

Econ 131
Spring 2025
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Midterm Exam

March 12

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.
- **You must submit your solutions using the exam packet provided.** If you need more room to write your answers or need to re-draw a graph use the extra pages at the end. Make sure to note it clearly and accurately if your solutions continue on a different page.
- **Do not write your solutions on pages that say “Do not write on this page”.** Answers written on these pages will not be graded.
- **When time is called, STOP** writing, immediately **CLOSE** your exam packet and hold it up until it is collected by one of the GSIs.
- **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 punished.

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: _____

- (c) 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?
- (d) Under the new Trump 2017 corporate tax reform, thanks to the minimum tax on foreign profits, US multinational corporations have no incentives to shift profits to tax havens anymore.

(e) The top income tax rate decrease of 1986-1988 in the United States was a supply-side success because it led to a huge increase in pre-tax incomes reported by the top 1%.

(f) Denmark has a very progressive tax system but can still attract top talent from abroad by offering tax discounts on highly skilled immigrants. Therefore, mobility of top talent does not threaten tax progressivity.

2. Tax Incidence (3 Points)

Let's consider the following model for the bubble tea market in Berkeley. Suppose the aggregate demand for bubble tea is given by $Q^D = 900 - 20P$, where P denotes the price and Q denotes the quantity of bubble tea demanded. The supply for bubble tea is given by $Q^S = 80P$. The original pre-tax market equilibrium is thus given by $Q^* = 720$ and $P^* = 9$.

- (a) The city of Berkeley imposes a \$2 tax on each bubble tea that is purchased. How is the incidence of the \$2 tax split between consumers and producers? (*2 Points*)

- (b) If the consumer demand changes to be $Q^D = 900 - 10P$, will the deadweight loss of the tax be larger or smaller? Why? *Keep answers succinct.* (1 point)

Hint: You do not need to do any calculations to answer this question correctly.

Part II: Labor Income Tax (10 Points)

Assume that all individuals have the same utility function over consumption and labor given by:

$$U(c, l) = c + \theta \ln(16 - l)$$

where c represents consumption, l represents hours of labor, and θ is a constant parameter that reflects an individual's distaste for labor hours. Also, $\ln(\)$ denotes the natural logarithm (this can also be denoted by $\log(\)$). Suppose the only income that individuals have is from labor income, and that they work at an hourly wage w which is taxed at rate t .

- (c) Assuming the government imposes a tax on labor income at rate t , solve for the individual's optimal labor supply as a function of w , θ , and t . (2 points)

(d) For this part (d) only, assume the following:

- There are 100 individuals in this society with the utility function given above.
- All individuals have $\theta = 24$.
- There are 50 low-wage individuals and 50 high-wage individuals. The low-wage individuals earn wage $w = 4$, while the high-wage individuals earn wage $w = 8$.

Calculate how much revenue the government will raise if it imposes a flat 25% labor income tax ($t = 0.25$) on all 100 individuals. (2 points)

- (e) The government creates a universal basic income (UBI) program to support individuals with low or zero labor income, where the UBI phases out after a certain threshold of income. The program is financed by imposing a labor tax on higher earners.

More specifically:

- The UBI program provides all individuals a lump-sum grant of \$20.
- The grant does not phase out for the first \$24 of labor income.
- After the first \$24 of labor income, the grant is phased out at a 50% rate.
- After the grant phases out entirely, labor income from that point up to \$120 is taxed at a 25% rate.
- After \$120, any additional labor income is taxed at a 50% rate.

Graph the budget constraint (*Hint: there are four brackets*). Put pre-tax income ($Z = wl$) on the x-axis and after-tax income $c = Z - T(Z)$ on the y-axis. **Label the x and y values of each kink point, and the slope of each of the four segments of the graph.** (2 points)

- (f) For each of the four brackets in your budget constraint, indicate the sign (direction) of the substitution and income effects on an individual's choice of labor supply. Also indicate the sign (direction) of the total (combined) effect of the two, if it is possible to know for certain, or indicate with a question mark if the total effect is uncertain. (2 points)

	Bracket 1	Bracket 2	Bracket 3	Bracket 4
Substitution Effect:				
Income Effect:				
Total Effect:				

- (g) A new administration is elected and they change the UBI policy:

- The grant is cut from \$20 to \$8.
- Workers are subsidized on the first \$24 of labor earnings with a new credit that pays \$0.50 per dollar of pre-tax labor income. This new credit phases out at a 50% rate after the first \$24 of income.
- All else stays the same.

Theoretically, how do you expect the change from the old UBI policy to this new policy to affect the extensive and intensive labor supply choices of individuals at and near the bottom of the income distribution? (2 points)

Give a brief explanation for each. No need for any calculations.

End of Exam

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