

Test 2
Economics 136 – Human Resources
Winter 2005
Prof. Julian Betts

February 15, 2005

Name: _____

Student ID _____

There are 4 written problems in this exam, worth a total of 50 points. Please write neatly. If you place the answer to a question in an odd place, such as the back of the page, please indicate this clearly, for the sake of the graders.

If you use pencil, the exam cannot be regraded. If you do submit your test for regrading, you must do within the time and other guidelines listed in the syllabus.

SHOW ALL YOUR WORK!

You have 80 minutes. Good luck.

For the graders:

1. _____/11
2. _____/20
3. _____/16
4. _____/3
SUM _____/50

Note: If you think that there is a chance that you will not pick up your test in class and would like to have the option of picking up the test in a public area at the end of quarter please sign the Buckley Waiver on the next page. You are NOT required to sign this.

STUDENT CONSENT FOR RELEASE OF STUDENT INFORMATION
(Buckley Waiver)

I hereby authorize the UCSD Economics Department to return my graded final examination/research paper by placing it in a location accessible to all students in the course. I understand that the return of my examination/research paper as described above may result in disclosure of personally identifiable information, that is not public information as defined in UCSD PPM 160-2, and I hereby consent to the disclosure of such information.

Quarter _____ Course _____ Date _____

Instructor _____

Student ID# _____

Print Name _____

Signature _____

1. (11 points) You own a record company that specializes in Rap and Country music, called, Whazzup-Howdy Inc. (Go figure.)

You need one recording technician in each division (R and C). By rotating the workers through both divisions, you have determined that the addition to net revenues generated by each worker during their career with you is as follows:

Worker	Net revenues in Rap (R)	Net revenues in Country (C)
1	\$24	\$30
2	\$76	\$80

a) (7 points) Your company needs one worker in R and one in C. First, state the rule that your company should follow to maximize profits. Then, use this rule to assign the two workers to the Rap and Country divisions. If you pay each worker a total of \$20, and it costs you \$5 (total, NOT \$5 per worker) to screen the two workers to learn their productivity in each division, what are your profits?

b) (4 points) Suppose instead of spending \$5 on screening you had randomly assigned the two workers to R and C divisions. What is your expected profit in this case, assuming that you have an equal chance of assigning a given worker to R and C and that, once in that division, they remain there? Was it worth paying the cost of screening in a)?

2. (20 points) A firm is trying to establish a wage $=a+bE$ where E is worker effort and a and b are to be chosen by the firm. The worker maximizes utility which is given by $\text{wage} - E^4$ or $U = (a+bE) - E^4$, where the latter term reflects the cost of effort to the worker. Each unit of effort E produces \$36 of sales revenue. But additional worker effort of 1 unit also leads to additional material costs for your firm of \$4.

a) Assume that the worker's utility must be at least zero for him or her to accept the job. Calculate the profit maximizing values of a and b , and the optimal effort E and profit π that results. (14 points)

b) (4 points) In a) above we assumed that the worker had to receive utility of at least 0 in order to accept the job. This might apply during a recession in which few jobs were available. Suppose instead that as the economy strengthens each worker will accept the job only if $U > U_{\text{res}}$ where $U_{\text{res}} > 0$ is the “reservation utility” a worker now needs to accept a job. How will the optimal values of a , b , E and π change as a result? (Hint: You can save a lot of time by “eyeballing” the logic in your answer to a) and then writing down what does and does not change, and why. Your new answer for a , b , E and π should be a function of U_{res} if indeed any of these outcomes depends on the reservation utility.)

c) Is there a value of U_{res} above which your firm should shut down? (2 points)

3. (16 points) Assume that a worker works for two periods, and chooses the job that maximizes the sum of her earnings. She can earn w_a per period at any other job in the economy on average. At your firm you supply workers with training, so that the workers each have a value marginal product of VMP_1 and VMP_2 in periods 1 and 2 respectively.

Note that

$VMP_1 < w_a < VMP_2$. However, average productivity over two periods equals w_a :

$VMP_1 + VMP_2 = 2w_a$.

The firm must set wages in the two periods, W_1 and W_2 respectively.

The training is valuable to your firm but of no use to any other firms in the economy.

a) (1 point) Is this an example of general or specific human capital?

b) (5 points) Suppose the firm sets wages equal to VMP in the two periods (that is $W_j = VMP_j$ in periods $j=1,2$). Explain why the worker and firm are likely to re-negotiate the wage in period 2 (W_2). Which party would lose from this renegotiation in period 2, the firm or worker?

c) (5 points) Suppose the firm sets wages equal to W_a in the two periods (that is $W_j = W_a$ in periods $j=1,2$) Explain why the worker and firm are likely to re-negotiate the wage in period 2 (W_2). Which party would lose from this renegotiation in period 2, the firm or worker?

d) (5 points) Finally, explain why if the firm sets W_1 and W_2 such that $VMP_1 < W_1 < W_a$ and $W_a < W_2 < VMP_2$, while ensuring that $VMP_1 + VMP_2 = 2w_a = W_1 + W_2$, then neither firm nor worker will seek to re-negotiate the wage in period 2.

4. (3 points) What are the two main costs of attending college full time that we covered in class? For the typical student attending public university in the U.S., which of these two costs is larger?