Econ 131  
Spring 2020  
Emmanuel Saez  

Problem Set 1  

DUE DATE: 11:59pm, Wednesday, February 26 on Gradescope  

Student Name:  
Student ID:  

- You must submit your solutions using this template.  
- 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. Essay

Read the following recent New York Times article about taxing the rich. Write a short essay [the essay has to fit in the page below] explaining whether the Times article accurately reported on changes in tax progressivity over recent decades (the grade is not based on whether you agree or not with the article but how well you can put the arguments in perspective based on what your learned in class).

NY Times link:

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) The fundamental reason why governments in modern economies are so large is because human are social beings.

(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

Azim is taking a new job, and must decide how many hours he’d like to work. Assume that Azim gets enjoyment from two things: consumption goods $c$ and hours of leisure $\ell$. His utility is given by $U(c, l) = c^{2/3} l^{1/3}$. The price of consumption goods is given by $p_c = 1$. Azim’s wage in the new job is 30 per hour worked. Assume that Azim has only 90 available hours each week that he can either spend working or on leisure.

(a) What is Azim’s budget constraint?

(b) What is Azim’s optimal choice of consumption goods $c$ and hours of leisure $\ell$?
(c) Now assume that the government imposes a 30% tax on wages. What is Azim’s new budget constraint?

(d) What is Azim’s new optimal choice of consumption goods $c$ and hours of leisure $\ell$?
(e) What is the sign (direction) of the substitution effect and the income effect, caused by the introduction of the tax, on Azim’s choice of $c$ and $\ell$?

<table>
<thead>
<tr>
<th>Substitution Effect</th>
<th>$c$</th>
<th>$\ell$</th>
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<tbody>
<tr>
<td>Income Effect</td>
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(f) Which effect (income or substitution) has a larger impact on Azim’s choice of $\ell$, or are they the same size? In one sentence, how can you tell?

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*Keep answers short, above this line.*
4. Tax Incidence

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 \( \varepsilon^D \) and the elasticity of supply \( \varepsilon^S \) at the market equilibrium price and quantity. If a tax is imposed on soda purchases, do you expect consumers or producers would bear more of the tax?

(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)