Econ 131
Spring 2021
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Midterm Exam

March 10

Exam Instructions:

- **Explanation should be written using pens (we recommend black or blue ink, as these often scan the best).** No pencils, except for graphs.
- **Show your work**. Credit will only be awarded on the basis of what is written on the exam.
- **Sign the academic honesty pledge**. Cheating will be dealt with harshly.

Student Name:

Student ID Number:

Affirm the academic honesty pledge below. For those writing on a non-printed copy, please just write "Academic Honesty Pledge as on exam", and sign your name.
If you do not affirm this pledge, your exam will be marked invalid.

0. ACADEMIC HONESTY PLEDGE

I confirm that I have abided by all academic honesty rules for UC Berkeley and Economics 131. I confirm that I did not see this exam before my official exam start time. I confirm that I have not shared and will not share this exam with anyone else. I confirm that I haven't copied from anybody else's exam.

Signature: _____

1. True/False/Uncertain (questions 1a-g) (14 points, 2 points per question.)

Explain your answer fully based on what was discussed in class, since all the credit is based on the explanation. Your grade depends entirely on the substance of your justification, not on whether you are correct in writing "True" or "False". Note that it is possible to answer each question for full credit with three sentences or fewer, and answers longer than ten lines long will not be graded.

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

(b) Labor supply theory and changes in incentives do a pretty good job at explaining the labor force participation of single mothers in the US over the last four decades.

(c) Suppose two individuals are unemployed and receive the same unemployment benefits of $700/month. One is looking for work while the other is not. Are they both equally deserving of support?

(d) The new COVID bill just passed by Congress sharply increases the generosity of the EITC for childless adults in 2021. According to the standard labor supply model, this is going to encourage labor supply of childless adults.

(e) Evidence of bunching around the first kink point of the EITC implies that the standard economic model of labor supply works.

(f) If the elasticity of taxable income of upper income taxpayers with respect to the net-of-tax rate is high, it is self-defeating for the government to impose a very high top marginal tax rate on the rich.

(g) The Biden-Harris campaign promised to increase the tax rate on realized capital gains from the current 20% to about 40% for high earners. As a result, we should observe a surge in capital gains realizations in 2020.

2. Tax Incidence (4 Points)

In Ba Sing Se, the daily demand for gallons of different varieties of tea is as follows:

- Jasmine Tea: $Q_D^J = 140 - 2P$
- Ginseng tea: $Q_D^G = 140 - 3P$
- White Tea: $Q_D^W = 140 - 3P$

where Q_D^X is the quantity demanded for tea X and P is the price. The supply of each tea is the same for each variety $Q_S = 20 + 2P$.

(a) The city of Ba Sing Se imposes a tax of \$2 on jasmine tea producers. What is the economic incidence of this tax on jasmine tea consumers? Note that, without the tax, the equilibrium for the jasmine tea market would be $Q^J = 80$ and $P = 30$. *(2 points)*

(b) A city official proposes eliminating the tax on jasmine tea, and instead imposing a \$2 tax on ginseng tea. Would this tax be more or less efficient (in other words, would it create less dead weight loss for the amount of revenue generated)? Why or why not (explain in one sentence)? *(1 point)*

(c) Ba Sing Se decides to create a new tax. Would it be more efficient to impose a tax of \$4 on ginseng tea than a \$2 tax on ginseng tea and a \$2 tax on white tea? Why or why not (explain in one sentence)? *(1 point)*

3. Labor Income Tax (12 Points)

In the country of Examplelandia, there have historically been no taxes. A new Parliament is elected in Examplelandia and implements the following tax reform: Every individual in the country will receive a universal basic income of \$50 annually, which will be paid for by a tax rate of 20% on pre-tax income over \$100 annually (this means the first \$100 is exempt and a tax of 20% applies only to the income in excess of \$100). Everyone who chooses to work can earn a wage of \$5 (pre-tax) per hour worked both before and after the reform.

(a) For each pre-reform labor supply (in hours) in the table below, determine the sign of the substitution effect, income effect and total effect of the reform compared to a baseline with no taxes or subsidies at all, and fill in that determination on the following table. Use $\uparrow$ to indicate if the generic effect incentivizes work, $\downarrow$ if it disincentives work, 0 is there is no effect, and ? if the effect is uncertain. *(5 points)*

Pre-reform labor supply	**Substitution effect**	**Income effect**	**Total Effect**
10			
30			
80			

(b) Ms. Exemplar lives in Examplelandia, and has the following utility function over consumption (c) and **labor** hours (l):

$$U(c, l) = 9c - l^2 + 90$$

What is her optimal labor supply before the reform in terms of an arbitrary wage w? *(2 points)*

(c) Assume that, like all her fellow citizens, Ms. Exemplar makes a pre-tax wage of 5. What is her optimal labor supply after the reform? (*2 points)*

(d) Is Ms. Exemplar better off before or after the reform? Why or why not (explain in one sentence)? *(1 point)*

(e) Assume that Ms. Exemplar moves out of Examplelandia and that everyone remaining in the country has an identical utility function expressing a taste for consumption and a distaste for labor. Their optimal labor supply given by $l^* = 15w$, where w is an arbitrary post-tax wage. They therefore work 75 hours before the reform and 60 hours after it.

(i) Will the tax revenue collected under the reform be sufficient to pay for the universal basic income program? Why or why not (explain in one sentence)? *(1 point)*

(ii) What is the minimum tax rate Parliament could impose on pre-tax incomes over $100 that will fully fund the universal basic income program? Express your answer as a percentage rounded to the nearest tenth (i.e. xx.x%). *(1 point)* [Hard]