned}$$

(iii) Deadweight Loss

$$\begin{aligned} \text{black area} &= \left(\frac{1}{2} \times 10 \times (Q_{t_1} - Q_{d_1}) \right) + \left(\frac{1}{2} \times 10 \times (Q_{d_2} - Q_{t_2}) \right) \\ &= 5 (Q_{t_1} - Q_{d_1} + Q_{d_2} - Q_{t_2}) \end{aligned}$$

$$Q_{d_1}: Q_{d_1} = 20, \quad Q_{d_2}: 20 = 100 - Q \\ Q_{d_2} = 80$$

$$\begin{aligned} \text{black area} &= 5(30 - 20 + 80 - 70) \\ &= 100 \text{ £} \end{aligned}$$