

**Problem Set 4**  
Due: Friday, December 4

**Labor Economics**  
**Spring 2009**

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A. Book problems

Chapter 7, problems 2 and 9

*Extra credit:* Chapter 9, problems 6 and 11

Chapter 10, problems 1, 2, and 10

B. Analytical and discussion problems

1. “Strikes are mistakes.” Briefly evaluate this statement using the Hicks model of strike activity. Explain why strikes might occur even if they are wasteful from the point of view of the parties to a dispute (hint: see the Ashenfelter and Johnson paper).

2. Provide a mathematical characterization of the contract curve for an efficient bargain between union and employer (as described graphically in Section 10.5 of the book). Hint: specify a profit function for the firm and a utility function for the union. Does this analysis determine exactly what the employment/wage combination will be in an efficient labor-management bargain?

*Extra credit:* Let the competitive wage be  $w^*$ . Show that if the union maximizes the excess wage bill,  $(w-w^*)L$ , where  $L$  is labor employed, then efficient bargains set employment equal to the competitive level. Such bargains are said to be “strongly efficient”. Why might we like to believe that labor-management bargains are indeed strongly efficient?

3. Show that the Cobb-Douglas production function:  $Y=A_K K^\beta L^{(1-\beta)}$  (where  $A$  is a constant) has an elasticity of substitution between capital and labor of 1.

*Extra credit:* Find the elasticity of substitution of the production function  $Y=(A_K K^\rho + A_L L^\rho)^{1/\rho}$  where  $A_K$  and  $A_L$  are constants. This production function is called a CES or constant elasticity of substitution production function.

C. Empirical problem

Mandy will provide you with an extract from the CPS for this problem. The variables included are hourly wages, age, race, marital status, years of schooling, one-digit industry and occupation codes, and a dummy variable indicating whether workers’ wages are set by collective bargaining (call this variable “union status”).

1. Estimate the effect of union status on (log) wages. Discuss your choice of covariates and the sensitivity of the estimates to alternative industry and occupation controls.

2. Estimate the impact of union status on the economic returns to schooling. Do your results support the notion of a link between declining unionization rates and increasing income inequality? Explain.

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