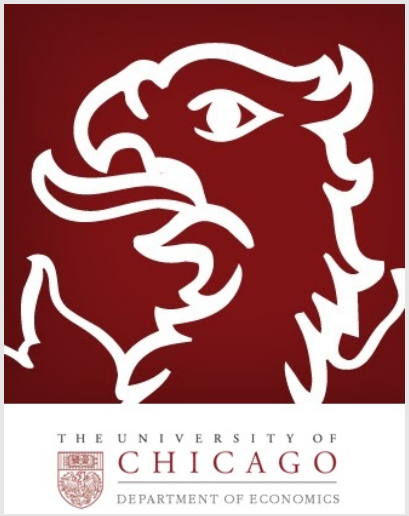

Life-cycle Decisions

Female vs. Male

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Outline

1. Two Models of Life-cycle Choices
2. Motivation of the Papers
3. Research Question and Approach
4. Models
5. Data
6. Estimation Results
7. Counter Factual Exercises
8. Comments

Objective

1. Objective: compare two models of life-cycle decisions
   - One model for females one model for males
   - "Females Model": Keane and Wolpin (2010)
   - "Males Model": Keane and Wolpin (1997)
2. Learn about modeling decisions
3. Understand the main features of female and male life-cycle or career decisions

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Motivation: Females

1. Large differences in economic and demographic characteristics of majority (white) compared to minority (black and Hispanic) women
2. NLSY79 in 1990 (Ages 25 to 33):
   - Mean schooling years: white 13.4; black 12.8; Hispanic 12.1
   - Marriage percentages: white 65%; black 32%; Hispanic 55%.
   - Children: white 1.2; black and Hispanic 1.7
   - Employment: white 74%, black 66%, Hispanic 67%
   - AFDC previous year: white 4%, black 20%, Hispanic, 11%

Motivation: Males

1. Analyze the "life-cycle" or career decisions of a core sample of white men

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Research Question and Approach: Females

- Model labor supply, marriage markets, preference heterogeneity, and the welfare system to answer:
  1. How much observed of observed minority-majority differences in behavior can attributed to differences in labor market and marriage opportunities, and preferences?
  2. How does to welfare system affects augment the differences minority-majority differences?
  3. How will the new cohorts that grow up under the new welfare system (TANF) behaves compared to older cohorts?

Research Question and Approach: Males

- Combine the extensions to the basic Roy (1951) model in Heckman and Sedlaeck (1985) and Willis (1986) to asses self-selection in three dimensions, schooling, work, and occupational choice, and understand
  1. Human capital investment
  2. School attendance
  3. Work
  4. Occupational choices
  5. Future work decisions
  6. Wage patterns

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Model: Females, Basics

- $j = 1, \ldots, J$ defines the types of women
- At each time a each women j decides to:
  1. work (if she gets an offer), h_a^p, h_a^f
  2. attend school to schoo, s_a
  3. be married (if someones proposes), m_a
  4. become pregnant (if at fecund age), p_a
  5. government help (if eligible)
- Life span: 14 to 62 (fecund stage: 14 to 45)
- Utility depends on:
  1. Past and current choices
  2. Number of children, N_a
  3. Consumption, C_a
  4. Completed level of Schooling, S_a

Model: Females, Utility and BC

$$
\begin{aligned}
U_a^j &= U_a\left(C_a, S_a, m_a, p_a, g_a, h_a^p, h_a^f; \varepsilon_a, \mathbf{1}(type = j), \Omega_a^a\right) \\
c_a &= y_a^o(1-m_a)(1-z_a) + \left[y_a^o + y_a^m\right] m_a \tau_a^m \\
&+ \left[y_a^o + y_a^z \tau_a^z\right] z_a + \beta_1 g_a - \left[\beta_3 \left(\mathbf{1}(S_a \geq 12)\right)\right] \\
&+ \beta_4 \left(\mathbf{1}(S_a \geq 16)\right)
\end{aligned}
$$

Model: Females, Job Offers and Wages

- Probabilities of receiving full and part time job offers: π^{wp}, π^{wf}
- Earnings: $y_a^o = 500 w_a^p h_a^p + 1000 w_a^f h_a^f$
- Hourly wage: $\ln w_a^k = r^k + \Psi_a(\cdot) + \varepsilon_a^w$, for $k = p, f$ and where r^k is rental rate and $\Psi_a(\cdot)$ is human capital stock
- Marriage:
  1. offers to marry married depend on age and welfare status, π_a^m
  2. offers to continue married depend on age and marriage current duration
- Husband's human capital: (conditional on marriage offer) drawn from a distribution that depends on woman's race/ethnicity, schooling, age, state of residence, type, Psi_a^m
- After marriage, husband's earnings are $\ln y_a^m = \mu^m + \Psi_{0a}^m + \varepsilon_a^m$

Model: Females, Welfare System

- The welfare system is time and state particular

$$b_t^s\left(N_{at}^{18}, y_{at}^o, y_{at}^z\right) = \begin{cases} b_{0t}^s + b_{1t}^s N_{at}^{18} - b_{3t}^s \beta_2 y_{at}^z z_{at}, & y_{at}^o < y_{at}^{s1}(\cdot) \\ b_{2t}^s + b_{4t}^s N_{at}^{18} - b_{3t}^s & \\ \times \left[y_{at}^o - y_{at}^{s1} + \beta_2 y_{at}^z z_{at}\right], & y_{at}^{s1}(\cdot) < y_{at}^o < y_{at}^{s2}(\cdot) \\ 0, & \text{otherwise} \end{cases}$$

- The parameters that define the welfare system evolve according to a VAR

$$\mathbf{b}_t^s = \lambda^s + \Lambda^s \mathbf{b}_{t-1}^s + \mathbf{u}_t^s \tag{1}$$

- (1) is estimated outside the model with simulated data

Model: Females, Dynamic Problem

$$V_a(\Omega_a) = \begin{cases} \max_{l \in \mathcal{L}} U_a^j + \delta \mathbb{E}\left(V_{a+1}(\Omega_{a+1} | l \in \mathcal{L}, \Omega_a)\right), & a < A \\ U_A^j, & a = A \end{cases}$$

- The value of option $l \in \mathcal{L}$ depends on the current state space: Ω_A, which includes residence, the WS rule parameters, preference shocks, own husband's earnings shocks, parental income shocks, labor market, marriage, and parental co-residence opportunities
- Solution: set of "Emax's" for all $l \in \mathcal{L}$ and all elements in Ω_a

Model: Males, Basics

- $k = 1, \ldots, J$ defines the types of men (by human capital at age 16)
- At each age a individuals choose among five mutually exclusive, exhaustive alternatives ($m = 1, \ldots, 5$):
  1. Blue collar job
  2. White collar job
  3. Military job
  4. Go to school
  5. Engage in household production
- Per period reward:

$$R(a) = \sum_{m=1}^{5} R_m(a) d_m(a)$$

where $R_m(a)$ is the per period reward in the m_{th} alternative and $d_m(a)$ indicates the choice of the m_{th} alternative

Model: Males, Utility

- For $m = 1, 2, 3$:

$$\begin{aligned} R_m(a) &= w_m(a) \\ &= r_m \exp[e_m(16) + e_{m1} g(a) + e_{m2} x_m(a) \\ &- e_{m3} x_m^2 + \epsilon_m(a)] \end{aligned}$$

- For $m = 4, 5$:

$$\begin{aligned} R_4(a) &= e_4(16) - tc_1 \mathbf{1}[g(a) \geq 12] - tc_2 \mathbf{1}[g(a) \geq 16] + \epsilon_4(a) \\ R_3(a) &= e_5(16) + \epsilon_4(a) \end{aligned}$$

- r_m, rental rate of human capital; completed schooling years, $g(a)$; work experience, $x_m(a)$; skill endowment, $e_m(16)$; tc_1, tc_2 college/grad school costs; $\epsilon_m(a)$ skill technology shock

Model: Males, Dynamic Problem

$$V(\mathbf{S}_a) = \begin{cases} R_m(\mathbf{S}_a) + \delta \mathbb{E}\left[V((S(a+1))|d_m(a), \mathbf{S}(a)\right], & a < A \\ R_m(\mathbf{S}_a), & a = A \end{cases}$$

- The value of option m depends on the current state space, $\mathbf{S}_a$: endowment at age 16 (occupation and type particular), $\mathbf{e}(16)$; completed schooling years, g_a, experience in each (labor) occupation, $\mathbf{x}(a)$; skill technology shocks (occupation particular), $\epsilon(a)$
- Solution: set of "Emax's" for $m = 1, \ldots, 5$ and all elements in $\mathbf{S}_a$

Model: Males, Model Extension

- Extensions to fit the data adequately:
  1. Skill technology functions:
     - Occupation particular skill depreciation
     - First year experience effect
     - Age effects
     - High School and College graduation effects
  2. Mobility and search costs:
     - Direct monetary job-finding cost (when unemployed last period)
     - Additional monetary job-finding cots when no occupational specific experience
  3. Non-pecuniary rewards for civilian workers (additive parameter)
  4. Consumption value of school attendance (function of age)
  5. Reentry costs to high school and post-secondary school
  6. Remaining-at-home payoff as a function of age
  7. Psychic reward of earning high school/college diploma; psychic cost of leaving the military early

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Data, Females

- NLSY79: represents the cohort of young (ages 14 to 21) individuals in 1979: $12,686$ total observations
- $6,000$ women (nationally representative sample plus over sample of poor white, blacks, and Hispanics)
- Data on all decisions available in very high frequency
- Period decision: trade-off between information precision and computational burden
  - 6 months from 14 to 45
  - 1 year from 45 to 62
- Restrict sample to U.S. states with largest sample representations: CA, MI, NY, NC, OH

Choice Distribution by Age, Females

Table 1 KW(2010) goes here.

Estimated Monthly Benefits, Females

Table 2 KW(2010) goes here.

Data, Males

- NLSY79: represents the cohort of young (ages 14 to 21) individuals in 1979: $12,686$ total observations
- Focus on core white males who reach 16 years on 1977-1981
- Period decision: one schooling years
  - Age span, 16 to 26 years old (follow up to 1988)

Choice Distribution by Age, Males

Table 1 KW(1997) goes here.

Choice-State Combinations, Males

Table 3 KW(1997) goes here.

Average Real Wages, Males

Table 4 KW(1997) goes here.

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