What I cannot create, I do not understand. – Richard Feynman

# Software Engineering for **Economists**

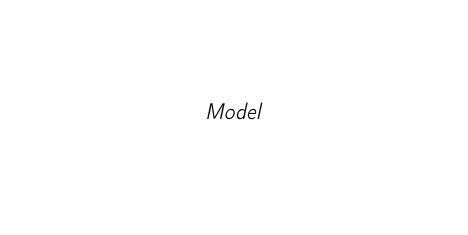
# **Advanced Applications**

- ► Modeling Career Choice
  - ▶ On-the-Job Search

# Modeling Career Choice

#### Resources

- ▶ Derek Neal. The Complexity of Job Mobility among Young Men. *Journal of Labor Economics*, 17(2):237-261, 1999.
- Quantitative Economics Website



#### Model Features

▶ Individuals choose their career and job within a career to maximize the expected discounted value of lifetime wages. They solve an infinite horizon dynamic programming problem with two state variables

# Objective

$$\mathbb{E}\sum_{t=0}^{\infty}\beta^t\omega_t$$

# **Payoffs**

$$w_t = \theta_t + \epsilon_t$$

- $\triangleright$   $\theta_t$  contribution of current occupation at time t
- $ightharpoonup \epsilon_t$  contribution of current job at time t

#### **Decision Problem**

At the start of time t, a worker has the following options:

- ▶ Stay Put, retain a current (career, job) pair  $(\theta_t, \epsilon_t)$
- **New Job**, retain a current career  $\theta_t$  but redraw a job  $\epsilon_t$
- ▶ New Life, redraw both a career  $\theta_t$  and a job  $\epsilon_t$

Draws of  $\theta$  and  $\epsilon$  are independent of each other and past values, with  $\theta_t \sim F$  and  $\epsilon_t \sim G$ .

### Value Functions

$$egin{aligned} V_{SP} &= heta + eta V( heta, \epsilon) \ V_{NJ} &= heta + \int \epsilon' G(d\epsilon') + eta \int V( heta, \epsilon') G(d\epsilon') \ V_{NL} &= \int heta' F(d heta') + \int \epsilon' G(d\epsilon') + eta \int \int V( heta', \epsilon') G(d\epsilon') F(d heta') \end{aligned}$$

## **Course Registration**

▶ Please register for our class **ECON41904** by sending an eMail to Brett Baker at:

bbaker@uchicago.edu