

Econ 131
Spring 2023
Emmanuel Saez

Problem Set 1

DUE DATE: 11:59pm, Wednesday, March 1 on Gradescope

Student Name:

Student ID:

- Write or type your answers clearly and in dark ink (physical or electronic ink) so that your responses are legible
- Tag each of your answers on Gradescope so that it is clear what responses are to which questions
- **Although you may work in groups**, each student must submit individual sets of solutions. You must note the names other students that you worked with. Write their names here:

1. Inequality (13 pts)

Take a look at the new dashboard on measuring inequality in real time at <http://realtimeinequality.org>

a) Using the income inequality graph section, compute the share of disposable income going to the bottom 50%, bottom 90%, bottom 99%, bottom 99.9%, and bottom 99.99% in December 2019 (pre-covid), April 2020 (during covid), and December 2022 (most recent month). Use individual adult units in population and make sure you use the disposable income concept in income type (not the default “factor income”).

b) Using these numbers, draw the corresponding three Lorenz curves on the same chart (assume the Lorenz curve is linear in between each point you can draw). Compute the Gini coefficients for each of the 3 concepts using this Lorenz curve.

c) Discuss how inequality ranks for the three months and why? Without re-doing all the computations but just looking at the figures on the website, would you have obtained the same conclusion if you had used the “factor income” income type (i.e., income before any taxes are paid and before any transfers from the government are received)?

2. True/False Statements (12 pts)

Determine whether each statement is true, false, or uncertain and explain why. Answers with no explanation will receive no points.

- (a) If US economic growth continues, the fraction of people living in poverty in the United States (as defined by the official US poverty measure) will eventually fall to zero in coming decades. This implies that the analysis of inequality will become an obsolete topic for economists.

(b) The government should only intervene in the economy when there are market failures.

(c) Repaying the large US debt accumulated during the Great recession and the covid crisis will be a heavy burden on future generations of Americans.

(d) Suppose two individuals are out of work and receive the same means tested benefit of \$1000/month. One would be able to work while the other is not. Are they both equally deserving of support?

3. Optimization (12 points)

Paula is a Uber driver and must decide how many hours she would like to work in a week in which she is available 90 hours at most. She makes 30 USD per hour worked. Paula enjoys two things: aggregate consumption of goods, c , and hours of leisure, ℓ . Her utility is given by

$$U(c, \ell) = (c - 60)^{\frac{1}{2}} \ell^{\frac{1}{2}}$$

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The price of consumption goods is normalized to $p_c = 1$.

(a) What is Paula's budget constraint? (*1 point*)

(b) What is Paula's optimal choice of aggregate consumption, c , and hours of leisure, ℓ ? (*4 points*)

(c) In the summer, demand for Uber rides decreases. Paula has a harder time finding clients, and her wage decreases to 20 USD an hour. How does Paula re-optimize her consumption of c and ℓ ? (2 points)

(d) Are c and ℓ normal or inferior goods ? Explain why in a sentence. (2 points)

(e) What is the sign (direction) of the substitution effect and the income effect induced by the income cut on Paula's choice of c and ℓ ? If the effect is motivating Paula to increase c or ℓ , fill in the cell with the (\uparrow) symbol, if decreasing (\downarrow), if no effect (0) and if the effect is ambiguous (?). (2 points)

	c	ℓ
Substitution Effect		
Income Effect		

- (f) Which effect (income or substitution) has a larger impact on Paula's choice of ℓ , or are they the same size? In one sentence, how can you tell? (*1 point*)

Keep answer short, above this line.

4. Tax Incidence (13 points)

Consider the following model for the surfboard market in Berkeley. Suppose the aggregate demand for surfboards in Berkeley is given by $Q^D = 600 - P/3$ where P denotes the price and Q denotes the quantity of surfboards in terms of thousands of surfboards demanded. The aggregate supply for surfboards in Berkeley is given by $Q^S = P/6$.

- (a) Compute the surfboard market equilibrium. What are the equilibrium price and quantity?
- (b) Calculate the elasticity of demand ε^D and the elasticity of supply ε^S at the market equilibrium price and quantity. If a tax is imposed on surfboard purchases, do you expect consumers or producers to bear more of the tax burden?

- (c) Now suppose a tax of $t = \$60$ is imposed on each surfboard that is purchased. Compute the surfboard market equilibrium with the tax. What are the equilibrium prices and quantity? How much revenue does the government collect?
- (d) Compute and graphically depict deadweight loss due to the tax.

- (e) What is the economic incidence of the tax (calculate who bears the burden)? Very briefly explain the intuition for the key factors that determine the incidence.

Now suppose that consumers are inattentive to the tax and demand is given by

$$Q^D = 600 - (P + \theta t)/3$$

where $\theta = 1/2$. Again, suppose that a tax of $t = \$60$ is imposed on each surfboard that is purchased.

- (f) What are the new equilibrium prices and quantity? Compute and graphically depict deadweight loss arising due to the tax. How does your answer compare to your answer from part (c)? Explain.