Econ 131

Spring 2019

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Midterm

March 13

Student Name:

Student ID:

GSI Name:

Exam Instructions

- **Closed book/notes exam.** No computer, calculator, or any electronic device allowed.

- **No phones.** Turn them off and put them in your bag.

- **Explanation should be written using pens.** 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.

- This exam contains a total of 30 points.

Do NOT open this test until instructed to do so.

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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 US poverty rate has been roughly stable in level over the last 50 years and hence there is no cause for alarm.

(b) If society cares about people with no earnings, optimal tax theory tells us that the government should provide a basic transfer for those with no earnings but this transfer should be phased-out quickly as earnings increase.

(c) If high income earners can easily avoid or evade income taxes, the top income tax rate should be low.

(d) Changes in value-added-tax rates in Europe show that consumers bear almost the full burden on these taxes.

(e) According to labor supply theory, the EITC should increase labor supply.

(f) In the basic economic model with perfect competition, the free market equilibrium with no government intervention maximizes total economic surplus and hence is the most socially desirable outcome.

(g) Goods whose demand is price inelastic should be taxed more.

2. Exercise - Labor Income Taxation (16 points, 2 points per question)

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

$$U(c, l) = c - \frac{l^2}{2}$$

where c represents consumption and l represents hours of labor. 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 τ.

(a) Write down and draw the budget constraint faced by the individual.

(b) Solve for the individual's optimal labor supply as a function of the wage w and the tax rate τ.

(c) Show that the revenue maximizing tax rate is $\tau^* = 0.5$.

(d) Suppose that the government uses all the collected revenue to give people universal basic income (ie a lump sum transfer $T > 0$ per person). How is the individual's optimal labor supply affected? Discuss the income and substitution effects, and draw their new budget constraint.

Now imagine there are two individuals in the economy: one earns a wage of $20/hour and one earns a wage of $100/hour.

(e) Solve for each individual's utility-maximizing labor supply under the revenue-maximizing tax at rate $\tau^* = 0.5$, and calculate the revenue generated by the government. What is each individual's post tax earnings if the government evenly divides tax revenue to provide universal basic income?

(f) Suppose there is an election, and the new government administration abandons universal basic income, and changes the tax schedule so that:

- There is a 100% subsidy on the first $1,000 of labor income (this means that if you earn up to $1000, the government provides you with a transfer equal to your earnings).
- All labor income above $1,000 is then taxed at rate 50%

Find each individual's new labor supply and after tax earnings.

(g) Discuss how the substitution and income effects influence their optimal labor supply relative to the previous tax scheme.

(h) Is the low wage individual better off under the tax scheme from question (f) or under the tax scheme from question (e)? Is the high wage individual better off under the tax scheme from question (f) or under the tax scheme from question (e)? Is society better off under the tax scheme from question (f) or under the tax scheme from question (e)?

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