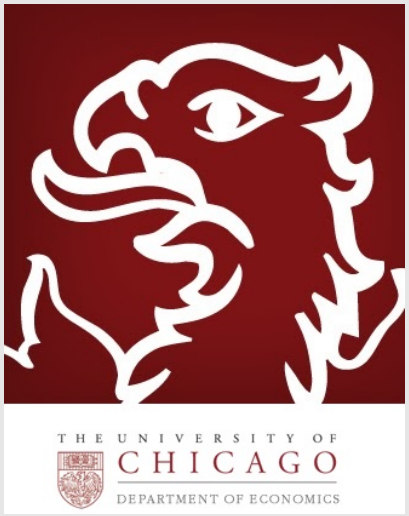

Life-cycle Decisions

Female vs. Male

Econ 350

The University of Chicago, Economics

This draft: March 3, 2014

Outline

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

Objective

1. Objective: compare two models of life-cycle decisions
   - One model for females, one 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) versus minority (black and Hispanic) woman
2. NLSY79 in 1990 (Ages 25 to 33):
   - Mean schooling years: white 13.4; black 12.8; Hispanic 12.1
   - Percent Married: 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 of observed minority-majority differences in behavior can be attributed to differences in labor market, marriage opportunities, and preferences?
  2. How do welfare system effects augment the differences minority-majority differences?
  3. How will the new cohorts that grow up under the new welfare system (TANF) behave compared to older cohorts?

Research Question and Approach: Males

- Combine extensions to the basic Roy (1951) model in Heckman and Sedlaeck (1985) and Willis (1986) to assess self-selection in three dimensions - schooling, work, and occupational choice, as well as 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 Basics: Females

- $j = 1, \ldots, J$ 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, s_a
  3. marry (remain married) (if someones proposes), m_a
  4. become pregnant (if fecund), 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

Utility and BC: Females

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

Job Offers and Wages: Females

- 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 the rental rate and $\Psi_a(\cdot)$ is human capital stock
- Marriage:
  1. offers of marriage depend on age and welfare status, π_a^m
  2. offers to continue marriage 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, Ψ_a^m
- After marriage, husband's earnings are $\ln y_a^m = \mu^m + \Psi_{0a}^m + \varepsilon_a^m$

Welfare System: Females

- 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

Dynamic Problem: Females

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

- 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, 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 Basics: Males

- $k = 1, \ldots, J$ 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

Utility: Males

- 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 $m = 4, 5$:

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

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

Dynamic Problem: Males

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

- 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 Extension: Males

- 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 in previous period)
     - Additional monetary job-finding cots (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 individuals (ages 14 to 21) 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

CHOICE DISTRIBUTIONS BY AGE: ESTIMATION SAMPLE OF THE COMBINED FIVE STATES

	Attending School			Working (PT or FT)			Married			Becomes Pregnant			Receives AFDC		
Age	W	B	H	W	B	H	W	B	H	W	B	H	W	B	H
14	100	93.3	100	14.3	10.5	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	97.7	100	100	11.4	9.9	5.2	0.0	0.0	0.0	1.0	3.4	1.0	1.0	1.3	0.0
16	88.3	87.5	90.3	30.0	14.5	19.3	3.0	1.0	2.9	3.1	3.8	2.1	1.0	1.0	1.0
17	84.6	80.7	79.2	50.0	26.9	32.4	8.7	1.4	6.4	5.6	5.3	2.5	1.3	2.5	2.3
18	42.8	50.9	41.5	63.0	32.6	50.7	16.4	3.7	11.9	3.7	4.5	6.7	2.6	9.0	3.3
19	32.5	32.1	27.1	65.6	43.4	51.2	24.9	7.1	19.9	4.5	8.6	5.6	3.6	15.6	6.8
20	23.8	22.2	18.8	67.5	46.4	52.2	31.5	11.7	27.1	4.3	6.0	4.9	5.4	17.3	10.3
21	19.4	12.3	12.2	69.6	49.2	58.3	37.1	14.4	34.2	6.0	7.9	6.3	5.1	21.2	13.7
22	10.8	8.3	7.7	70.0	52.5	60.6	37.5	20.3	35.9	4.5	5.3	5.7	6.1	25.6	15.1
23	4.2	6.2	3.9	72.0	54.2	58.5	49.1	22.3	39.7	5.9	6.1	5.3	6.2	27.2	15.3
24	3.8	5.4	4.6	72.7	55.4	57.7	54.1	22.8	45.7	6.6	6.9	7.9	7.0	27.8	17.2
25	4.0	5.9	2.9	73.8	62.8	55.6	58.5	20.9	47.2	7.6	7.0	7.2	6.4	26.8	16.0
26–29	3.2	3.6	2.2	71.5	61.1	56.7	63.6	25.6	52.1	5.8	4.4	5.8	5.0	25.7	15.4
30–33	4.5	2.3	2.6	72.6	63.3	64.9	72.8	32.0	56.7	4.3	2.3	5.3	2.6	22.3	14.5

Estimated Monthly Benefits: Females

SUMMARY STATISTICS OF TOTAL MONTHLY BENEFITS BY NUMBERS OF CHILDREN AND EARNINGS BY STATE: 1967–90

Monthly Earnings	Zero		$500		$1000	
	One Child	Two Children	One Child	Two Children	One Child	Two Children
CA						
μ	589	724	351	517	87	196
σ	60	67	85	91	89	151
1970	459	568	416	560	297	440
1975	652	794	441	620	132	311
1980	617	757	405	560	156	311
1985	596	730	260	414	0	46
1990	594	728	303	476	0	110
MI						
μ	654	809	429	621	150	304
σ	92	106	161	179	158	215
1970	671	830	585	799	302	516
1975	735	912	551	762	273	483
1980	660	808	424	602	152	330
1985	561	705	235	405	0	58
1990	551	694	293	484	0	156

Estimated Monthly Benefits (contd 1): Females

SUMMARY STATISTICS OF TOTAL MONTHLY BENEFITS BY NUMBERS OF CHILDREN AND EARNINGS BY STATE: 1967–90

Monthly Earnings	Zero		$500		$1000	
	One Child	Two Children	One Child	Two Children	One Child	Two Children
NY						
μ	574	718	334	514	92	204
σ	52	71	126	152	98	189
1970	562	726	469	685	189	406
1975	635	798	443	643	172	372
1980	552	679	322	473	61	211
1985	524	644	189	334	0	0
1990	528	649	230	393	0	31
NC						
μ	480	566	274	384	35	132
σ	48	58	68	82	40	66
1970	455	513	348	432	143	227
1975	570	679	356	502	50	197
1980	462	553	260	364	31	134
1985	454	543	199	295	0	69
1990	438	530	249	367	13	131

Estimated Monthly Benefits (contd 2): Females

SUMMARY STATISTICS OF TOTAL MONTHLY BENEFITS BY NUMBERS OF CHILDREN AND EARNINGS BY STATE: 1967–90

Monthly Earnings	Zero		$500		$1000	
	One Child	Two Children	One Child	Two Children	One Child	Two Children
OH						
μ	489	607	270	414	87	128
σ	34	43	69	88	36	87
1970	460	565	361	511	106	256
1975	552	688	339	514	27	202
1980	499	619	284	423	11	151
1985	459	570	185	305	0	0
1990	455	566	218	346	0	0

Data: Males

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

Choice Distribution by Age: Males

Choice Distribution: White Males Aged 16–26

Age	Choice					Total
	School	Home	White-Collar	Blue-Collar	Military	
16	1,178	145	4	45	1	1,373
	85.8	10.6	.3	3.3	.1	100.0
17	1,014	197	15	113	20	1,359
	74.6	14.5	1.1	8.3	1.5	100.0
18	561	296	92	331	70	1,350
	41.6	21.9	6.8	24.5	5.2	100.0
19	420	293	115	406	107	1,341
	31.3	21.9	8.6	30.3	8.0	100.0
20	341	273	149	454	113	1,330
	25.6	20.5	11.2	34.1	8.5	100.0
21	275	257	170	498	106	1,306
	21.1	19.7	13.0	38.1	8.1	100.0
22	169	212	256	559	90	1,286
	13.1	16.5	19.9	43.5	7.0	100.0
23	105	185	336	546	68	1,240
	8.5	14.9	27.1	44.0	5.5	100.0
24	65	112	284	416	44	921
	7.1	12.2	30.8	45.2	4.8	100.0
25	24	61	215	267	24	591
	4.1	10.3	36.4	45.2	4.1	100.0
26	13	32	88	127	2	262
	5.0	12.2	33.6	48.5	.81	100.0
Total	4,165	2,063	1,724	3,762	645	12,359
	33.7	16.7	14.0	30.4	5.2	100.0

Note.—Number of observations and percentages.

Choice-State Combinations: Males

SELECTED CHOICE-STATE COMBINATIONS

Highest grade completed	9	10	11	12
Percentage choosing school	26.9	59.8	49.1	13.5
If in school previous period	73.5	91.1	85.0	44.2
White-collar experience	0	1	2	3
Percentage choosing white-collar employment	6.8	38.0	55.3	63.3
If white-collar previous period	···	57.5	71.7	76.7
Blue-collar experience	0	1	2	3
Percentage choosing blue-collar employment	15.0	51.6	64.9	74.0
If blue-collar previous period	···	62.0	71.4	78.7
Military experience	0	1	2	3
Percentage choosing military employment	1.5	68.0	56.6	44.6
If military previous period	···	90.7	86.5	74.0

Choice-State Combinations (contd): Males

SELECTED CHOICE-STATE COMBINATIONS

Highest grade completed	13	14	15	16	17
Percentage choosing school	45.1	44.8	62.5	13.5	42.5
If in school previous period	72.9	70.6	68.8	23.5	55.6
White-collar experience	4	5	6		
Percentage choosing white-collar employment	76.2	74.6	79.2		
If white-collar previous period	78.8	82.0	86.4		
Blue-collar experience	4	5	6	7	
Percentage choosing blue-collar employment	74.9	81.2	77.1	88.3	
If blue-collar previous period	81.7	85.3	78.7	85.4	
Military experience	4	5			
Percentage choosing military employment	32.7	61.9			
If military previous period	57.1	78.8			

Average Real Wages: Males

Average Real Wages by Occupation: White Males Aged 16–26

Age	Mean Wage			
	All Occupations	White-Collar	Blue-Collar	Military
16	10,217 (28)	...	10,286 (26)	...
17	11,036 (102)	10,049 (14)	11,572 (75)	9,005 (13)
18	12,060 (377)	11,775 (71)	12,603 (246)	10,171 (60)
19	12,246 (507)	12,376 (97)	12,949 (317)	9,714 (93)
20	13,635 (587)	13,824 (128)	14,363 (357)	10,852 (102)
21	14,977 (657)	15,578 (142)	15,313 (419)	12,619 (96)
22	17,561 (764)	20,236 (214)	16,947 (476)	13,771 (74)
23	18,719 (833)	20,745 (299)	17,884 (481)	14,868 (53)
24	20,942 (667)	24,066 (259)	19,245 (373)	15,910 (35)
25	22,754 (479)	24,899 (207)	21,473 (250)	17,134 (22)
26	25,390 (206)	32,756 (79)	20,738 (125)	...

Note.—Number of observations is in parentheses. Not reported if fewer than 10 observations.

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Estimation Approach: Females

- Usual estimation approach of DCDP models: simulated conditional likelihood
- Issues in this context:
  - Requires conditional probability agent makes observed choice at t given Ω_a at t
  - Lack of complete histories of employment, schooling, and welfare for most cohorts back to age 14
  - Unobserved initial conditions and unobserved state variables pose DCCP estimation problems (Heckman, 1981)
  - Need to integrate over distribution of unobserved elements: intractably complex
  - Estimate based on unconditional simulation of the likelihood function based on the (realistic) assumption that all outcome variables have measurement error (Keane and Wolpin, 2001)

Estimation Approach: Males

- Simulated conditional likelihood
- "Easy" to write and calculate the likelihood function:

$$\Pr\left(c(16),\ldots,c(\bar{a})|g_n(16)\right) = \sum_{k=1}^{K}\prod_{a=16}^{\bar{a}}\pi_{k|g(16)}L_{nk}$$

with

$$L_{nk} = \Pr\left(c_n(a)|g_n(16), \text{type=k}\right)$$

where $k = 1,\ldots,K$ and $n = 1,\ldots,N$ index types and individuals, respectively. $\pi_{k|g_n(16)}$ are type proportions, and $c_n(a)$ is a choice-reward combination

Model Fit and External Validation: Females

- Keane and Wolpin (2007) studies this extensively:
  - Within sample fit: captures features of the data well (choice frequencies and welfare use for each group in each state over the life cycle)
  - External Validation: outperforms MNL with less parameters (202 vs 240) in external validation exercises:
    - Forecast behavior of women in TX
    - What happens if estimation states adopt TX's welfare system?

Model Fit and External Validation: Males

- Within-sample: Figures 1-5 evidence satisfactory within-sample fit, which is confirmed through tests (Table 5)
- External validation: model frequency predictions coincide with CPS choice frequencies (Table 10)

Model Fit and External Validation (contd 1): Males

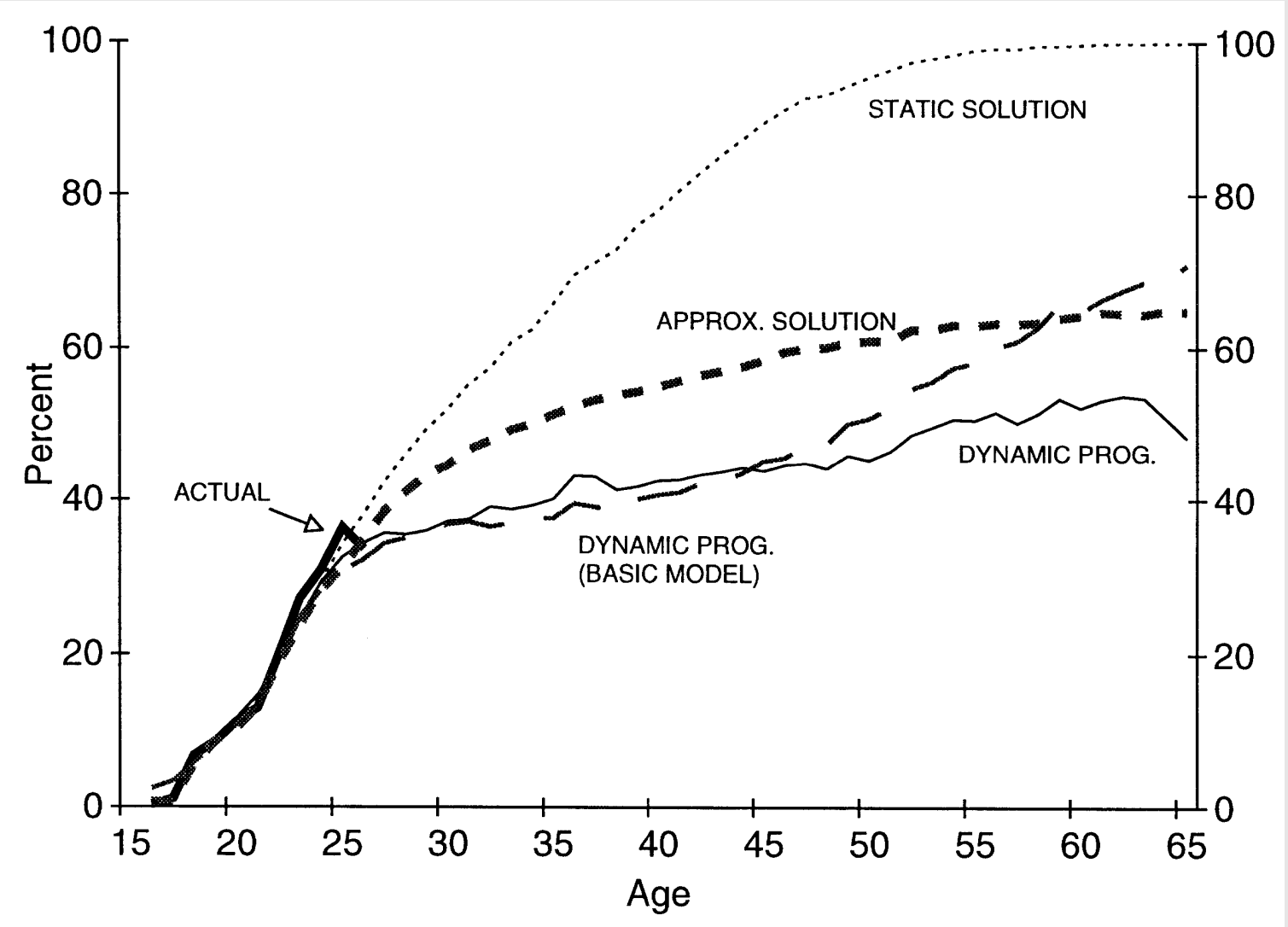

FIG. 1.—Percentage white-collar by age

Model Fit and External Validation (contd 2): Males

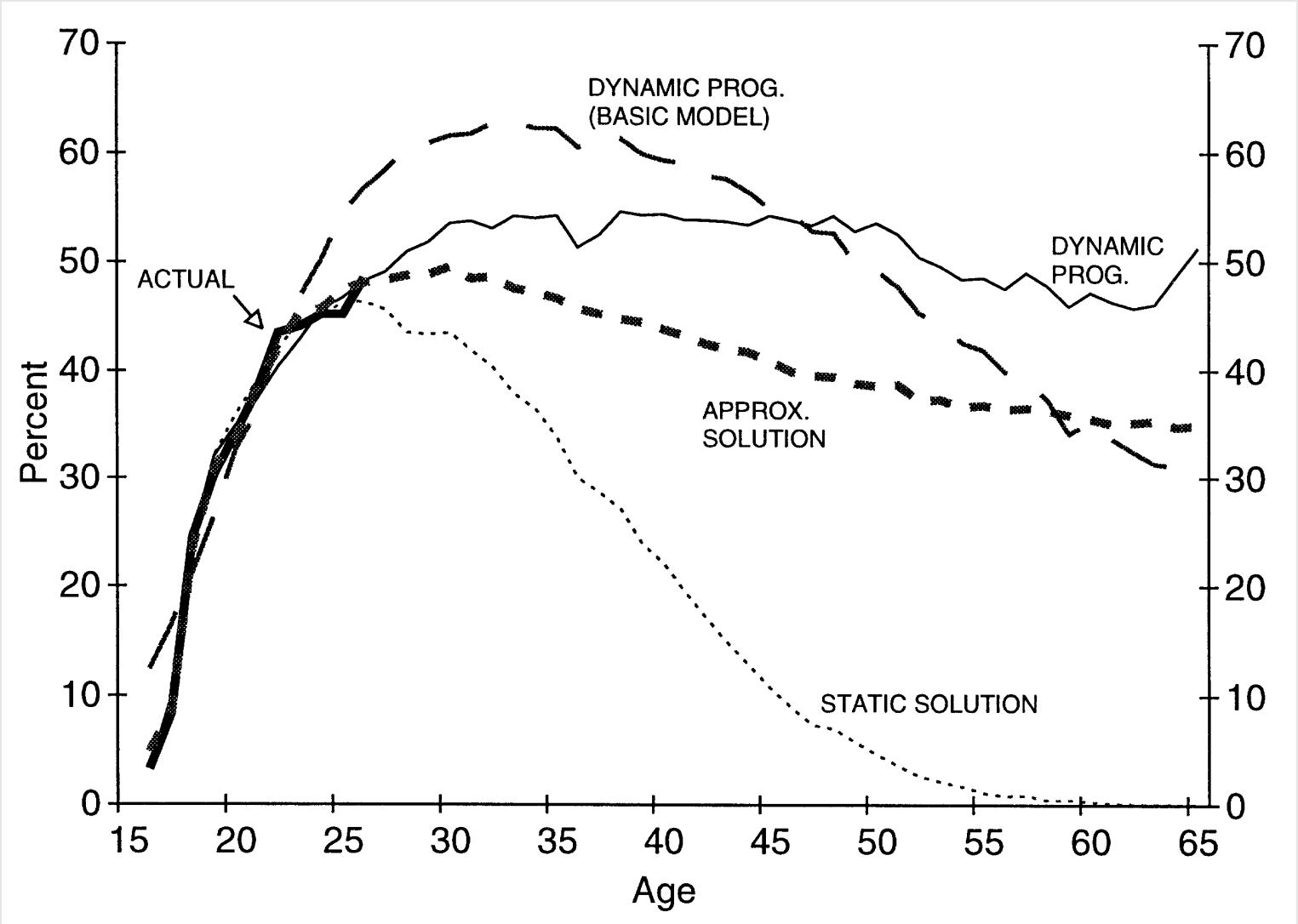

FIG. 2.—Percentage blue-collar by age

Model Fit and External Validation (contd 3): Males

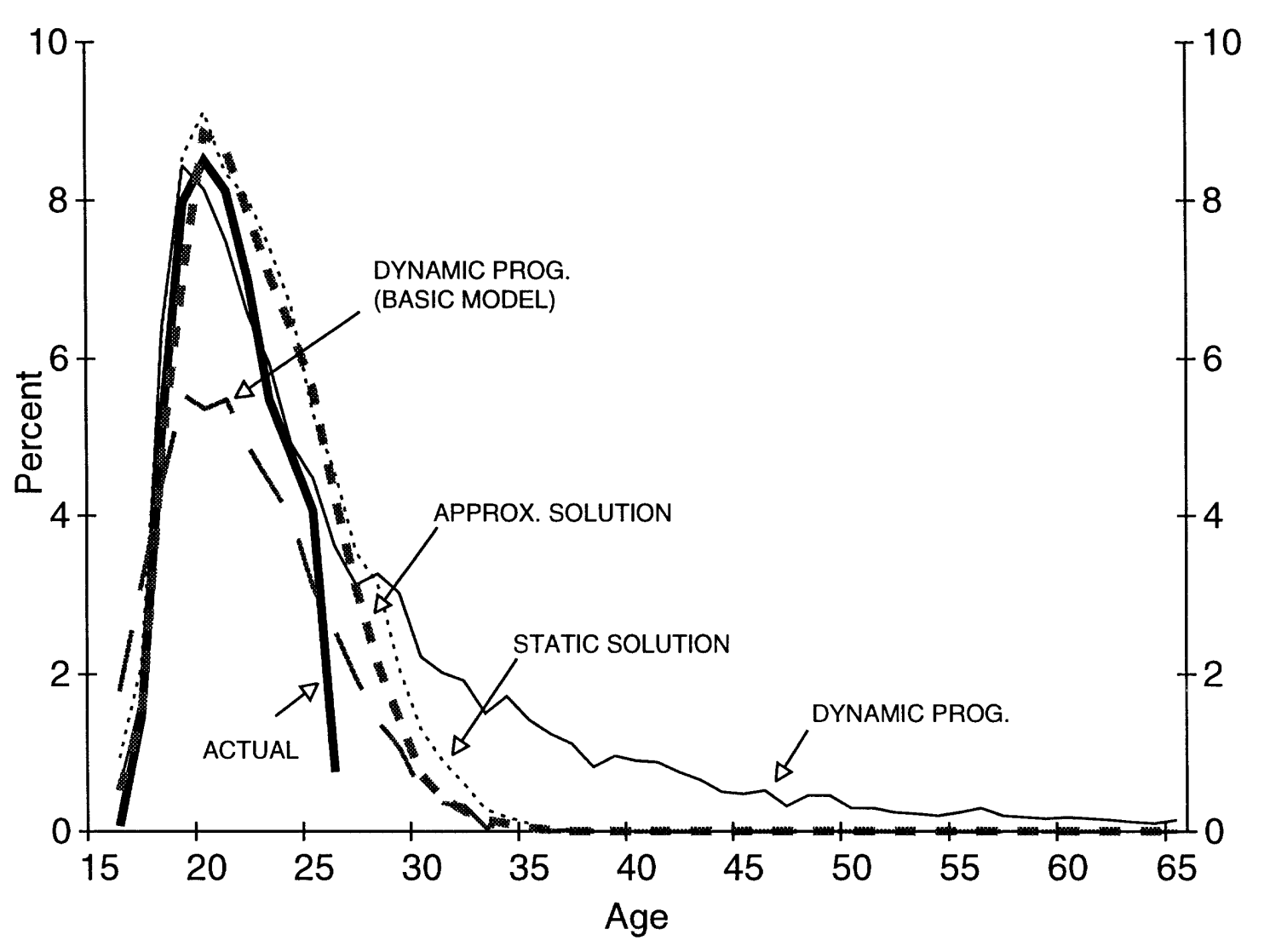

FIG. 3.—Percentage in the military by age

Model Fit and External Validation (contd 4): Males

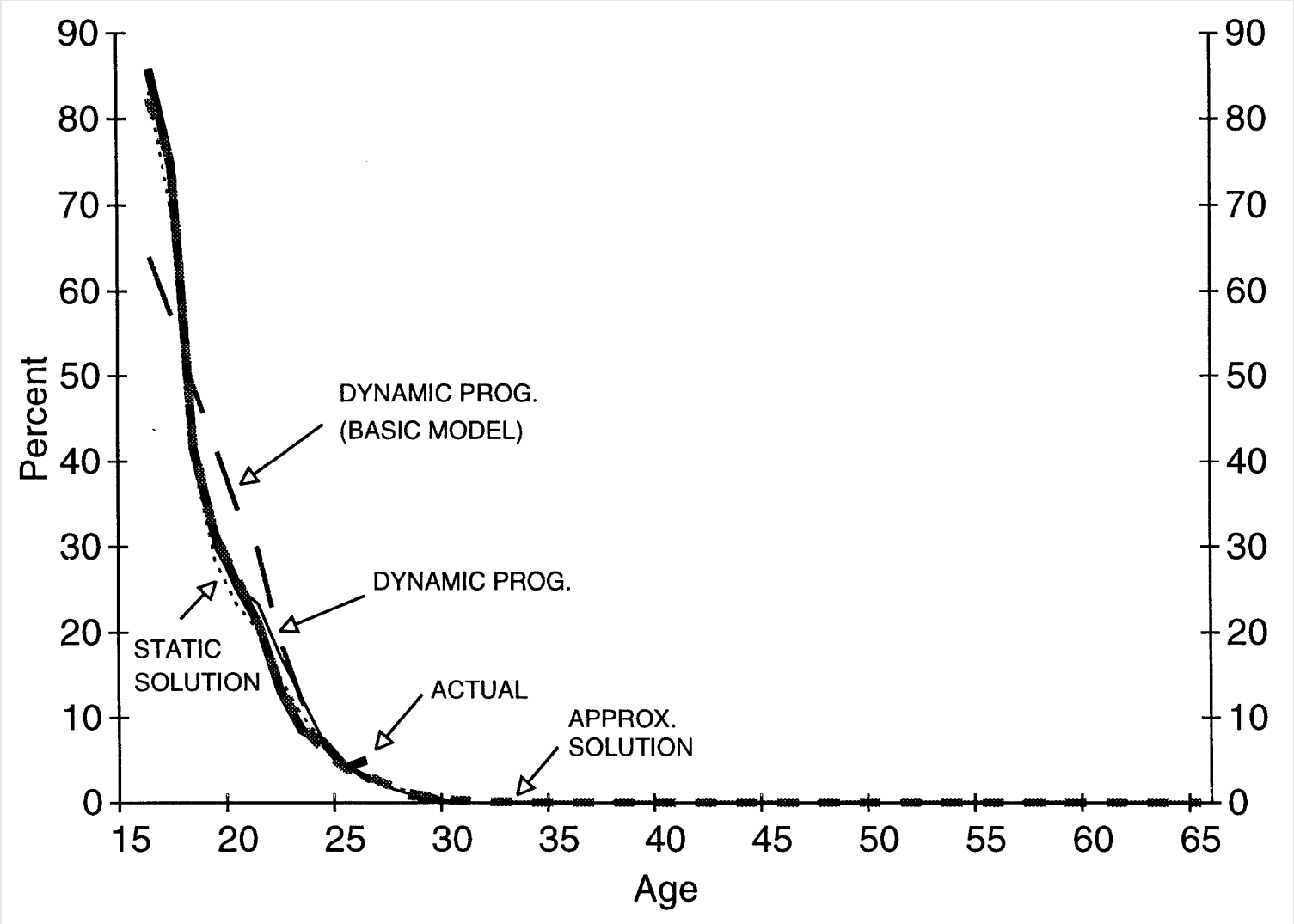

FIG. 4.—Percentage in school by age

Model Fit and External Validation (contd 5): Males

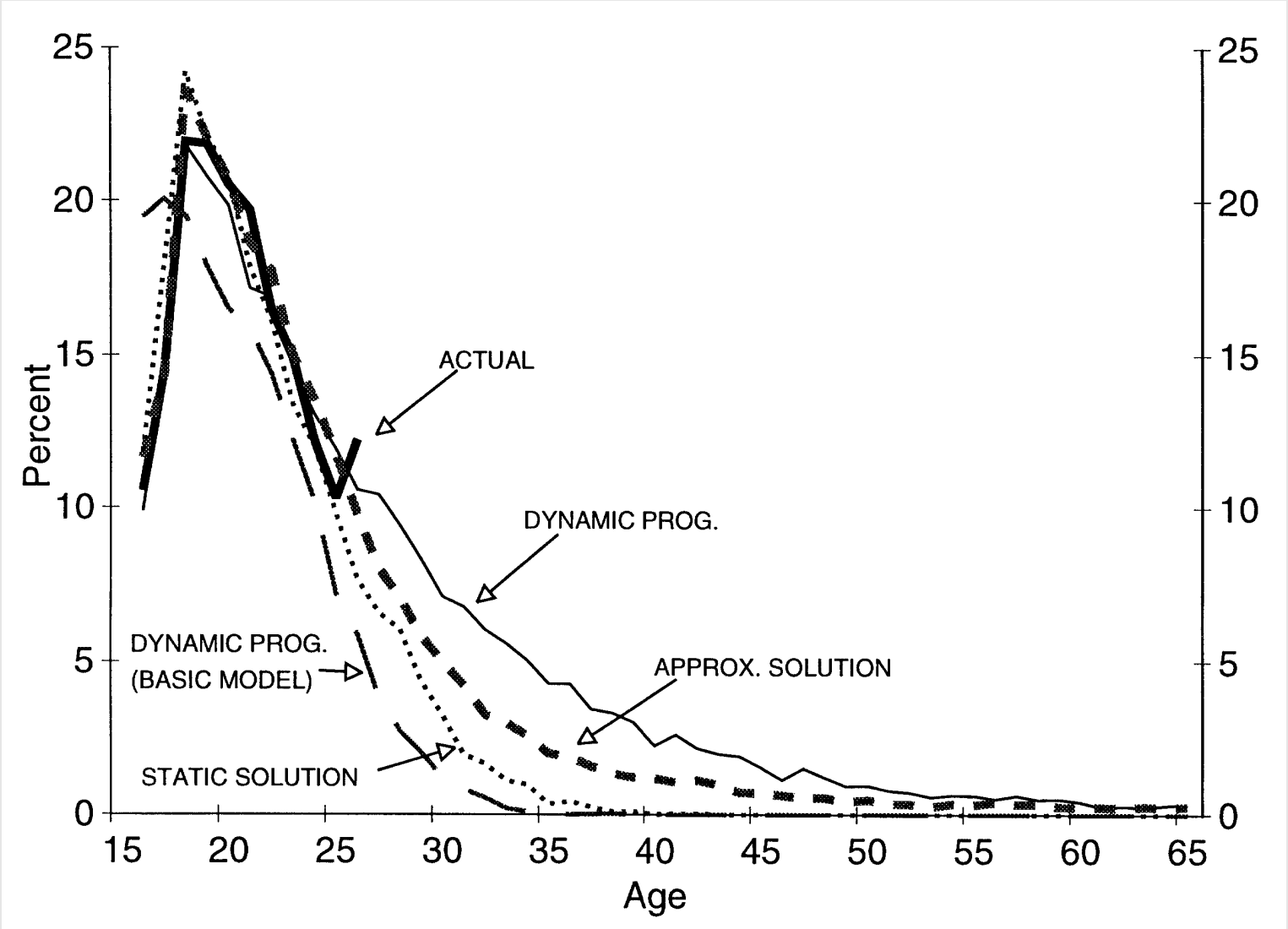

FIG. 5.—Percentage at home by age

Model Fit and External Validation (contd 6): Males

Model Predictions vs. CPS Choice Frequencies

Age Range	NLSY*	CPS (Year)†	DP-Basic*	DP-Extended†	Approximation*
			White-Collar		
16–19	.043	.064 (1981)	.052	.043	.041
20–23	.190	.187 (1985)	.176	.187	.180
24–26	.344	.345 (1989)	.307	.335	.332
24–27	· · ·	.348 (1989)	.323	.343	.349
28–31	· · ·	.384 (1993)	.365	.375	.443
30–33	· · ·	.413 (1995)	.370	.388	.472
35–44	· · ·	.449 (1995)	.405	.430	.547
			Blue-Collar		
16–19	.171	.265 (1981)	.199	.182	.176
20–23	.430	.432 (1985)	.416	.418	.434
24–26	.475	.472 (1989)	.544	.490	.498
24–27	· · ·	.476 (1989)	.565	.494	.498
28–31	· · ·	.465 (1993)	.616	.539	.495
30–33	· · ·	.460 (1995)	.624	.547	.487
35–44	· · ·	.423 (1995)	.595	.541	.440

* Military is excluded to facilitate comparison with CPS (which is a civilian sample).

† Choice frequencies pertain to whites in the March CPS from the years indicated. We classify a person as working if, over the previous calendar year, he worked at least 35 weeks and, in those weeks, he worked at least 20 hours per week on average. The occupation is that held longest in the previous year.

Outline

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Behavior by Type: Females

BEHAVIORAL DIFFERENCES BY UNOBSERVED TYPE FOR BLACK, HISPANIC, AND WHITE WOMEN

	Black Women		Hispanic Women		White Women	
	Type 1	Type 6	Type 1	Type 6	Type 1	Type 6
Number of years receiving welfare by age 30	0.1	7.1	0.0	4.7	0.0	2.8
Number of years of work experience by age 30	9.7	1.9	10.6	2.5	10.3	3.5
Number of years of schooling completed by age 30	15.9	11.5	15.1	11.2	15.4	11.6
Number of years of marriage by age 30	2.6	2.7	5.6	4.5	6.5	5.7
Number of children by age 30	0.8	2.7	0.8	2.6	0.6	2.1
Percent of sample	15.8	25.5	13.8	29.3	19.2	20.4

Variance Explained by Initial Conditions: Females

PROPORTION OF VARIANCE EXPLAINED BY INITIAL CONDITIONS

	Type	B,W,H	State	Parent Schooling	All (With Interactions)
Highest grade completed by age 30	0.65	0.02	0.04	0.11	0.70
Years on welfare by age					
30	0.33	0.07	0.01	0.06	0.49
40	0.36	0.09	0.01	0.05	0.55
Years of work experience by age					
30	0.43	0.03	0.03	0.06	0.52
40	0.51	0.03	0.03	0.07	0.60
50	0.49	0.02	0.04	0.07	0.60
Children ever born by age					
30	0.22	0.04	0.01	0.05	0.28
40	0.26	0.06	0.01	0.05	0.34
Years of marriage by age					
30	0.03	0.12	0.04	0.01	0.23
40	0.02	0.17	0.05	0.01	0.27

NOTE: All determinants created as categorical. There are 6 type, 3 race, 5 state, and 13 parent schooling categories.

Variance Explained by Initial Conditions (contd): Females

PROPORTION OF VARIANCE EXPLAINED BY INITIAL CONDITIONS

	Type	B,W,H	State	Parent Schooling	All (With Interactions)
Full time wage offer at age					
20	0.44	0.06	0.02	0.08	0.54
30	0.61	0.04	0.01	0.11	0.65
40	0.65	0.04	0.01	0.15	0.70
50	0.64	0.04	0.01	0.11	0.68
Potential husband's earnings at age					
20	0.18	0.16	0.08	0.06	0.44
30	0.25	0.14	0.11	0.10	0.47
40	0.28	0.14	0.10	0.10	0.49
Present discounted value of utility					
White women	0.32	–	0.00	0.09	0.36
Black women	0.09	–	0.04	0.03	0.20
Hispanic women	0.17	–	0.02	0.05	0.23
All	0.18	0.24	0.03	0.11	0.47

NOTE: All determinants created as categorical. There are 6 type, 3 race, 5 state, and 13 parent schooling categories.

Behavior by Type: Males

Selected Characteristics at Age 24 by Type: Nine or 10 Years Initial Schooling

	Initial Schooling 9 Years or Less			
	Type 1	Type 2	Type 3	Type 4
Schooling	15.6	10.6	10.9	11.0
Experience:				
White-collar	.528	.704	.742	.279
Blue-collar	.189	4.05	2.85	1.61
Military	.000	.000	1.35	.038
Proportion who chose:				
White-collar	.509	.123	.176	.060
Blue-collar	.076	.775	.574	.388
Military	.000	.000	.151	.010
School	.416	.008	.013	.038
Home	.000	.095	.086	.505

Note.—Based on a simulation of 5,000 persons.

Behavior by Type (contd): Males

Selected Characteristics at Age 24 by Type: Nine or 10 Years Initial Schooling

	Initial Schooling 10 Years or More			
	Type 1	Type 2	Type 3	Type 4
Schooling	16.4	12.5	12.4	13.0
Experience:				
White-collar	1.07	1.06	1.05	.436
Blue-collar	.176	3.65	2.62	1.77
Military	.000	.000	1.10	.034
Proportion who chose:				
White-collar	.673	.236	.284	.155
Blue-collar	.039	.687	.516	.441
Military	.000	.000	.116	.005
School	.239	.024	.025	.074
Home	.050	.053	.059	.325

Note.—Based on a simulation of 5,000 persons.

Type Proportions by Initial Conditions: Males

ESTIMATED TYPE PROPORTIONS BY INITIAL SCHOOLING LEVEL AND TYPE-SPECIFIC ENDOWMENT RANKINGS

	Type 1	Type 2	Type 3	Type 4
Initial schooling:				
Nine years or less	.0491 (· · ·)	.1987 (.0294)	.4066 (.0357)	.3456 (.0359)
10 years or more	.2343 (· · ·)	.2335 (.0208)	.3734 (.0229)	.1588 (.0183)
Rank ordering:				
School attainment at age 16	1	2	3	4
White-collar skill endowment	1	2	4	3
Blue-collar skill endowment	2	1	4	3
Consumption value of school net of effort cost	1	3	4	2
Value of home production	1	2	4	3

NOTE.—Standard errors are in parentheses.

Family Background: Males

Relationship of Initial Schooling and Type to Selected Family Background Characteristics

	Initial Schooling Nine Years or Less and Person Is of Type			
	1 (1)	2 (2)	3 (3)	4 (4)
All	.010	.051	.103	.090
Mother's schooling:				
Non–high school graduate	.004	.099	.177	.161
High school graduate	.011	.043	.086	.071
Some college	.023	.021	.043	.058
College graduate	.007	.005	.049	.023
Household structure at age 14:				
Live with mother only	.001	.062	.133	.119
Live with father only	.026	.037	.088	.120
Live with both parents	.011	.049	.097	.082
Live with neither parent	.0001	.090	.154	.184
Number of siblings:				
0	.002	.041	.086	.092
1	.002	.029	.064	.051
2	.016	.048	.104	.063
3	.013	.056	.119	.090
4+	.009	.067	.117	.141
Parental income in 1978:				
$Y \leq$ ½ median*	.002	.078	.155	.181
½ median $< Y \leq$ median	.007	.053	.120	.103
Median $\leq Y \leq 2 \cdot$ median	.015	.044	.071	.051
$Y \geq 2 \cdot$ median	.014	.025	.024	.021

* Median income in the sample is $20,000.

Family Background (contd): Males

Relationship of Initial Schooling and Type to Selected Family Background Characteristics

	Initial Schooling 10 Years or More and Person Is of Type			
	1 (5)	2 (6)	3 (7)	4 (8)
All	.157	.177	.289	.123
Mother's schooling:				
Non–high school graduate	.038	.141	.276	.103
High school graduate	.143	.210	.305	.131
Some college	.294	.166	.263	.133
College graduate	.388	.151	.222	.154
Household structure at age 14:				
Live with mother only	.123	.137	.297	.128
Live with father only	.062	.180	.378	.106
Live with both parents	.169	.184	.284	.124
Live with neither parent	.037	.175	.275	.085
Number of siblings:				
0	.142	.227	.285	.126
1	.236	.199	.287	.133
2	.191	.157	.275	.146
3	.147	.182	.288	.104
4+	.081	.171	.303	.111
Parental income in 1978:				
$Y \leq$ ½ median*	.071	.132	.221	.161
½ median $< Y \leq$ median	.103	.173	.328	.113
Median $\leq Y \leq 2 \cdot$ median	.177	.204	.304	.134
$Y \geq 2 \cdot$ median	.479	.167	.182	.087

* Median income in the sample is $20,000.

Family Background (contd): Males

Relationship of Initial Schooling and Type to Selected Family Background Characteristics

	Observations (9)	Expected Present Value of Lifetime Utility at Age 16 (10)
All	1,373	307,673
Mother's schooling:		
Non–high school graduate	333	286,642
High school graduate	685	309,275
Some college	152	328,856
College graduate	142	339,593
Household structure at age 14:		
Live with mother only	178	296,019
Live with father only	44	291,746
Live with both parents	1,123	310,573
Live with neither parent	28	290,469
Number of siblings:		
0	50	310,833
1	261	320,697
2	364	311,053
3	320	306,395
4+	378	296,089
Parental income in 1978:		
$Y \leq$ ½ median*	214	292,565
½ median $< Y \leq$ median	382	296,372
Median $\leq Y \leq 2 \cdot$ median	446	314,748
$Y \geq 2 \cdot$ median	83	358,404

* Median income in the sample is $20,000.

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Counter-factual Exercises: Females

1. Equate wage offers, welfare stigma, and parent schooling of blacks and Hispanics to that of whites
2. Welfare experiments for "type 6" black, Hispanic, and white women
3. Increase the wage rate for "type 6" black, Hispanic, and white women
4. Introduction of EITC:
   - Unexpected in 2004 for "type 6" women
   - Fully adjusted (in Ω_{14}) in 2004 for "type 6"

Equating Opportunities for Blacks: Females

ACCOUNTING FOR DIFFERENCE IN OUTCOMES BETWEEN WHITE AND BLACK WOMEN

	Baseline		Counterfactuals			
	White	Black[a]	(1)	(2)	(3)	(4)
Pct. receiving welfare						
Age 15–17.5	1.3	5.1	5.4	4.1	4.1	4.2
18–21.5	4.7	16.8	15.1	12.5	14.0	14.3
22–25.5	7.1	26.5	20.9	17.9	22.8	23.3
26–29.5	7.1	29.7	21.4	19.6	26.4	26.1
Pct. in school						
Age 15–17.5	85.3	84.4	80.7	87.7	84.2	85.2
18–21.5	29.8	29.6	25.0	30.6	29.8	33.1
22–25.5	8.3	8.1	6.0	9.0	8.1	9.0
26–29.5	3.4	3.5	2.6	3.7	3.5	3.9
Pct. working						
Age 15–17.5	28.3	16.9	15.5	31.0	17.0	16.3
18–21.5	63.8	51.9	42.4	68.5	52.8	53.0
22–25.5	70.3	57.4	44.7	71.2	59.1	61.6
26–29.5	69.8	55.7	42.3	70.2	57.3	60.5

NOTE: (1) Black women have same marriage market as white women, (2) black women have same wage offer function as white women, (3) black women have same welfare stigma as white women, (4) black women have same parent schooling as white women.
[a]Black women assigned same geographic distribution as white women.

Equating Opportunities for Blacks (contd 1): Females

ACCOUNTING FOR DIFFERENCE IN OUTCOMES BETWEEN WHITE AND BLACK WOMEN

	Baseline		Counterfactuals			
	White	Black[a]	(1)	(2)	(3)	(4)
Pct. pregnant						
Age 15–17.5	1.9	3.0	3.2	2.6	2.9	2.8
18–21.5	4.8	6.7	7.0	5.9	6.6	6.5
22–25.5	5.1	7.4	7.6	6.7	7.3	7.3
26–29.5	4.9	6.8	6.9	6.3	6.7	6.5
Pct. married						
Age 15–17.5	5.0	1.1	3.6	1.7	1.1	1.0
18–21.5	28.2	9.6	24.6	12.7	10.0	8.7
22–25.5	52.3	21.7	45.1	27.3	22.5	20.6
26–29.5	65.4	28.5	55.7	36.5	29.4	27.6
Pct. out-of-wedlock pregnancy						
Age 15–17.5	1.8	3.0	3.0	2.5	2.9	2.8
18–21.5	3.1	5.9	4.9	5.0	5.8	5.7
22–25.5	2.4	5.8	4.2	4.9	5.7	5.7
26–29.5	1.6	4.9	3.1	4.0	4.7	4.7

NOTE: (1) Black women have same marriage market as white women, (2) black women have same wage offer function as white women, (3) black women have same welfare stigma as white women, (4) black women have same parent schooling as white women.
[a]Black women assigned same geographic distribution as white women.

Equating Opportunities for Blacks (contd 2): Females

ACCOUNTING FOR DIFFERENCE IN OUTCOMES BETWEEN WHITE AND BLACK WOMEN

	Baseline		Counterfactuals			
	White	Black[a]	(1)	(2)	(3)	(4)
Pct. living with parents						
Age 15–17.5	93.6	97.6	95.0	96.9	97.6	97.6
18–21.5	56.2	71.5	60.0	68.8	71.3	72.4
22–25.5	19.6	33.2	22.4	30.5	32.9	34.1
26–29.5	10.5	23.2	13.9	20.4	22.9	23.8
Children ever born before						
Age 20	.31	.47	.51	.41	.47	.45
24	.72	1.04	1.09	.91	1.02	1.00
28	1.14	1.65	1.71	1.47	1.63	1.59
Highest grade completed by						
Age 24	13.08	12.97	12.62	13.17	12.99	13.22

NOTE: (1) Black women have same marriage market as white women, (2) black women have same wage offer function as white women, (3) black women have same welfare stigma as white women, (4) black women have same parent schooling as white women.
[a]Black women assigned same geographic distribution as white women.

Equating Opportunities for Hispanics: Females

ACCOUNTING FOR DIFFERENCE IN OUTCOMES BETWEEN WHITE AND HISPANIC WOMEN

	Baseline		Counterfactuals			
	White[a]	Hispanic[b]	(1)	(2)	(3)	(4)
Pct. receiving welfare						
Age 15–17.5	1.0	4.1	4.1	3.1	4.5	2.0
18–21.5	3.6	10.6	10.6	9.0	11.5	6.1
22–25.5	5.7	14.7	15.0	11.6	16.0	9.5
26–29.5	5.6	15.7	15.6	11.9	16.9	10.1
Pct. in school						
Age 15–17.5	85.5	80.2	79.6	82.7	80.1	84.1
18–21.5	31.1	22.5	21.8	23.4	22.4	30.6
22–25.5	8.7	6.4	6.0	7.0	6.4	8.3
26–29.5	3.7	2.9	2.6	2.9	2.9	3.8
Pct. working						
Age 15–17.5	30.2	25.5	25.7	33.6	25.5	24.7
18–21.5	69.0	58.8	57.5	66.1	58.4	63.0
22–25.5	76.1	58.9	56.5	66.5	58.1	69.8
26–29.5	75.8	56.5	53.1	65.0	55.9	68.8

NOTE: (1) Hispanic women have same marriage market as white women, (2) Hispanic women have same wage offer function as white women, (3) Hispanic women have same welfare stigma as white women, (4) Hispanic women have same parent schooling as white women.
[a]California and New York only.
[b]Hispanic women assigned same geographic distribution as whites.

Equating Opportunities for Hispanics (contd 1): Females

ACCOUNTING FOR DIFFERENCE IN OUTCOMES BETWEEN WHITE AND HISPANIC WOMEN

	Baseline		Counterfactuals			
	White[a]	Hispanic[b]	(1)	(2)	(3)	(4)
Pct. pregnant						
Age 15–17.5	1.6	3.1	3.1	2.9	3.1	2.5
18–21.5	4.1	6.4	6.5	6.1	6.4	5.8
22–25.5	4.5	7.0	6.9	6.6	7.0	6.3
26–29.5	4.3	6.6	6.5	6.4	6.6	5.9
Pct. married						
Age 15–17.5	4.1	3.1	3.2	3.7	3.1	2.8
18–21.5	23.8	22.4	22.9	23.9	22.4	19.0
22–25.5	47.8	42.6	43.6	44.6	42.4	40.7
26–29.5	61.6	53.9	55.9	56.6	53.4	52.9
Pct. out-of-wedlock pregnancy						
Age 15–17.5	1.5	3.0	3.0	2.8	3.0	2.4
18–21.5	2.9	4.8	4.8	4.5	4.8	4.4
22–25.5	2.4	4.0	3.9	3.7	4.0	3.7
26–29.5	1.6	3.0	2.9	2.7	3.0	2.7

NOTE: (1) Hispanic women have same marriage market as white women, (2) Hispanic women have same wage offer function as white women, (3) Hispanic women have same welfare stigma as white women, (4) Hispanic women have same parent schooling as white women.

[a]California and New York only.

[b]Hispanic women assigned same geographic distribution as whites.

Equating Opportunities for Hispanics (contd 2): Females

ACCOUNTING FOR DIFFERENCE IN OUTCOMES BETWEEN WHITE AND HISPANIC WOMEN

	Baseline		Counterfactuals			
	White[a]	Hispanic[b]	(1)	(2)	(3)	(4)
Pct. living with parents						
Age 15–17.5	94.5	95.6	95.5	95.0	95.6	95.7
18–21.5	60.1	60.9	60.0	59.4	60.9	64.1
22–25.5	21.8	23.3	22.9	22.5	23.4	24.9
26–29.5	11.9	14.5	13.9	13.4	14.8	15.1
Children ever born before age						
Age 20	.27	.47	.47	.44	.47	.39
24	.62	1.01	1.01	.95	1.01	.89
28	.99	1.59	1.59	1.51	1.60	1.41
Highest grade completed by						
Age 24	13.18	12.48	12.41	12.61	12.46	13.10

NOTE: (1) Hispanic women have same marriage market as white women, (2) Hispanic women have same wage offer function as white women, (3) Hispanic women have same welfare stigma as white women, (4) Hispanic women have same parent schooling as white women.

[a]California and New York only.

[b]Hispanic women assigned same geographic distribution as whites.

Welfare Experiments and Wage Increase for Blacks: Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: BLACK WOMEN (TYPE 6)

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pct. receiving welfare							
Age 15–17.5	13.2	0.0	13.0	13.2	9.6	8.0	10.9
18–21.5	39.6	0.0	36.4	39.9	30.6	27.2	35.3
22–25.5	61.2	0.0	35.6	60.5	52.2	45.2	57.2
26–29.5	68.1	0.0	16.5	66.5	61.8	55.1	66.5
Pct. in school							
Age 15–17.5	70.1	72.8	70.2	70.1	71.1	70.9	79.2
18–21.5	8.9	10.9	8.9	8.8	9.5	9.1	13.1
22–25.5	3.7	5.2	4.5	4.0	4.3	3.9	5.1
26–29.5	1.1	1.6	1.5	1.3	1.4	1.3	1.7
Pct. working							
Age 15–17.5	9.5	10.4	9.6	9.6	9.7	11.9	11.3
18–21.5	26.9	36.5	27.2	26.7	29.1	42.6	36.8
22–25.5	20.8	42.7	25.9	21.4	24.7	54.1	29.7
26–29.5	15.1	43.4	31.2	18.1	18.9	62.2	23.8

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Welfare Experiments and Wage Increase for Blacks (contd 1): Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: BLACK WOMEN (TYPE 6)

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pct. pregnant							
Age 15–17.5	5.0	4.5	5.2	5.2	4.9	4.9	4.4
18–21.5	9.5	8.8	9.5	9.6	9.4	9.3	8.9
22–25.5	10.1	9.7	10.3	10.3	10.1	10.1	9.8
26–29.5	9.2	8.8	9.4	9.3	9.1	9.1	8.7
Pct. living with parents							
Age 15–17.5	98.2	98.0	98.2	98.1	98.1	98.1	98.2
18–21.5	73.1	70.7	73.0	73.1	72.5	71.9	73.9
22–25.5	34.4	31.1	33.6	34.3	33.7	33.4	35.2
26–29.5	26.3	21.0	23.6	26.0	25.6	25.4	27.2
Pct. married							
Age 15–17.5	0.4	0.5	0.4	0.4	0.4	0.4	0.3
18–21.5	7.8	10.6	8.0	7.8	8.6	9.0	6.9
22–25.5	16.5	25.3	19.0	16.8	18.3	18.9	14.7
26–29.5	21.8	36.6	28.9	22.6	23.9	25.0	14.2

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Welfare Experiments and Wage Increase for Blacks (contd 2): Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: BLACK WOMEN (TYPE 6)

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pct. out-of-wedlock pregnancy							
Age 15–17.5	5.0	4.5	5.2	5.2	4.9	4.9	4.4
18–21.5	8.5	7.6	8.6	8.6	8.3	8.3	8.1
22–25.5	8.5	7.1	8.2	8.6	8.3	8.2	8.9
26–29.5	7.3	5.4	6.6	7.3	7.0	6.9	7.1
Children ever born before							
Age 20	0.76	0.68	0.78	0.78	0.75	0.74	0.67
24	1.50	1.38	1.52	1.53	1.48	1.47	1.38
28	2.40	2.24	2.43	2.44	2.37	2.37	2.25
Highest grade completed by							
Age 24	11.4	11.6	11.5	11.4	11.5	11.5	11.9

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Welfare Experiments and Wage Increase for Blacks (contd 3): Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: BLACK WOMEN (TYPE 6)

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pct. high school dropouts	45.4	36.2	44.0	45.2	42.2	43.7	27.0
Welfare benefits (÷ 1000)							
Age 15–17.5	0.16	0.00	0.15	0.16	0.08	0.09	0.13
18–21.5	0.63	0.00	0.57	0.62	0.38	0.40	0.56
22–25.5	1.42	0.00	0.76	1.20	0.98	0.89	1.31
26–29.5	1.88	0.00	0.39	1.36	1.35	1.25	1.78
Earnings (÷ 1000)							
Age 15–17.5	0.15	0.16	0.15	0.15	0.15	0.18	0.19
18–21.5	0.63	0.86	0.64	0.62	0.69	0.90	0.96
22–25.5	0.70	1.43	0.84	0.75	0.84	1.40	1.11
26–29.5	0.61	1.77	1.13	0.69	0.77	1.77	1.04

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Welfare Experiments and Wage Increase for Blacks (contd 4): Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: BLACK WOMEN (TYPE 6)

Outcome		(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total income (÷ 1000)								
Age 15–17.5	7.13	6.98	7.13	7.14	7.06	7.10	7.15	
18–21.5	6.03	5.56	5.98	6.02	5.82	6.03	6.31	
22–25.5	4.33	3.68	3.83	4.13	4.03	4.50	4.63	
26–29.5	4.35	3.86	3.50	3.92	4.00	4.91	4.65	
PDV utility (÷ 1000)								
From age 14	58.2	56.1	58.1	58.2	57.7	57.9	5.98	
18	62.1	60.9	61.6	61.8	61.8	61.9	66.5	
22	55.5	56.1	54.7	54.9	55.4	56.0	62.2	
25	52.8	55.2	52.2	52.2	53.1	54.2	60.0	

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Welfare Experiments and Wage Increase for Hispanics: Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: HISPANIC WOMEN (TYPE 6)

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pct. receiving welfare							
Age 15–17.5	12.1	0.0	11.8	12.0	6.4	6.2	9.3
18–21.5	28.8	0.0	26.4	28.9	18.7	18.1	25.4
22–25.5	39.6	0.0	26.4	38.8	30.5	27.4	36.2
26–29.5	40.3	0.0	15.3	38.3	31.1	29.1	35.3
Pct. in school							
Age 15–17.5	65.4	68.8	65.5	65.4	66.5	66.2	75.2
18–21.5	6.7	8.5	6.7	6.7	7.3	7.0	10.9
22–25.5	2.9	4.3	3.5	3.0	3.3	3.0	4.4
26–29.5	0.9	0.8	1.0	0.9	1.0	0.9	1.1
Pct. working							
Age 15–17.5	13.2	14.9	13.4	13.2	14.4	15.7	17.7
18–21.5	34.5	44.4	35.1	34.5	37.8	45.3	46.5
22–25.5	25.4	42.8	29.7	26.4	30.1	45.4	37.7
26–29.5	19.4	38.1	28.4	21.4	24.0	45.2	32.1

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Welfare Experiments and Wage Increase for Hispanics (contd 1): Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: HISPANIC WOMEN (TYPE 6)

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pct. pregnant							
Age 15–17.5	4.9	4.7	5.0	5.0	4.8	4.9	4.5
18–21.5	8.9	8.4	8.9	8.9	8.8	8.8	8.4
22–25.5	9.8	9.3	10.0	10.0	9.8	9.7	9.2
26–29.5	8.7	8.6	8.9	8.9	8.7	8.7	8.5
Pct. living with parents							
Age 15–17.5	97.3	97.0	97.4	97.4	97.2	97.3	97.6
18–21.5	63.1	59.7	62.9	63.0	61.4	60.8	65.3
22–25.5	25.9	22.5	25.5	25.8	24.4	24.8	27.0
26–29.5	17.7	12.4	15.4	17.2	15.6	15.9	18.5
Pct. married							
Age 15–17.5	1.2	1.5	1.2	1.2	1.4	1.3	1.0
18–21.5	19.7	23.0	19.9	19.7	21.3	21.5	16.7
22–25.5	35.3	45.0	37.0	35.7	38.3	38.2	31.6
26–29.5	45.5	58.8	51.5	46.7	49.2	49.8	43.0

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Welfare Experiments and Wage Increase for Hispanics (contd 2): Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: HISPANIC WOMEN (TYPE 6)

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pct. out-of-wedlock pregnancy							
Age 15–17.5	4.8	4.5	4.9	5.0	4.8	4.8	4.4
18–21.5	7.0	6.5	7.0	7.1	6.8	6.8	7.0
22–25.5	6.2	5.2	6.2	6.3	5.9	5.9	6.2
26–29.5	4.8	3.4	4.3	4.8	4.4	4.4	4.7
Children ever born before							
Age 20	0.74	0.68	0.75	0.76	0.73	0.72	0.66
24	1.42	1.33	1.43	1.44	1.40	1.39	1.31
28	2.29	2.18	2.31	2.32	2.27	2.26	2.14
Highest grade completed by							
Age 24	11.1	11.4	11.2	11.1	11.2	11.2	11.7

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Welfare Experiments and Wage Increase for Hispanics (contd 3): Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: HISPANIC WOMEN (TYPE 6)

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pct. high school dropouts	51.9	45.0	51.4	51.8	49.0	51.1	35.4
Welfare benefits (÷ 1000)							
Age 15–17.5	0.15	0.00	0.15	0.15	0.05	0.07	0.11
18–21.5	0.50	0.00	0.45	0.48	0.27	0.32	0.44
22–25.5	1.03	0.00	0.67	0.90	0.65	0.62	0.94
26- w-29.5	1.24	0.00	0.44	0.94	0.79	0.76	1.08
Earnings (÷ 1000)							
Age 15–17.5	0.25	0.28	0.25	0.25	0.27	0.28	0.34
18–21.5	0.98	1.26	0.99	0.97	1.07	1.18	0.43
22–25.5	1.03	1.70	1.17	1.05	1.23	1.51	1.67
26–29.5	0.96	1.87	1.28	1.02	1.20	1.71	1.71

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Welfare Experiments and Wage Increase for Hispanics (contd 4): Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: HISPANIC WOMEN (TYPE 6)

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total income (÷ 1000)							
Age 15–17.5	8.15	8.02	8.16	8.16	8.06	8.11	8.22
18–21.5	6.67	6.32	6.63	6.66	6.46	6.60	7.13
22–25.5	4.85	4.56	4.65	4.74	4.67	4.93	5.34
26–29.5	4.97	4.83	4.61	4.75	4.79	5.29	5.52
PDV utility (÷ 1000)							
From age 14	69.5	68.1	69.4	69.5	69.1	69.2	71.4
18	76.8	76.4	76.5	76.5	76.8	76.9	81.7
22	72.5	74.4	72.0	72.0	73.1	73.7	79.5
25	69.9	73.7	69.8	70.3	70.8	71.5	78.1

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Welfare Experiments and Wage Increase for Whites: Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: WHITE WOMEN (TYPE 6)

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pct. receiving welfare							
Age 15–17.5	4.6	0.0	4.4	4.4	2.1	2.9	3.4
18–21.5	15.2	0.0	14.3	15.0	9.5	10.5	12.4
22–25.5	25.0	0.0	19.6	24.6	18.2	18.2	20.7
26–29.5	24.6	0.0	12.6	23.5	18.2	18.4	20.4
Pct. in school							
Age 15–17.5	69.5	72.3	69.7	69.6	70.3	70.4	79.0
18–21.5	9.4	10.5	9.4	9.3	9.6	9.4	12.9
22–25.5	4.6	4.9	4.7	4.4	4.8	4.5	5.7
26–29.5	1.2	1.2	1.2	1.1	1.3	1.1	1.6

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Welfare Experiments and Wage Increase for Whites (contd 1): Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: WHITE WOMEN (TYPE 6)

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pct. working							
Age 15–17.5	15.4	15.9	15.5	15.6	15.7	16.0	19.4
18–21.5	40.8	48.3	41.2	43.6	43.2	47.1	54.4
22–25.5	35.5	47.7	37.5	44.5	38.8	48.6	50.6
26–29.5	31.6	44.8	36.0	44.0	35.1	46.5	49.1
Pct. pregnant							
Age 15–17.5	3.6	3.1	3.6	3.6	3.5	3.5	2.9
18–21.5	7.7	7.2	7.8	7.8	7.6	7.6	7.1
22–25.5	8.0	7.5	8.1	8.0	7.9	8.0	7.6
26–29.5	7.3	6.9	7.4	7.4	7.2	7.3	6.8

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Welfare Experiments and Wage Increase for Whites (contd 2): Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: WHITE WOMEN (TYPE 6)

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pct. living with parents							
Age 15–17.5	95.3	95.2	95.4	95.4	95.3	95.3	95.7
18–21.5	57.7	56.4	57.8	57.8	57.0	57.0	60.0
22–25.5	21.8	20.0	21.6	21.8	21.1	21.3	23.4
26–29.5	12.4	9.4	11.2	12.2	11.3	11.4	13.5
Pct. married							
Age 15–17.5	3.2	3.4	3.1	3.2	3.3	3.2	3.4
18–21.5	25.4	27.3	25.3	25.3	26.1	26.1	25.7
22–25.5	45.8	52.7	46.8	46.0	47.9	47.7	47.1
26–29.5	58.0	66.2	61.2	58.7	60.7	60.3	59.8
Pct. out-of-wedlock pregnancy							
Age 15–17.5	3.4	2.9	3.5	3.5	3.4	3.3	2.8
18–21.5	5.3	4.7	5.4	5.4	5.2	5.1	5.1
22–25.5	4.5	3.6	4.4	4.5	4.3	4.3	4.5
26–29.5	2.9	2.1	2.7	2.9	2.6	2.7	2.8

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Welfare Experiments and Wage Increase for Whites (contd 3): Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: WHITE WOMEN (TYPE 6)

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Children ever born before							
Age 20	0.55	0.49	0.56	0.56	0.54	0.54	0.48
24	1.18	1.08	1.19	1.19	1.16	1.16	1.07
28	1.86	1.72	1.88	1.88	1.83	1.88	1.70
Highest grade completed by							
Age 24	11.5	11.7	11.5	11.5	11.5	11.5	12.0
Pct. high school dropouts	42.2	36.8	41.6	42.1	40.3	41.2	23.7
Welfare benefits (÷ 1000)							
Age 15–17.5	0.04	0.00	0.04	0.04	0.01	0.02	0.03
18–21.5	0.25	0.00	0.23	0.24	0.14	0.17	0.20
22–25.5	0.57	0.00	0.43	0.52	0.35	0.35	0.46
26–29.5	0.63	0.00	0.30	0.50	0.39	0.39	0.50

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Welfare Experiments and Wage Increase for Whites (contd 4): Females

THE EFFECT OF WELFARE AND WAGES ON OUTCOMES: WHITE WOMEN (TYPE 6)

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Earnings (÷ 1000)							
Age 15–17.5	0.30	0.31	0.30	0.30	0.30	0.31	0.39
18–21.5	1.22	1.46	1.23	1.22	1.29	1.35	1.79
22–25.5	1.52	2.06	1.60	1.53	1.67	1.87	2.39
26–29.5	1.58	2.36	1.79	1.61	1.76	2.07	2.73
Total income (÷ 1000)							
Age 15–17.5	10.5	10.4	10.5	10.5	10.4	10.5	10.6
18–21.5	8.09	8.01	8.08	8.08	8.00	8.09	8.69
22–25.5	5.72	5.79	5.69	5.69	5.66	5.87	6.42
26–29.5	5.83	6.07	5.75	5.75	5.79	6.09	6.65
PDV utility (÷ 1000)							
From Age 14	84.6	83.4	84.5	84.6	84.3	84.4	86.9
18	94.2	94.1	94.0	94.1	94.1	94.2	99.6
22	92.8	94.7	92.6	92.6	93.2	93.5	100.8
25	92.3	96.3	92.3	92.1	93.1	93.5	101.4

NOTE: (1) Baseline, (2) no welfare, (3) 5-year time limit – no benefits thereafter, (4) 3-year time limit – 1/3 reduction in benefits, (5) welfare benefit reduction of 20%, (6) 25 hours/week work requirement after six months on welfare, (7) wage offers 5% higher.

Introduction of EITC: Females

THE EFFECT OF EITC ON OUTCOMES: TYPE 6

	Black Women			Hispanic Women			White Women		
Outcome	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Pct. receiving welfare									
Age 15–17.5	13.2	12.8	15.8	12.1	11.8	14.3	4.6	4.6	5.9
18–21.5	39.6	39.3	43.2	28.8	28.0	31.1	15.2	14.8	16.9
22–25.5	61.2	61.0	62.9	39.6	39.3	41.0	25.0	24.7	26.9
26–29.5	68.1	68.2	69.3	40.3	40.5	41.6	24.6	24.9	27.4
Pct. in school									
Age 15–17.5	70.1	68.7	67.0	65.4	63.4	61.3	69.5	68.0	66.3
18–21.5	8.9	8.3	7.4	6.7	6.1	5.0	9.4	8.7	7.9
22–25.5	3.7	3.2	2.8	2.9	2.4	2.1	4.6	4.0	3.7
26–29.5	1.1	1.0	0.9	0.9	0.7	0.7	1.2	1.1	1.0
Pct. working									
Age 15–17.5	9.5	9.4	9.1	13.2	12.9	12.5	15.4	15.5	14.9
18–21.5	26.9	27.2	23.4	34.5	34.2	28.8	40.8	41.0	36.6
22–25.5	20.8	22.0	18.1	25.4	26.7	20.8	35.5	36.3	31.0
26–29.5	15.1	16.5	13.3	19.4	21.6	17.0	31.6	32.3	27.2
Pct. pregnant									
Age 15–17.5	5.0	6.1	6.0	4.9	6.2	6.0	3.6	4.5	4.4
18–21.5	9.5	10.8	10.6	8.9	10.7	10.5	7.7	9.0	8.9
22–25.5	10.1	11.5	11.5	9.8	10.4	10.5	8.0	9.2	9.2
26–29.5	9.2	10.0	10.3	8.7	9.6	9.9	7.3	8.1	8.2

NOTE: (1) Baseline, (2) short-run: one-period ahead forecast with same states as baseline at each age, (3) long-run.

Counter-factual Exercises: Males

1. The impact of college tuition subsidies on school attainment and inequality

Effects of a College Subsidy: Males

EFFECT OF A $2,000 COLLEGE TUITION SUBSIDY ON SELECTED CHARACTERISTICS BY TYPE

	All Types	Type 1	Type 2	Type 3	Type 4
Percentage high school graduates:					
No subsidy	74.8	100.0	68.6	70.2	67.0
Subsidy	78.3	100.0	73.2	74.0	72.2
Percentage college graduates:					
No subsidy	28.3	98.7	11.1	8.6	19.5
Subsidy	36.7	99.5	21.0	17.1	32.9
Mean schooling:					
No subsidy	13.0	17.0	12.1	12.0	12.4
Subsidy	13.5	17.0	12.7	12.5	13.0
Mean years in college:					
No subsidy	1.34	3.97	.69	.59	1.05
Subsidy	1.71	3.99	1.14	1.00	1.58

NOTE.—Subsidy of $2,000 each year of attendance. Based on a simulation of 5,000 persons.

Effects of a College Subsidy (contd): Males

DISTRIBUTIONAL EFFECTS OF A $2,000 COLLEGE TUITION SUBSIDY

	Type 1	Type 2	Type 3	Type 4
Mean expected present value of lifetime utility at age 16:				
No subsidy	413,911	391,162	225,026	286,311
Subsidy	419,628	392,372	226,313	288,109
Gross gain	5,717	1,210	1,287	1,798
Net gain:				
Subsidy to all types*	3,513	−994	−917	−406
Subsidy to types 2, 3, and 4†	−1,134	76	153	664
Subsidy to types 3 and 4‡	−862	−862	425	936

* The per capita cost of the subsidy program is $2,204.
† The per capita cost of the subsidy program is $1,134.
‡ The per capita cost of the subsidy program is $862.