Econ 131
Spring 2022
Emmanuel Saez

Problem Set 1

DUE DATE: 11:59pm, Wednesday, March 2 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

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

a) Using the most recent data posted (December 2021 for income and 4th quarter of 2021 for wealth), figure out the shares of total income (or wealth) going to the bottom 50%, bottom 90%, bottom 99%, bottom 99.9%, and bottom 99.99% for 3 concepts: (1) factor income, (2) disposable income, (3) wealth (use individual adult units and make sure you look at the most recent data point in the series).

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.

c) Discuss how inequality ranks for the three concepts. Can we conclude that taxes and cash transfers combined reduce US income inequality? Should we be worried about the level of US wealth inequality?

2. True/False Statements

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

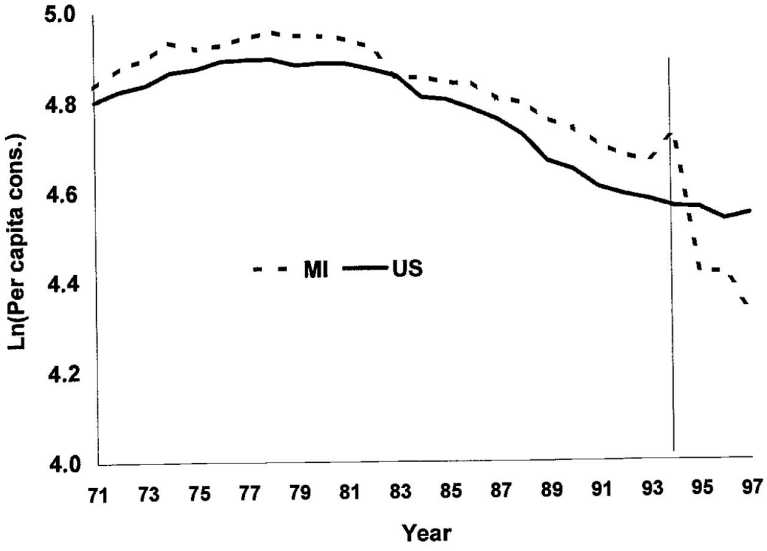
(a) The number of people in poverty is falling quickly around the world. This implies that the analysis of inequality will become an obsolete topic for economists.

(b) The United States is a land of opportunity because kids from low income family background can succeed economically.

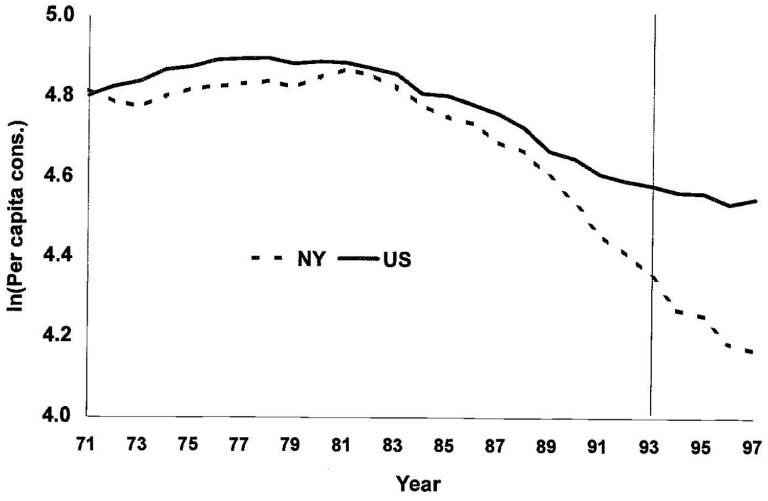
(c) Suppose two individuals are unemployed and receive the same unemployment benefits of $800/month. One is looking for work while the other is not. Are they both equally deserving of support?

(d) During the COVID crisis, income inequality in the United States increased.

(e) In 1994, Michigan raised taxes on cigarettes sold in Michigan. The graph below shows the evolution of log per capita consumption in Michigan (dashed line) and in the US overall (solid line). Based on what you know about the difference-in-difference methodology learned in class, do you find that this graph provides compelling evidence of an effect of cigarette taxation on consumption? (graph from Evans, Ringel, Stech "Tobacco Taxes and Public Policy to Discourage Smoking" *Tax Policy and the Economy, volume 13*)



(f) In 1993, New York substantially raised taxes on cigarettes sold to consumers in New York. The graph below shows the evolution of log per capita consumption in New York (dashed line) and in the US overall (solid line). Based on what you know about the difference-in-difference methodology learned in class, do you find that this graph provides compelling evidence of an effect of cigarette taxation on consumption? (graph from Evans, Ringel, Stech "Tobacco Taxes and Public Policy to Discourage Smoking" *Tax Policy and the Economy, volume 13*)



3. Optimization (12 points)

Stanislav is taking on a new job and must decide how many hours he would like to work. Assume that Stanislav gets enjoyment from two things: aggregate consumption of goods, c, and hours of leisure, ℓ. His utility (in logs) is given by

$$U(c, l) = \frac{1}{2}\ln(c - 40) + \frac{1}{2}\ln(\ell)$$

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The price of consumption goods is given by $p_c = 1$. Stanislav's wage in the new job is 20 per hour worked. Assume that Stanislav has only 80 available hours each week that he can either spend working or on leisure.

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

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

(c) Now assume that Stanislav gets a raise so that he is paid 40 an hour. What is his new optimal choice of c and ℓ? (*2 points*)

(d) What is the sign (direction) of the substitution effect and the income effect induced by the raise on Stanislav's choice of c and ℓ? If the effect is motivating Stanislav 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 (?). (*4 points*)

	c	ℓ
Substitution Effect		
Income Effect		

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

4. Tax Incidence (13 points)

Let's consider the market for cups of coffee purchased at coffee shops in Berkeley. Suppose that aggregate demand for coffee is given by $Q^D = 20000 - 2500P$, where P represents the price of a cup of coffee and Q represents the quantity of cups in a given day. Suppose aggregate supply is given by $Q^S = -10000 + 5000P$.

(a) What are the equilibrium price and quantity in the Berkeley coffee market?

(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 coffee purchases, do you expect consumers or producers to bear more of the tax burden?

(c) Now suppose a tax of $t = \$0.30$ is imposed on coffee sales. More specifically, at the time of any transaction, for each cup purchased, the consumer is taxed \$0.30 above the sticker price. Who bears the statutory incidence of the tax?

(d) Compute the new coffee equilibrium with the tax. What are the new equilibrium price and quantity? How many fewer cups of coffee are sold are a result of the tax?

(e) How much revenue does the government collect per day?

(f) How is the incidence of the \$0.30 tax borne between producers and consumers?

(g) Compute and graphically depict deadweight loss due to the tax (The graph doesn't have to be in scale, just make sure you write down the important information)