ECON 115 - Labor Economics
Drake University, Spring 2014
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Signature: _____

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EXAMINATION 3 VERSION B
"Wage Structure, Mobility, and Discrimination"
April 16, 2014

INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators, calculators with alphabetical keyboards, computers, wireless devices and mobile phones are NOT permitted. Numerical answers, if rounded, must be correct to at least 3 significant digits. Point values for each question are noted in brackets. Maximum total points are 100.

I. Multiple choice: Please circle the one best answer to each question. [2 pts each, 16 pts total]

(1) The wage distribution in the U.S. and other countries is
a. normal.
b. positively skewed.
c. negatively skewed.
d. symmetric.

(2) Perfect inequality implies a Gini coefficient of
a. negative one.
b. zero.
c. one-half.
d. one.
e. infinity.

(3) Since 1970, the 90-10 wage ratio in the U.S. has
a. remained constant.
b. increased.
c. decreased.
d. disappeared completely.

(4) Since 1980, the fraction of private sector workers in the U.S. who are covered by union collective-bargaining agreements has
a. remained roughly constant.
b. increased sharply.
c. decreased sharply.

(5) The "superstar phenomenon" is most likely to characterize the earnings of
a. college professors.
b. carpenters.
c. violinists.
d. accountants.

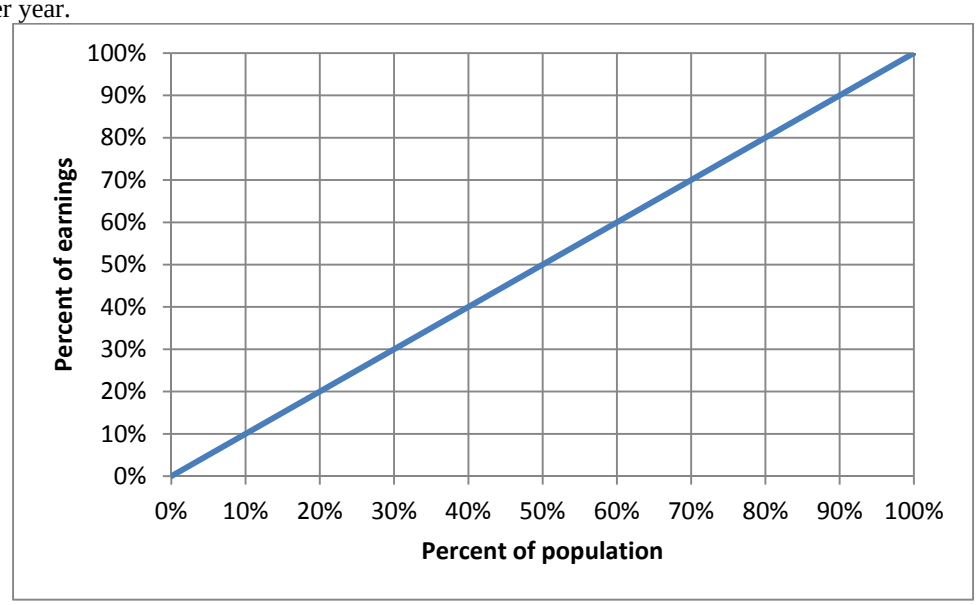
(6) A worker is less likely to move,
a. the older the worker is.
b. the more education the worker has.
c. both (a) and (b).
d. neither (a) nor (b).

(7) Negative selection of immigrants means immigrants
a. earn less in the U.S. than they earned in their home country.
b. are forced to come to the U.S. by natural disaster or civil unrest
c. earn less than native workers.
d. had lower-than-average skills in their home country.

(8) Suppose Person A and Person B form a household. Suppose Person A has a comparative advantage in the labor market and Person B has a comparative advantage in home production. Which of the following time allocations would *never* be chosen by that household?
a. Person A works part-time in the labor market and Person B does not work in the labor market.
b. Person A works part-time in the labor market and Person B also works part-time in the labor market.
c. Person A works full-time in the labor market and Person B does not work in the labor market.
d. Person A works full-time in the labor market and Person B works part-time in the labor market.

II. Problems: Please insert your answer to each question in the box provided. Circle your final answers.

(1) [Measuring inequality: 16 pts] Suppose 90% of workers earn $20,000 per year and 10% of workers earn $320,000 per year.



a. [6 pts] Carefully draw the Lorenz curve for earnings in the graph above. Circle any kink points.

b. [4 pts] Compute the Gini coefficient.

c. [2 pts] Compute the 90-50 wage gap.

d. [2 pts] Compute the 50-10 wage gap.

e. [2 pts] Compute the 90-10 wage gap.

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(2) [Joint migration decision: 6 pts] George and Laura live in Texas, but are contemplating a move to Maine. George's net present value of earnings in Texas is $1,100,000 and his net present value of earnings in Maine is $1,000,000. Laura's net present value of earnings in Texas is $100,000 and her net present value of earnings in Maine is $400,000. Each person's moving cost is $50,000.

a. Assuming George and Laura remain together, will they move to Maine? Why or why not?

b. Is George a tied mover, a tied stayer, or neither? Why?

c. Is Laura a tied mover, a tied stayer, or neither? Why?

(3) [Immigration—cohort effects: 8 pts] Suppose the 2000 census showed that new immigrants earned an average of 10 percent less than the average earnings of all native-born workers, but immigrants who had lived here 10 years earned an average of 20 percent more than all native-born workers. The 2010 census showed that new immigrants earned an average of 25 percent less than all native-born workers, but immigrants who had lived here 10 years earned about the same as all native-born workers.

a. Suppose that individual native-born workers typically enjoy a 10 percent increase in earnings over ten years (compared to the average of all native-born workers). Do immigrants enjoy slower or faster earnings growth than native-born workers? Justify your answer.

b. Forecast the percent difference in earnings in 2020 of immigrants (in comparison with native-born workers) who will have lived here 10 years at that time. Justify your answer.

(4) [Roy model: 6 pts] Country X and Country Y each have workers whose skill (S) ranges from 0 to 100. Suppose the relationship between wages and skill in Country X is given by $w_X = 150 + S$. The relationship in Country Y is given by $w_Y = 10 + 3S$. Assume that moving costs are **$20**.

a. [4 pts] For what values of S will workers in Country X want to migrate to Country Y?

b. [2 pts] Is this immigrant flow positively or negatively selected?

(5) [Oaxaca decomposition: 12 pts] Suppose that for green workers, the relationship between schooling and the hourly wage is given by $\ln(wage_G) = 1.2 + 0.1\, S_G$, while for blue workers, the relationship is $\ln(wage_B) = 1.1 + 0.08\, S_B$. On average, green workers have 12 years of schooling, while blue workers have 10 years.

a. Compute the raw log wage differential—that is, $\overline{\ln(wage_G)} - \overline{\ln(wage_B)}$.

b. Compute the log wage differential due to schooling.

c. Compute the log wage differential due to discrimination, in Oaxaca's definition.

(6) [Employer discrimination: 18 pts] Suppose a firm's production function is given by $q = 12\sqrt{E_G + E_B}$, where E_G is the number of green workers employed by the firm and E_B is the number of blue workers employed by the firm. There are no other inputs besides labor. It can be shown that green and blue workers are perfect substitutes in production and that the marginal product of labor (either type) is given by $MP_E = 6/\sqrt{E_G + E_B}$. Suppose the market wage of green workers is \$30 and the market wage of blue workers is \$10. Also assume the price of the firm's output is \$5.

a. First, suppose the firm does not discriminate. How many workers will it hire of each type? How much output does it produce? How much profit does it enjoy?

Now suppose the firm discriminates against blue workers, with discrimination coefficient d. That is, the firm perceives the cost of blue workers as being (1+d) times their actual wage.

b. If d = 0.5, how many workers will it hire of each type? How much output does it produce? How much profit does it enjoy?

c. If d= 2.5, how many workers will it hire of each type? How much output does it produce? How much profit does it enjoy?

(7) [Monopsony wage discrimination: 12 pts] A certain employer enjoys monopsony power over two groups of workers. Supply of green workers to this employer is given by $w_G = 5 + (E_G/200)$, so that marginal labor cost of green workers is given by $MLC_G = 5 + (E_G/100)$. Supply of blue workers to the same employer is given by $w_B = 1 + (E_B/100)$, so that marginal labor cost of blue workers is given by $MLC_B = 1 + (E_B/50)$. The value of marginal product of all workers is constant and equal to \$20.

a. What level of employment (E_G and E_B) will the employer choose for each group?

b. What wage (w_G and w_B) will the employer pay each group?

c. Suppose the government imposes a minimum wage of \$15 for all workers. Now what level of employment (E_G and E_B) will the employer choose for each group?

III. Critical thinking: Write a short essay answering the question below. [6 pts]

(1) [Seniority and wages] Suppose that you survey all the workers at a particular company. You collect data on their current wages and their seniority (length of time at this employer). You find that workers with greater seniority tend to earn higher wages than workers with less seniority, holding everything else (schooling, labor-market experience, etc.) constant.

a. Explain briefly the "specific human capital" explanation for this relationship.
b. Explain briefly the "matching" explanation for this relationship.
c. How could you determine which explanation is correct? What additional data on these workers would you need?

Write your answer below. Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling.

[end of exam]