

MICROECONOMICS I - Problem Set No.3

0. Please write your first name, last name, and group in **CAPITAL LETTERS**. You are required to hand in **ONLY 5 EXERCISES**. If you hand in more than 5 exercises, only the first 5 will be corrected and graded. However, you are *strongly* suggested to practice by solving all of them.

1. In the market for history books, there are 50 sellers. Each of them has an individual supply curve equal to: $Q = P - 1$. In the same market, there are 100 consumers. Each of them has an individual demand curve equal to: $Q = 4 - P$.

- (a) What are the equilibrium price and quantity in this market? In equilibrium, which quantity is sold by a single firm? Which quantity is bought by a single consumer?
- (b) Now, assume that the government wants to buy a certain quantity of history books, in order to bring the price to 3.5 and help sellers. How many books must it buy in order to reach this goal?

2. The market for Vespa scooters in China is represented by the following demand and supply curves: $Q_d = 10,000 - 5P$, $Q_s = -5,000 + 20P$.

- (a) What are the equilibrium price and quantity?
- (b) Assume that the supply curve shifts to: $Q_s = -2,500 + 20P$. What are the new equilibrium price and quantity? Calculate the elasticity of demand when moving from the old to the new equilibrium.
- (c) Considering the old equilibrium (point *a*), what happens in this market if the government decides to introduce a price floor equal to 700? Is there any excess demand or supply? By what amount?
- (d) Find the deadweight loss of the price floor, both graphically and numerically.

3. Countries A and B produce goods X and Y. Labor is the only factor of production. The following table displays the quantities of the two goods that can be produced with one hour of work in the two countries.

	X	Y
A	25	37.5
B	12.5	20

- (a) Find the opportunity costs of the two goods in each country.
- (b) Are there gains from trade? If yes, which country should specialize in the production of good X?

4. Countries A and B produce goods X and Y. Labor is the only factor of production. The following table displays the number of working hours required to produce a single unit of each good in the two countries.

	X	Y
A	20 hours	36 hours
B	15 hours	27 hours

- (a) Find the opportunity costs of the two goods in each country.
- (b) Are there gains from trade? If yes, which country should specialize in the production of good X?

5. How do each of the following events affect the market for frozen yogurt in the US? For each event, show which curve has shifted and the resulting change in the equilibrium price and quantity.

- (a) The price of ice cream falls.
- (b) The economy begins to expand rapidly and people enjoy higher incomes.
- (c) Frozen yogurt workers successfully negotiate for higher pension benefits.
- (d) Events *a* and *c* take place at the same time.

6. Spain and Germany can both use 90,000 working hours in a year to produce two goods: wine and clothes. The following table displays the number of working hours required to produce a single unit of each good in the two countries.

	Wine	Clothes
Spain	80 hours	90 hours
Germany	120 hours	100 hours

- (a) Which country has a comparative advantage in the production of wine?
 (b) Assume that Spain produces 562.5 units of wine and 500 units of clothes, while Germany produces 450 units of wine and 360 units of clothes. Find the total amount of the two goods that it is produced when the two countries *completely* specialize according to their comparative advantages. Compare this amount with the allocation mentioned above.

7. The demand and supply lines for new apartments in Getafe are given by:

$$Q_d = 20,000 - 3P$$

$$Q_s = 2P - 10,000.$$

- (a) What are the equilibrium price and quantity? Draw a graph of market equilibrium.
 (b) Find the price elasticity of both demand and supply at the equilibrium point.
 (c) Assume that a new tax of 1,000 euros per unit is established. How would this policy affect the market equilibrium? How is the tax burden split between buyers and sellers?
 (d) Find the deadweight loss of this tax, both graphically and numerically.

8. The demand and supply lines for snooker tables in Madrid are given by:

$$Q_d = 8,000 - 12P$$

$$Q_s = 8P - 2,000.$$

- (a) What are the equilibrium price and quantity? Draw a graph of market equilibrium.
 (b) Assume that a new medical study shows that playing snooker improves mental capabilities: How does this event affect demand or supply? Assume also that the price of wood (an important input to build snooker tables) increases: How does this event affect demand or supply? Show graphically these two events and explain the direction of their *joint* effect on the initial equilibrium.
 (c) Considering the equilibrium in point *a*, what happens in this market if the government decides to introduce a price ceiling equal to 350? Is there any excess demand or supply? By what amount?
 (d) Find the elasticity of supply from the old equilibrium to the post-ceiling situation.
 (e) Find the deadweight loss of the price ceiling, both graphically and numerically.

9. The demand and supply lines for baseball memorabilia in Boston are given by:

$$Q_d = 225 - 5P$$

$$Q_s = 10P - 25.$$

- (a) What are the equilibrium price and quantity? Draw a graph of market equilibrium.
 (b) What happens in this market if the government decides to give a subsidy equal to 5 to the sellers of baseball memorabilia?
 (c) Is there any deadweight loss from the subsidy? By what amount?

10. As a consequence of a positive externality in production:

- (a) the government should subsidize consumption;
 (b) the market outcome is lower than the social optimum;
 (c) the government should tax production;
 (d) the market outcome is greater than the social optimum.

Explain which answer is correct and why (more than one may be right).