Fall 2024 Professor Emmanuel Saez
University of California, Berkeley

ECONOMICS 2

SECOND MIDTERM EXAMINATION

INSTRUCTIONS

1. Put your name, your SID number, and your GSI's name or your section number in the blanks provided on the front of the exam. ***Please do not put your name or your GSI's name anywhere else on the exam.***

2. The exam is written on ***both sides of the page***. Be sure to answer all the questions.

3. Write all of your answers directly on the exam in the spaces provided. **Use a dark enough pen so that answers remain legible** after electronic scanning.

4. Use blank pages at the back for scratch paper NOT your own paper.

5. The exam consists of three parts. There are 201points in total. Part I counts for 7 points; Part II counts for 7 points; and Part III counts for 7 points.

6. Turn off and put away all cellphones and other electronics.

7. We collect the exams at exactly 6:30 p.m.

PLEASE DO NOT OPEN THE EXAM UNTIL INSTRUCTED TO DO SO.

Name _____

SID Number _____

GSI or Section Number _____

During the exam, I will NOT obtain help from anyone, provide help to anyone else, or use any notes or other resources. Sign below:

_____

PAGE FOR GRADING ONLY (STUDENTS SHOULD SKIP IT)

QUESTION 1: _____

QUESTION 2: _____

QUESTION 3: _____

QUESTION 4a: _____

PROBLEM 4b: _____

PROBLEM 5a: _____

PROBLEM 5b: _____

PROBLEM 5c: _____

PROBLEM 5d: _____

MULTIPLE CHOICE: _____

TOTAL: _____

PART I: PROBLEMS [14 POINTS TOTAL]

Answer all questions. Be sure to explain your answers and to draw diagrams where they are appropriate.

1. If the Consumer Price Index was 100 in March of 2021 and 108 in March of 2022, what is the inflation rate over this period? Which measure of GDP rose more over the same period, nominal GDP or real GDP, why? **[1 point]**

2. Suppose you were given a choice between receiving $A dollars 5 years from now or $B dollars 2 year from now, and suppose the nominal interest rate is i. What calculations would you need to make to compare the present value of the two options? **[1 point]**

3. When there is a negative externality associated with a good, is the socially optimal level of production and consumption of the good zero? **[1 point]**

4. Consider the market for sugar, a good that we import. Suppose that the US government decides to provide a subsidy to domestic sugar producers for each ton of sugar they produce. (For simplicity, assume that there are no positive or negative externalities associated with the production or consumption of sugar, and that the U.S. still imports sugar after the subsidy is imposed.) HINT: this is a subsidy for domestic producers and not a tariff on imports. A subsidy for producers affects the domestic supply curve.

a. What would the subsidy do to the U.S. production, consumption, and imports of sugar? Draw a graph to explain your answer. **[2 points]**

b. What will the subsidy paid to U.S. sugar producers do to the consumer surplus of U.S. consumers, the producer surplus of U.S. producers, and the total surplus in the U.S.? Draw a graph to explain your answer. **[2 points]**

5. [7 points total] Consider a competitive economy with 10 firms' owners and 90 workers. In the competitive equilibrium, each one of the 10 firm owners hires 9 workers and gets 10% of the value of production as profit. The remaining 90% of the value of production is paid as wages to workers. All firms are identical and sell the same amount. All workers are also identical and receive the same wage.

a. What is the income share for the bottom 90% in this economy? Using this information, plot the Lorenz curve that shows the fraction of income earned by the bottom X% of people where X goes from 0% to 100%. What is the Gini coefficient in this economy? (giving an approximation for the Gini to the nearest 5% based on your plot is enough) **[2 points]**

b. Suppose firm owners organize as a monopsony so that they can pay lower wages. While the hourly wage in question a. was $10, the hourly wage under monopsony is now only $5. Assuming that employment and production does not change, recompute the income share for the bottom 90%, replot the Lorenz curve, and recompute the Gini coefficient in this monopsony situation (giving an approximation for the Gini to the nearest 5% based on your plot is enough) **[2 points]** You get **1 point extra credit** if you can compute the exact Gini (harder, come back to this if you have extra time left)

c. Suppose firm owners stay competitive but now workers organize as a union and succeed in increasing their hourly wage from $10 to $11. Assuming again that employment and production do not change, compute the income share for the bottom 10%, replot the Lorenz curve, and recompute the Gini coefficient in this union situation (giving an approximation for the Gini to the nearest 5% based on your plot is enough). **[2 points]** You get **1 point extra credit** if you can compute the exact Gini (harder, come back to this if you have extra time left)

d. In b. we assumed that employment and production would not change under monopsony. What is the assumption needed on labor supply to get this result? If this assumption does not hold, what would happen to employment? You don't need to have solved b. fully to answer this one correctly. **[1 point]**

PART III: MULTIPLE CHOICE **[7 POINTS TOTAL]**

Each question is worth 1 point. Please write the letter of the ***best*** answer for each multiple choice questions below, like so:

1. E

2. F

…

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

1. Suppose a fall in the purchase price of capital causes PV(stream of future MRP_K's) to be greater than the purchase price of capital at a firm's old level of investment. As that firm increases its investment, what will change to bring those two quantities back to being equal is:
A. the MRP_K's will fall.
B. the interest rate will fall.
C. the purchase price of capital will rise.
D. all of the above.
E. none of the above

2. If a (small) country that produces two goods (that are traded internationally) becomes more productive in producing both goods, this will:
A. shift the country's CPC outward parallel to its original CPC.
B. shift the country's CPC inward parallel to its original CPC.
C. shift the country's CPC outward asymmetrically from its original CPC.
D. shift the country's CPC inward asymmetrically from its original CPC.
E. not affect the country's CPC.
F. none of the above

3. A small economy consists of 400 individuals. 80 are working; 20 are not working but are actively looking for work; and 300 are not working and not actively looking for work. The unemployment rate in this economy is:
A. 5% (calculated as 20/400).
B. 20% (calculated as 20/(20+80)).

C. 25% (calculated as 20/80).
D. 80% (calculated as (20+300)/400).
E. None of the above

4. The U.S. government is currently paying a nominal interest rate of about 4% on its debt, and expected inflation is about 3%. The real interest rate that the government is paying is therefore about:
A. −3%.
B. −2%.
C. −1%.
D. 0%
E. 1%.
F. 2%.
G. 3%.
H. 4%

5. Consider a payment of $F to be received two years from now. The interest rate in the economy for the first year will be 3%, and the interest rate in the economy for the second year will be 10%. The present value of the payment is:
A. $F.
B. $F/$1.03^2$.
C. $F/$1.10^2$.
D. $F/1.07.
E. $F/(1.03 • 1.10).
F. $F/($1.03^2$ • 1.10^2).
G. None of the above

6. If a large number of low-skilled recent immigrant workers leave the US and go back to their home countries, according to the competitive labor market model, the gap between high-skill and low-skill wages in the U.S. will:
A. rise.
B. fall.
C. stay the same.
D. rise if the supply curve of low-skilled labor is inelastic, and fall if it is elastic.
E. rise if the supply curve of low-skilled labor is elastic, and fall if it is inelastic.

7. A profit-maximizing competitive firm hires L identical workers all paid the same wage W. Which one below is true?
A. Each worker gets paid its marginal contribution to the revenue of the firm.
B. The firm gets more in value from its workers that what it pays them.
C. All workers (except the last one) get paid less than their contribution to the revenue of the firm.
D. All of the above.
E. None of the above.

SCRATCH

SCRATCH

SCRATCH

SCRATCH

SCRATCH

SCRATCH