

Human Resources
Homework 2

1/13/2004

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3rd trimester, 2004

Answer following questions on separate sheets of A4 papers. Answer should be in English. You may discuss questions with your friends, but you have to submit your own answer. Just copying your friends' answer will be harshly punished. **The due date is 1/20/2003.** You must submit your answer in the class.

1. Borjas, 3rd edition, p. 160, Problem 1 (2pts)

Suppose there are two inputs in the production function, labor and capital, and these two inputs are perfect substitutes. The existing technology permits one machine to do the work of three persons. The firm wants to produce 100 units of output. Suppose the price of capital is \$750 per machine per week. What combination of inputs will the firm use if the weekly salary of each worker is \$300? What combination of inputs will the firm use if the weekly salary of each worker is \$225? What is the elasticity of labor demand as the wage falls from \$300 to \$225?

2. Borjas, 3rd edition, p. 160, Problem 4 (2pts each, 6pts in total)

Consider a firm for which production depends on two normal inputs, labor and capital, with prices w and r , respectively. Initially the firm faces market prices of $w=6$ and $r=4$. These prices then shift to $w=4$ and $r=2$.

- a. In which direction will the substitution effect change the firm's employment and capital stock?
- b. In which direction will the scale effect change the firm's employment and capital stock.
- c. Can we say conclusively whether the firm will use more or less labor? More or less capital?

3. Borjas 3rd edition, p. 161 Problem 7 (2pts)

Suppose a firm purchases labor in a competitive labor market and sells its product in a competitive product market. The firm's elasticity of labor demand is -0.4 . Suppose the wage increases by 5 percent. What will happen to the number of workers hired by the firm? What will happen to the marginal productivity of the last worker hired by the firm?