Final exam

Labor Economics

Spring 2013

You have 2 hours to answer the following questions. The number of points to be earned for each question are given below. There are 120 points to be earned in total, so you can think of points as minutes.

Please show all your work. Only partial credit will be given for correct answers if we cannot figure out how they were derived. Justify your answers, but be brief and answer only what the question asks. No books or notes are allowed.

Good luck!

Problem 1. The government wants to increase tax revenue and decides to increase the income tax rate. Explain under what circumstances this policy would NOT succeed at increasing tax revenues (you can support your argument with a graph). **(5 points)**

Problem 2. True or false? Suppose there are two cities. Firms and individuals can choose the city where they locate based on wages and rent (i.e. Roback's model). If the only difference between the cities is an amenity that is valuable to firms only, rents and wages will be higher in the city with the amenity. Please justify your answer. **(6 points)**

Problem 3. Suppose that, initially, the Catalan economy is in equilibrium with no unemployment, and: Ls=1,000,000 + 200W, and L_D=19,000,000-300W, where W refers to annual wages and L is the number of workers. Then, structural unemployment arises because the demand for labor falls in Catalonia, but wages are inflexible downward and noone moves out of the region. If labor demand falls to LD= 18,000,000 – 300W, how many workers will be unemployed in Catalonia? What will be the unemployment rate? (show also in a graph). **(6 points)**

Problem 4. In a village as the one described in Roy (1951), an oil spill in the river decreases the quality of fish, so that rabbits become more popular in the village's diet. What is the effect on average productivity in both sectors of the economy (fishing and hunting)? **(5 points)**

Problem 5. On July 24, 2007, the federal minimum wage in the United States was increased from $5.15 per hour to $5.85 per hour. Consider the effect of this increase on an unemployed job seeker. Using the basic job search model, what is the effect on the probability of finding an acceptable job in any given period? How does this increase affect the expected duration of unemployment and the expected wage (once employed)? **(6 points)**

Problem 6. Baby-bonus. Suppose the government introduces a new "baby bonus", a transfer program that pays a large, unconditional cash grant to all mothers right after the birth of a child.

a) Using a simple economic framework, explain what would be the expected effect of this policy on fertility. You can show a graph. **(4 points)**

b) Using the static model of labor supply, explain what would be the expected effect of the new policy on labor supply (for the affected group of new mothers). You can also show a graph. **(4 points)**

c) Explain why the static model of labor supply may not be appropriate to think about the effect of the baby bonus. **(3 points)**

Problem 7. A firm uses labor as its only input, but can adjust both the number of hours per worker (a week) and the number of workers.

a) Write down the (static) maximization problem faced by the firm. **(3 points)**

b) Derive the first-order conditions. **(3 points)**

c) Draw a set of possible isoquants for this firm. Draw also an isocost line. Display the combination of hours and workers that would minimize the cost, for a given level of output. **(3 points)**

d) Describe the expected effects of a subsidy that reduces the fixed cost per worker for the firm (on output, average hours, and number of workers). You can illustrate your answer with the help of a graph. **(4 points)**

Problem 8. Imagine the Labor Economics course is evaluated based on, ***either*** a research project, or a final exam, and students can choose between the two options. We know that in last year's course, the average grade was 85 (over 100) for students who did the project, while it was 75 for those who chose the final exam. There were a total of 50 students taking the course, and 20 chose the research project. Suppose the distribution of student skills is constant across cohorts. This year, there are 40 students enrolled.

a) Provide an estimate for this year's average grade in the course. **(2 points)**

b) If all 40 students chose to do the final project, what would the average grade be? **(2 points)**

c) Suppose that this year, the possibility of doing a project is eliminated, so that everyone has to take the final exam. What would be the average grade then? **(2 points)**

Problem 9. In a standard compensating differentials model with a continuous disamenity (risk of death) and heterogeneous workers and firms, and assuming there is perfect competition,

a) Suppose that a government regulation states that no job can have a risk of death above D*. How will this regulation affect the equilibrium wage distribution? The aggregate risk of death on the job? How will workers' welfare be affected? Show graphically and explain. **(6 points)**

b) Now suppose that a union succeeds at passing a minimum wage law that bans firms from paying wages below W*. How will this regulation affect the equilibrium wage distribution? The aggregate risk of death on the job? How will workers' welfare be affected? Show graphically and explain. **(6 points)**

Problem 10. The Mincerian returns to schooling. A large literature aims to estimate a "human capital earnings function" of the following form.

$\log w_i = \alpha + \beta s_i + \delta_1 x_i + \delta_2 x_i^2 + \varepsilon_i,$

where w_i is the hourly wage of individual i, s_i is years of schooling, x_i is labor market experience, and ε denotes other factors affecting the wage.

a) Can we interpret the coefficient β as the internal rate of return on investments in human capital? Why or why not? **(4 points)**

b) What is meant by "ability bias" in the OLS estimate of β? If this were the only bias present, would we expect the estimate for β to be too high or too low? Why? **(4 points)**

c) Suppose we have data wages, schooling and experience for a random sample of (identical) twins. How could we use those data to address the issue of ability bias? Evaluate the arguments for and against using twins data to estimate the return to schooling. **(5 points)**

d) What other methods could we use to address the ability bias? Discuss at least two other solutions that have been used in the literature and evaluate the arguments for and against their plausibility. **(5 points)**

Problem 11. The following table shows the (hourly) wage distribution of workers in Tike, a firm that produces sports clothes, in 2000 and 2005.

	2000		2005	
Wage	**Executives**	**Rest of workers**	**Executives**	**Rest of workers**
5 to 10	0	35	0	40
10 to 20	0	35	0	60
20-50	0	10	3	25
50-100	10	5	5	0
100-200	5	0	17	0
Total	15	85	25	125

a) Calculate a measure that summarizes the change in wage inequality in Tike between 2000 and 2005. Has wage inequality increased or decreased? **(3 points)**

b) Analyze the sources of the change in wage inequality. Has inequality increased within or across groups of workers? **(3 points)**

c) What are possible sources of the observed evolution of the wage distribution? Do you think the changes are more likely to come from changes in demand or supply? **(4 points)**

Problem 12. Imagine a society where firms dislike employing immigrant workers, for a given skill level. Suppose immigrants represent 5% of overall labor supply.

a) Do you expect wage levels in equilibrium to be the same for native and immigrant workers? Why or why not? Explain with the help of a graph. **(3 points)**

b) Do you expect to observe native and immigrant workers hired in the same firms? If yes, why? If not, what kind of firm will hire immigrants and what kind will hire natives? **(3 points)**

c) Suppose there is a sudden inflow of new immigrants, and now they represent 10% of the labor force. What do you expect will happen to the equilibrium wage of immigrants relative to natives? To the degree on integration in the workforce? **(4 points)**

d) As the proportion of immigrants in the population increases, some of them become entrepreneurs and thus turn into employers themselves. Assuming immigrant-owned firms are indifferent between hiring natives or immigrants, what do you expect will happen to the equilibrium wage of immigrants relative to natives? To the degree on integration in the workforce? **(4 points)**

e) The following tables display the results of a (log) earnings regression for full-time workers in Spain in the period 1994-2001. The first regression includes only a dummy for females, a dummy for immigrants and year dummies as controls. The second specification adds age, age squared, age cubed and two education dummies as controls. Interpret the coefficients on female and immigrant in both regressions. Can we conclude there is discrimination against immigrants in the Spanish labor market? Against women? Explain. **(6 points)**

Log earnings	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Female	-.2120248	.009556	-22.19	0.000	-.2307549	-.1932946
Immigrant	-.1291925	.0356576	-3.62	0.000	-.1990828	-.0593022
_Iwave_2	-.0120164	.0168322	-0.71	0.475	-.0450081	.0209753
_Iwave_3	.0701635	.0169513	4.14	0.000	.0369384	.1033887
_Iwave_4	.037281	.0171438	2.17	0.030	.0036784	.0708835
_Iwave_5	.0656661	.0171584	3.83	0.000	.0320349	.0992972
_Iwave_6	.1553567	.0172295	9.02	0.000	.1215863	.1891272
_Iwave_7	.198989	.0172475	11.54	0.000	.1651833	.2327947
_Iwave_8	.2534308	.0172361	14.70	0.000	.2196473	.2872142
Constant	14.17982	.0119701	1184.61	0.000	14.15635	14.20328

Log earnings	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Age	.2440042	.0109251	22.33	0.000	.2225905	.2654178
age^2	-.0043081	.000278	-15.50	0.000	-.0048529	-.0037633
Age^3	.0000246	2.26e-06	10.91	0.000	.0000202	.000029
High school	.2621047	.0100889	25.98	0.000	.2423301	.2818793
University	.4914963	.0091182	53.90	0.000	.4736243	.5093682
Female	-.2390004	.0083814	-28.52	0.000	-.2554283	-.2225725
Immigrant	-.1597201	.0308324	-5.18	0.000	-.2201528	-.0992873
_Iwave_2	-.0000306	.0145331	-0.00	0.998	-.0285161	.0284549
_Iwave_3	.0719304	.0146372	4.91	0.000	.0432409	.1006199
_Iwave_4	.0510428	.0148059	3.45	0.001	.0220225	.080063
_Iwave_5	.0721219	.0148273	4.86	0.000	.0430597	.1011841
_Iwave_6	.1484502	.0148927	9.97	0.000	.1192599	.1776405
_Iwave_7	.1957725	.0149116	13.13	0.000	.1665451	.2249999
_Iwave_8	.238821	.0149064	16.02	0.000	.2096038	.2680381
Constant	9.762148	.1362893	71.63	0.000	9.495015	10.02928