

## Problem set 2

ECON-A2200 Principles of Economics II

**Deadline:** Wednesday November 17 at 23:59

**Instructions:** Return your answers in a **single pdf-file through MyCourses** (*lastname\_firstname\_PII\_PS2.pdf*). Make sure to include your name and your student number in your answers file. You may draw the graphs by hand or with any software (excel, power point, matlab, word,...). In whichever way you draw them, remember always to label the axes, and any point and line or curve that you draw. Add some description/explanation. If solutions are handwritten, make sure that your handwriting is easy enough to read, the picture is of good quality, the pages are labelled, in the right order and orientation.

1. Consider a landowner who owns a land parcel with a total area of 1000 m<sup>2</sup>. The rent per square meter of land is equal to 20 €/year.

- What is the annual total rent that the landowner receives?
- Assume now that the landowner receives the rental payment at the end of each year from now to eternity. If the discount rate is equal to 4% (0.04), what is the value of this land parcel?
- Now a property tax on land is introduced. The property tax payment is equal to 500 €/year and the tax has to be paid each year from now to eternity. What happens to the value of the land parcel?
- Given your answer to (c), who bears the burden of the property tax on land?

2. Imagine a post-COVID world where people have parties again. Three friends, Cristina, Miri and Matti, are going home from a party. They want to get something to eat before they go home. They all have a different preference of what to get. Matti wants a burger, Cristina wants tacos and Miri wants pizza. So where should they go? Miri says that all of them should have an equal say of which place they choose, and she proposes that they have a vote. In the table below, you can see the preference orderings for each person.

<b>Miri</b>	<b>Matti</b>	<b>Cristina</b>
pizza	taco	Burger
taco	burger	Pizza
burger	pizza	Taco

- Consider pairwise majority voting. Suppose that the group first votes on tacos vs. burgers and then the winner vs. pizza. What would happen?
- How about if they first vote on tacos vs. pizza and the winner against burgers?
- How about first pizza vs. burgers and the winner against tacos?
- Let's assume that Cristina is the agenda setter, i.e. She can decide in which order the votes are taken. You can assume that Cristina knows Matti's and Miri's preferences. What do you think Cristina is going to propose as the order of the voting pairs? Explain why.

3. Suppose that April and Bob are happily selling ice cream on the beach, standing side by side, with April getting all of the customers to the left and Bob getting all of those to the right. They will remain there because this is a Nash equilibrium. But now, along comes Caitlin, a third ice cream vendor.

- Where will she stand?

- b. What will happen next? And then?
- c. Will this process ever end?
- d. Is there a Nash equilibrium?

4. In the lectures, we covered some labour market measures. Let's look at some additional numbers and at the same time introduce you to a very useful data source. Visit the Statistics Finland's website ([https://www.stat.fi/index\\_en.html](https://www.stat.fi/index_en.html)). Click Products and Services and then choose StatFin statistical database (should appear at the top of the page). Go to the online service. As you can see, there are vast amounts of data available on a variety of topics. Spend some time to click around the database and marvel the amount of data freely available. Now choose Labour market and then Labour force survey annual data. Finally, choose "Population by labour force status, sex and age, 1990-2020".

- a. Draw a time series plot of the unemployment rate of males and females in the age group 15–74 from 1990 to 2020. Attach this figure to your answer sheet. You can do this either using the tools on the webpage of you can save the data as an Excel file and use Excel to draw the figure.
- b. Stay in the same data table, but now use it to calculate the average employment, unemployment, and participation rates in 2000–2015 (for 15–74y). Attach these to your answer sheet.
- c. Compare these Finnish numbers to Slovakia and Germany found in the table below. What are the differences between the countries? After reading Unit 9 and the lecture notes, can you come up with reasons why the numbers are similar or different across these countries?

	<b>Slovakia</b>	<b>Germany</b>
Employment rate (%)	51.5	57.4
Unemployment rate (%)	13.2	5.0
Participation rate (%)	59.4	60.4