Economics 2 Professor Emmanuel Saez
Fall 2024

PROBLEM SET 2

DUE ON GRADESCOPE BY 11:59PM ON MONDAY OCTOBER 14

Student name:

Student ID:

You may work together on the problems, but your answers must be ***in your own words*** and ***handwritten***. You also must ***list the other students with whom you worked*** here:

For all questions be sure to explain your answers and to use graphs whenever asked to. Write your answers in the spaces below.

1. (1 point) Consider Alice and Jeremy. They both have the same utility of income log(c) where c is their disposable income. Suppose Alice has $10 while Jeremy has $4.

a. What is the marginal utility of income for Alice and Jeremy? Explain why they are different.

b. Suppose that Alice gives $1 to Jeremy. Does this increase or decrease their utility sum? Why?

c. How much should Alice give to Jeremy to maximize their utility sum? Why?

d. Can we conclude from this exercise that maximizing utility means that disposable incomes should be equated across individuals?

2. (1 point) Consider a household that buys two things: electricity and everything else.

a. What is the condition for the household to be maximizing its utility? Explain intuitively what this condition means.

b. Suppose that the price of electricity rises. How will the household need to modify its consumption of electricity and everything else to continue maximizing its utility?

c. Suppose the area where the household lives experiences an intense heatwave (which can be counteracted by using electric air conditioners). Compared to its consumption before the heatwave hit, how, if at all, will the household need to modify its consumption of electricity and everything else to continue maximizing its utility? [assume that prices remain constant here]

3. (2 points) Consider an industry producing a specific good (e.g. whistles) with constant marginal costs of production MC=$1 per unit (and zero fixed costs) with a demand curve D(P)=5-P.

a. Draw the supply and demand curves and find the competitive equilibrium. What is the producer surplus and what is the consumer surplus?

b. Compute the elasticities of supply and demand at the competitive equilibrium from a.

c. Suppose a $2 per unit tax is introduced that is formally paid by producers. Figure out the new equilibrium, consumer and producer prices, consumer and producer surplus, tax revenue, and deadweight loss. Who ends up paying the tax in this case? Why?

d. Suppose the production of the good generates a negative externality equal to $2 per unit produced. Figure out the equilibrium, producer surplus, consumer surplus, total external cost, and deadweight loss without a tax. Figure out the tax that could restore efficiency.

e. Suppose now that the industry becomes a monopoly. With no taxes and no externalities as in a., what is the price that the monopoly charges? What is the resulting quantity? What are the producer surplus, consumer surplus, and deadweight losses? (draw a graph to explain your answer)

f. Suppose that we now combine the monopoly from e. with the $2 per unit externality from d. Figure out the equilibrium price, quantity, consumer and producer surplus, external cost, and deadweight loss? Can we conclude from this example that it was good that the Standard Oil has a monopoly on US oil in the 1890-1910 period?

4. (1 point) Read the following recent article on the recent lawsuit the Federal government won against Google:

https://www.nytimes.com/2024/08/13/technology/google-monopoly-antitrust-justice-department.html

Berkeley students can get free access to the NYTimes, see https://guides.lib.berkeley.edu/business_news

What does the article teach you about the recent shift in US anti-trust policy from only worrying about prices consumers pay toward worrying about firms' dominance over an industry?

Write your answer clearly and concisely in 10-15 lines below.