Introductory Economics

Introdução à Economia

Problems

2021/2022

3rd Quarter (P3)

1. Markets, efficiency and the role of the Government
1. Mercados, eficiência e papel do Estado

Margarida Catalão Lopes (mcatalao@tecnico.ulisboa.pt)
Inês Carrilho Nunes (ines.c.nunes@tecnico.ulisboa.pt)

1.1. The table represents market demand Q for a good at different prices P. The firm's unit cost of production is €60. (Adapted from CORE, The Economy)

Q	100	200	300	400	500	600	700	800	900	1,000
P	€270	€240	€210	€180	€150	€120	€90	€60	€30	€0

     a. What is the profit-maximizing output?
     b. The firm will make a loss at all outputs of 800 and above. True or false?

1.2. Figure 1 illustrates two demand curves, D and D'. Based on this graph, which of the following are correct? (Adapted from CORE, The Economy)
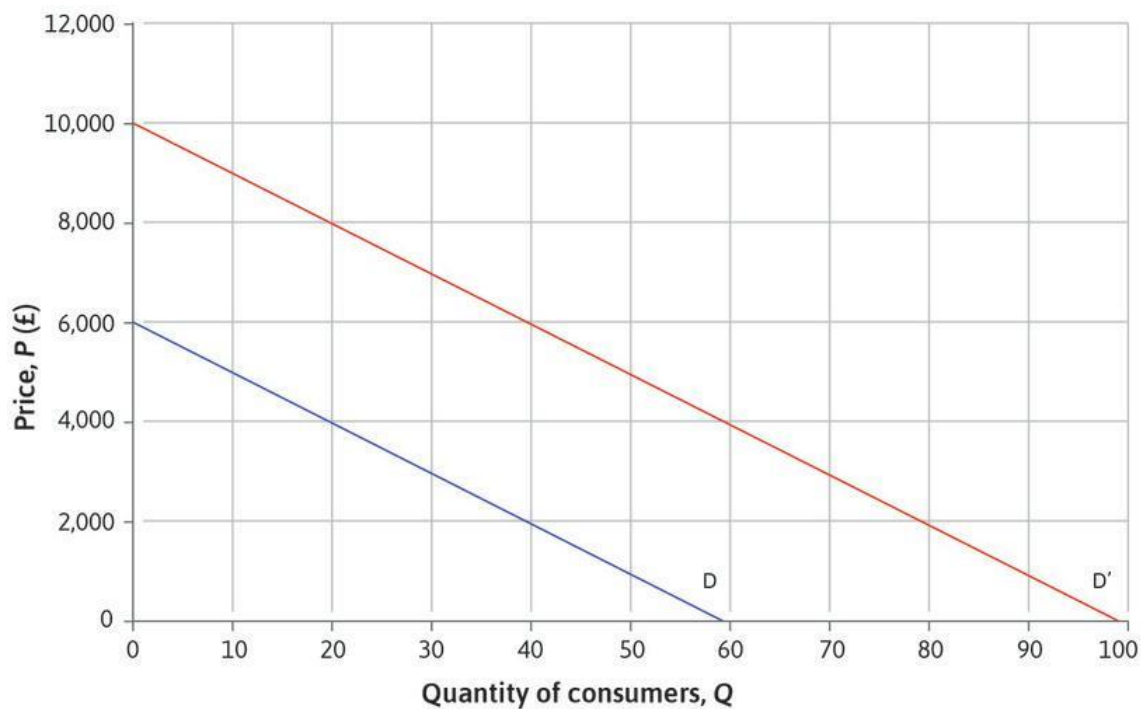
Figure 1

     a. On demand curve D, when the price is £5,000, the firm can sell 15 units of the product.
     b. On demand curve D', the firm can sell 70 units at a price of £3,000.
     c. At price £1,000, the firm can sell 40 more units of the product on D' than on D.
   d. With an output of 30 units, the firm can charge £2,000 more on D' than on D.

1.3. Figure 2 shows the demand and the supply curves for a book. The curves intersect at $(Q^*, P^*) = (24,8)$. Which of the following is correct? (Adapted from CORE, The Economy)
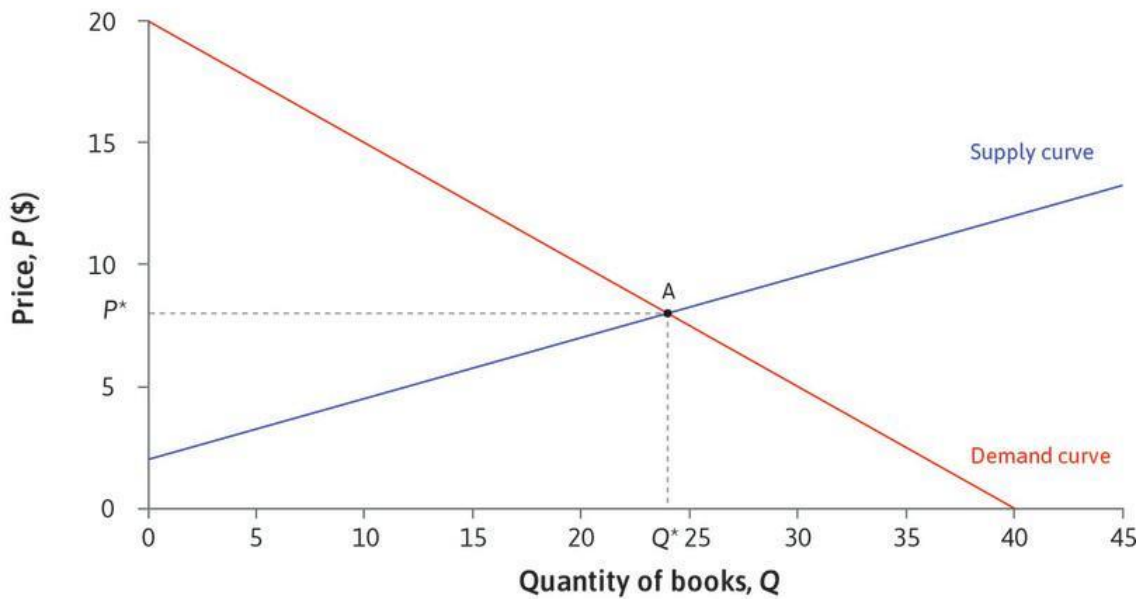
Figure 2

a. At price $10, there is an excess demand for the textbook.
b. At $8, some of the sellers have an incentive to increase their selling price to $9.
c. At $8, the market clears.
d. 40 books will be sold in total.

1.4. Figure 3 shows the equilibrium of the bread market to be 5,000 loaves per day at price €2. A year later, we find that the market equilibrium price has fallen to €1.50. What can we conclude? (Adapted from CORE, The Economy)
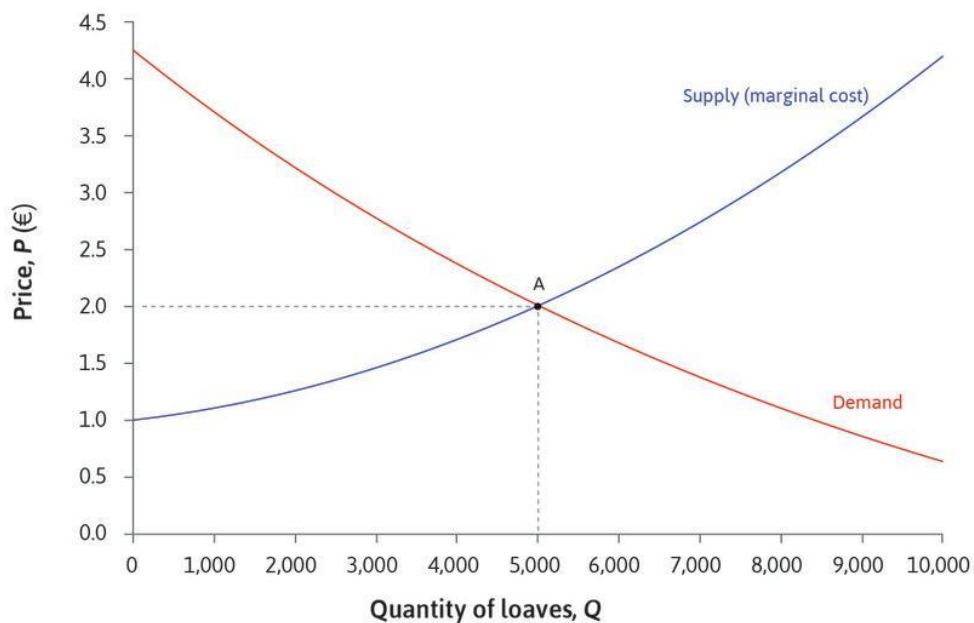
Figure 3

a. The fall in the price must have been caused by a downward shift in the demand curve.
b. The fall in the price must have been caused by a downward shift in the supply curve.
c. The fall in price could have been caused by a shift in either curve.
d. A year later, at a price of €1.50, there will be an excess demand for bread.

1.5. Give examples of negative and positive externalities.

1.6. A factory is situated next to a dormitory for nurses who work night shifts. The factory produces 120 humanoid robots a day. The production process is rather noisy, and the nurses often complain that their sleep is disturbed. Based on this information, which of the following statements is correct? (Adapted from CORE, The Economy)

a. The marginal private cost is the factory's total cost of producing 120 robots a day.
b. The marginal social cost is the noise cost incurred by the nurses from production of an additional robot.
c. The marginal external cost is the cost to the factory, plus the noise cost incurred by the nurses, when an additional robot is produced.
d. The total external cost is the total costs per day imposed on the nurses by the factory's production.

1.7. Figure 4 depicts the MPC and MSC of the robot factory production in the previous question. The robot market is competitive, and the market price is $340. Currently, the factory is producing an output of $Q = 120$, but $Q = 80$ would be Pareto efficient. Which of the statements is correct? (Adapted from CORE, The Economy)
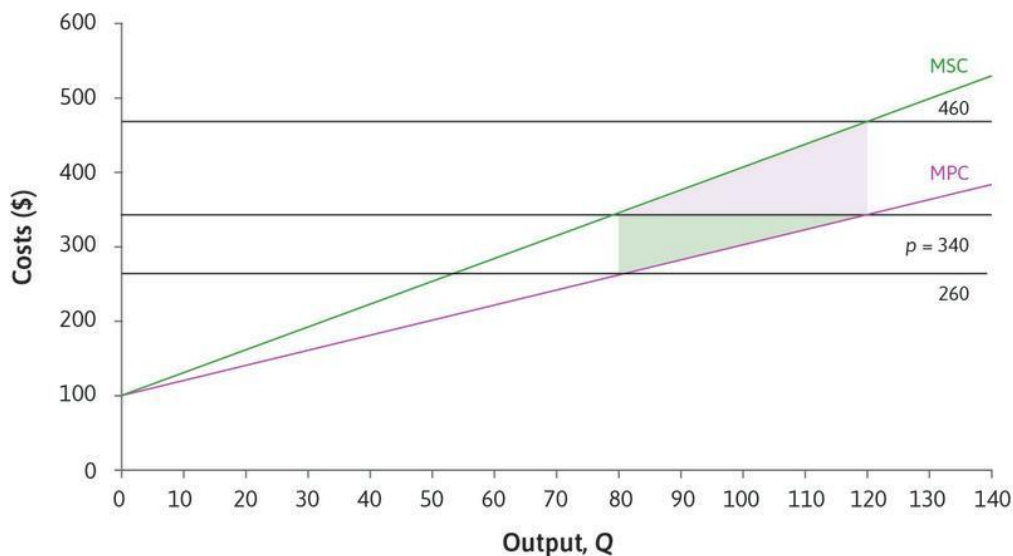

Figure 4

a. To reduce output to $Q = 80$, the factory's minimum acceptable payment would be $1,600.
b. The maximum that the nurses are willing to pay to induce the factory to reduce the output to $Q = 80$ is $2,400.
c. The factory would not reduce its output to $Q = 80$ unless it received at least $4,000.
d. The net social gain from the output reduction to $Q = 80$ depends on the amount paid by the nurses to the factory.

1.8. Imagine a beekeeper, who produces honey and sells it at a constant price per kilogram. (Adapted from CORE, The Economy)

a. Draw a diagram with the quantity of honey on the horizontal axis, showing the marginal cost of honey production as an upward-sloping line, and the price of honey as a horizontal line. Show the amount of honey that the profit-maximizing beekeeper will produce.
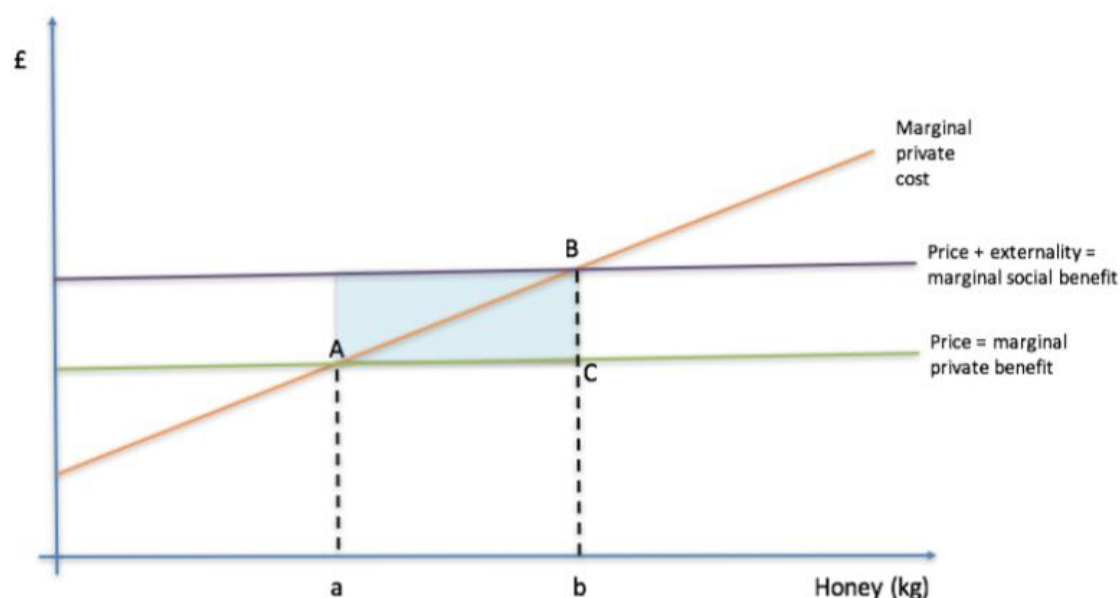
b. For the beekeeper, the marginal private benefit of producing a kilo of honey is equal to the price. But since the bees benefit a neighboring farmer, by helping to pollinate her crops, honey production has a positive external effect. Draw a line on your diagram to represent the marginal social benefit of honey production. Show the quantity of honey that would be Pareto efficient. How does it compare with the quantity chosen by the beekeeper?
c. Explain how the farmer and beekeeper could both be made better off through bargaining.

1.9. Explain what is meant by a good being "excludable". Explain what is meant by a good being "rival". Is a sushi box excludable? Is it rival? (Adapted from Mankiw, Principles of Economics)

1.10. Define and give an example of a public good. Can the private market provide this good on its own? Explain. (Adapted from Mankiw, Principles of Economics)

1.11. Define and give an example of a common resource. Without government intervention, will people use this good too much or too little? Why? (Adapted from Mankiw, Principles of Economics)

1.12. For each of the following goods or bads, decide whether they have rivalry and whether they are excludable, and explain your answer. If you think the answer depends on factors not specified here, explain how. (Adapted from CORE, The Economy)

    a. A free public lecture held at a university lecture theatre.
    b. Noise produced by aircraft around an international airport.
    c. A public park.
    d. A forest used by local people to collect firewood.
    e. Seats in a theatre to watch a musical.
    f. Bicycles available to the public to hire to travel around a city.

1.13. Which of the following statements is correct? (Adapted from CORE, The Economy)

    a. Some public goods are rival.
    b. A good cannot be rival and non-excludable.
    c. If a good is non-rival, then the cost of an additional person consuming it is zero.