

## Homework No. 2, Econ 955

Empirical Labor Economics

Instructor: Susumu Imai

Due Date: April 1, 2011

Use the data on employment and wages to answer the following questions.

### Question 1 (10 pts each)

- 1 Report the sample statistics.
- 2 Estimate the proportional hazard model of unemployment spells, with age as independent variable, separately for men and women. Set the age dummy as 20-29, 30-39, 40-49, 50-65.
- 3 Estimate the proportional hazard model with two points unobserved heterogeneity, separately for men and women.
- 4 Estimate the proportional hazard model with two points unobserved heterogeneity and Weibull duration dependence, separately for men and women.

### Question 2 (10 pts each)

- 1 Estimate the proportional hazard model of job spells, with age dummy and wage as independent variables, separately for men and women.
- 2 Estimate the proportional hazard model with two points unobserved heterogeneity, separately for men and women.
- 3 Estimate the proportional hazard model with two points unobserved heterogeneity and Weibull duration dependence, separately for men and women.

### Question 3 (10 pts each)

- 1 Derive  $\lambda_0$ ,  $\lambda_1$  and  $\delta$  and  $p$ . Let  $\underline{w}$  be the wage at the bottom 5 percentile. Derive them separately for men and women.
- 2 Derive the wage offer distribution (wages of workers with an employment duration inferior to one year that were also unemployed a year ago, 0 otherwise)

**3** Derive the wage distribution. Plot the wage offer distribution and the wage distribution on the same graph.

You need to submit a report where you present the results and also provide discussion on the estimation results. In particular, discuss the potential problems of the estimation results.