

**LISBOA
SCHOOL OF
ECONOMICS &
MANAGEMENT**



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UNIVERSIDADE
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INSTITUTO SUPERIOR DE ECONOMIA E GESTÃO

ECONOMICS I

Exercise Booklet

2021-22

Week 1

PPFs and opportunity costs (ch. 2)

Classroom exercises: 1.1, 1.2 and 1.3 (ch. 2)

Home exercises: 1.4 to 1.12 (ch. 1) & 1.13 to 1.15 (ch. 2)

Classroom Exercises

Exercise 1.1 (EXERC 2008-09, n. 1)

At Tignonovo Printers in a typical 40-hour week one can print two types of publications, which require different amounts of work. Type A publications require eight hours per thousand copies, whereas type B publications require one hour of work per thousand copies. Therefore in a week one can produce the following amounts of publications (number of publications are in thousands throughout):

Type A	0	1	2	3	4	5
Type B	40	32	24	16	8	0

- Draw the production possibility frontier (PPF).
- Suppose Tignonovo Printers are printing 3 (thousands) type A publications and 16 type B publications a week. They now receive an additional order for 8 type B publications. Will they be able to accept this order while keeping production of type A publications unchanged? Represent the situation on the diagram you drew in part a).
- Would the firm be able to accept the new order if they had been producing at point (3,8)? Represent the situation on the diagram.
- What is the opportunity cost of producing an additional thousand type A publications when the firm are efficiently producing 8 type B publications? And if they were efficiently producing 24 type B publications?
- Write down the equation of the PPF. Check that the opportunity cost of an additional type A publication equals $-dB/dA$, which is the slope of the line.
- Suppose that after installing a new machine it became possible to reduce by half the time required to print type B publications. Draw the new PPF and find its equation.

Now suppose the production possibility frontier is as shown in the table below

Type A	0	1	2	3	4	5	6
Type B	36	35	32	27	20	11	0

- Draw the new production possibility frontier.
- Find the opportunity cost of producing another thousand type A publications at points (0,36) and (3,27). How do you interpret the fact that the opportunity cost changes?
- The figures in the table can be generated by the function $B = 36 - A^2$. Check that the slope, which is $-dB/dA$, at (3,27) is different from the opportunity cost you found in part h). How do you explain the difference? (Hint: see how you compute the slope at different points).

Exercise 1.2 (textbook 4th edition, CYU 2-1, 2, p. 39)

In Italy, an automobile can be produced by 8 workers in one day and a washing machine by 3 workers in one day. In the United States, an automobile can be produced by 6 workers in one day, and a washing machine by 2 workers in one day.

- a) Which country has an absolute advantage in the production of automobiles? In washing machines?
- b) Which country has a comparative advantage in the production of washing machines? In automobiles?
- c) What pattern of specialization results in the greatest gains from trade between the two countries?

Exercise 1.3 (Repeat Exam, 2007-08)

Countries *A* and *B* produce goods *X* and *Y* only. Fully using their only resource, country *A* can produce, each month, 30 tons of *Y* and no *X*, or 50 tons of *X* and no *Y*, or any combination in between. Whereas country *B*, each month, can produce 40 tons of *Y* and no *X*, or 30 tons of *X* and no *Y*, or any combination in between.

- a) Assume that all production possibility frontiers (PPF) are straight lines. Draw one diagram showing the monthly production possibility frontier for country *A* and another for country *B*. What do the PPFs mean?
- b) Which pattern of comparative advantages is there between the two countries? Explain.
- c) In the meantime country *B* discover a new technique for making good *X* that doubles the quantity of *X* they can produce each month. Draw the new monthly production possibility frontier for country *B* together with the old one. Has the pattern of comparative advantage changed? Explain.

Home Exercises:

Exercise 1.4 (EM.2 / In-term test 31/3/2008)

Which of the following well illustrates the concept of opportunity cost?

- a) John misses the opportunity to visit his friend Gabriel in Sintra in order to go to the beach;
- b) Joana revises for her Molecular Biology exam, and forgoes a day's wage at a firm she works for;
- c) Mr Silvestre repairs the roof of his house in his day off rather than going fishing with his friends as he uses to;
- d) All of the above.

Exercise 1.5 (EM.2 / In-term test 08/11/2010)

It is Susan's little brother's birthday, and there is chocolate cake. Susan is pondering how many slices she should eat, as she is concerned with her waistline, and each additional slice brings in 135 more calories. Her thoughts involve:

- a) marginal analysis.
- b) the notion of scarcity.
- c) the notion of equilibrium.
- d) the notion of equity.

Exercise 1.6 (EM.3 / In-term test 31/10/2006)

In microeconomic analysis equity means:

- a) An efficient allocation of resources;
- b) An egalitarian distribution of resources;
- c) A fair distribution of resources according to everyone's actual needs;
- d) An allocation of resources according to individual's desires.

Exercise 1.7 (EM.3 / In-term test, version B 27/28-10-2006)

A market failure will exist if:

- a) The price of essential goods, such as petrol, are abnormally high;
- b) Some agents' actions have external effects that are not adequately priced by the market;
- c) There are mutually beneficial exchanges;
- d) Todas as situações descritas ocorrem simultaneamente.

Exercise 1.8 (EM.1 / In-term test 12/11/2007)

A trade-off between equity and efficiency may occur because:

- a) An efficient allocation of resources may give rise to an outcome that most people find unfair;
- b) A fair allocation of resources may give rise to inefficiency.
- c) To achieve equity some people may be made worse-off;
- d) Of all of the above.

Exercise 1.9 (EM.2 / In-term test 12/11/2007)

Suppose a friend of yours offers you a ticket to a rock concert tonight. You are ecstatic and accept the invitation. However to attend the concert you will spend five hours (attending the concert plus travel time) and €15 for travel. Had you decided not to go to the concert you would use those five hours to work from home on your computer for a firm and would earn €8 per hour. What is the money cost of your going to the concert?

- a) There is no money cost, for the the ticket is free (a gift from a friend);
- b) €15;
- c) €40;
- d) €55;

Exercise 1.10 (EM.1 / In-term test 26/10/2009 v.A)

Economists build economic models to

- a) Have a pretext to use mathematical tools;
- b) Simplify reality and highlight what is more important for its understanding.
- c) Describe how reality should be instead of how it actually is;
- d) Describe reality as perfectly as possible, incorporating in the model all the features of reality's multiple complexity.

Exercise 1.11 (EM.4 / In-term test 26/10/2009 v.A)

Suppose granny Maria tells his grandson: “I’ve reached this old age without much travelling... because I’m afraid of flying. But look, some people say everything you do has a cost. But if you do nothing, there is no cost, and that thought has always brought me consolation”. This view shows that granny Maria fails to understand

- a) Scarcity in the economy;
- b) Efficiency in the economy;
- c) Opportunity cost in the economy;
- d) Marginal reasoning in the economy.

Exercise 1.12 (EM1/ In-term test 29.10.2009, version B)

An economy

- a) Is equitable only if it is efficient;
- b) Cannot be equitable and efficient at the same time;
- c) Is efficient only if it is equitable;
- d) May be efficient and inequitable.

Exercise 1.13 (Exerc. 2005/2006. 2B)

A firm can produce copy paper (*c*) and brown paper (*b*). The production possibility frontier is given by the equation below, where *c* and *b* are the quantities produced in tons:

$$c = 10 - 0.04b^2$$

- a) Draw the production possibility frontier.
- b) Find the general expression of the opportunity cost of brown paper in terms of copy paper, and calculate its value at both ends of the production possibility frontier. What can you conclude?
- c) What would happen to the production possibility frontier (PPF) if the firm hired more staff and installed more machinery and these were equally suitable for the production of both types of paper? How would the PPF equation change?
- d) Explain the relevant economic changes when the PPF equation changes to $c = 10 - 0.05b^2$.

Exercise 1.14 (In-term test 29-10-2012)

Suppose a country has a linear production possibility frontier (PPF) and can produce at most 60 units of Y and zero of X or 30 units of X and zero of Y. The PPF equation and the opportunity cost of X in terms of Y ($CO_{x,y}$) are:

- a) The PPF: $Y = 60 - 2X$; $CO_{x,y} = 0.5$.
- b) $CO_{x,y} = 0.5$ but the information given is insufficient to determine the PPF equation.
- c) A FPP: $Y = 60 - 2X$; $CO_{x,y} = 2$.
- d) FPP: $Y = 30 - 0.5X$; $CO_{x,y} = 2$.

Exercise 1.15 (Exam 14-1-2013)

Two countries, *A* and *B*, use labour only to produce goods *X* and *Y*. The table below shows the number of hours of labour each country requires to produce one unit of each of the goods.

	Country <i>A</i>	Country <i>B</i>
1 unit of <i>X</i>	5	4
1 unit of <i>Y</i>	7	5

The table shows that:

- a) Country *B* has absolute and comparative advantages in the production of good *X*.
- b) Country *B* has absolute advantages in the production of both goods.
- c) Country *A* has an absolute advantage in the production of good *X* and a comparative advantage in the production of good *Y*.
- d) None of the countries has absolute advantages in the production on either good, but country *B* has a comparative advantage in the production of good *X*.

Note: There are more home exercises on chapter 2 on Week 2 booklet.