

Final Exam
Labor I
Fall Semester 2002

Instructions: You have five days to complete the examination. Don't write excessively long responses to the questions; while I won't give an explicit page limit I expect you to be as concise as possible. Good luck.

1. We studied a number of continuous time, stationary search models this semester. Consider the following variation that was not discussed. Individuals are infinitely-lived expected wealth maximizers. Future rewards are discounted at a constant rate ρ . When unemployed, offers arrive at rate λ_n , and the utility flow in unemployment is given by b . Employed individuals also meet other potential employers at rate λ_e ($< \lambda_n$). In either case, upon contact with a new firm (whether unemployed or already employed) a draw is made from a fixed distribution $G(\theta)$; successive draws are independently distributed. When employed at a firm at current match value θ a shock to productivity may arrive. The arrival rate process of these shocks is Poisson with a constant hazard of ξ . When a shock hits, a new draw (i.i.d.) from G is taken. Whenever there is a change in the productivity of a current employment match or when new employment opportunities arise (symmetric) Nash bargaining is used to divide the surplus between the worker and the employer. There are no exogenous dismissals in this model. You are also to assume that when a productivity shock hits a match the wage is renegotiated and the threat point of the worker is the value of unemployed search (since he has no current alternative offer, his only option is to "quit" into unemployment).

Characterize the decision rules used by searchers in this environment. When doing so always assume that the threat point of the firm is 0. Also describe, in as much detail as possible, the implications of the model for labor market histories. In particular, describe wage dynamics and the distribution of unemployment and employment spells. Compare the features of these distributions with those associated with similar models that we studied this semester.

2. The model estimated in Flinn (1986) posits learning as the sole source of earnings growth on a job. We want to consider the impact of (specific) human capital acquisition on the decision rules used by agents and the properties of the wage and job duration processes.

Assume that there is learning by doing only. For every period spent on a job, productivity increases by τ . Let d_{ijt} denote the duration of the job spell of individual i at firm j at time t , and let w_{ijt} denote the associated wage rate. Then the wage is given by

$$\ln w_{ijt} = \tau d_{ijt} + \theta_{ij} + \varepsilon_{ijt},$$

where θ_{ij} is $N(\mu_\theta, 1)$ and ε_{ijt} is $N(0, 1)$. The random variables θ and ε are independently distributed. The individual knows all of the parameters that characterize the environment but does not observe the value θ_{ij} and ε_{ijt} separately. Instead she observes $r_{ijt} = \theta_{ij} + \varepsilon_{ijt}$ only every period. When a individual begins a new job a new draw from the distribution of θ is taken, and these draws are independently distributed across matches.

As in Flinn (1986), assume that individuals are expected ln wage maximizers. Characterize the turnover rule in this model (we discussed the case of $\tau = 0$ in class; this is the original Jovanovic matching model). We are particularly interested in the impact of varying τ on the wage and turnover process. Perform this comparative statics exercise in as much depth as you can.