Dynamic Female Labor Supply

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1. Introduction

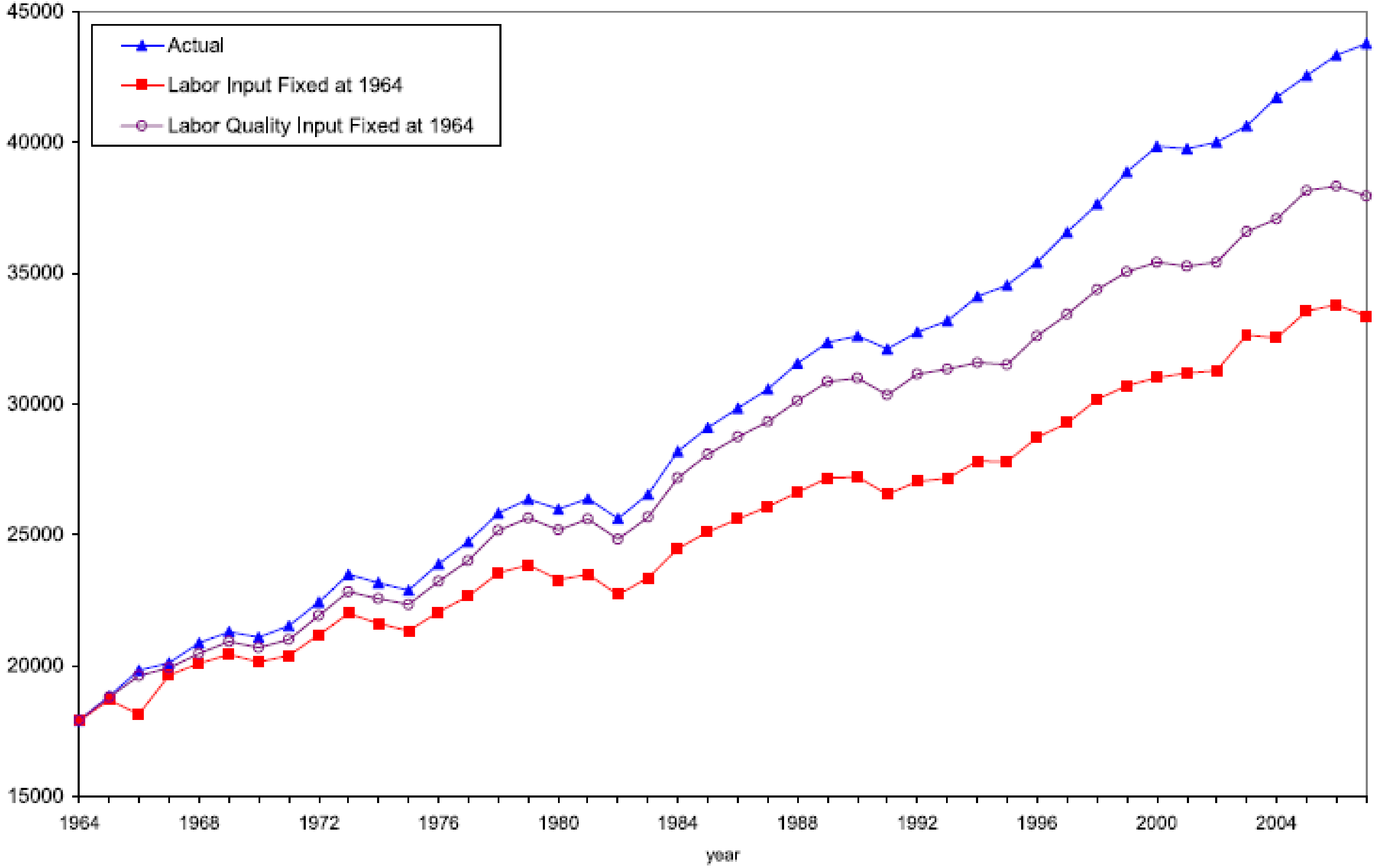

FIGURE 1.—United States per capita GDP (2006 prices).

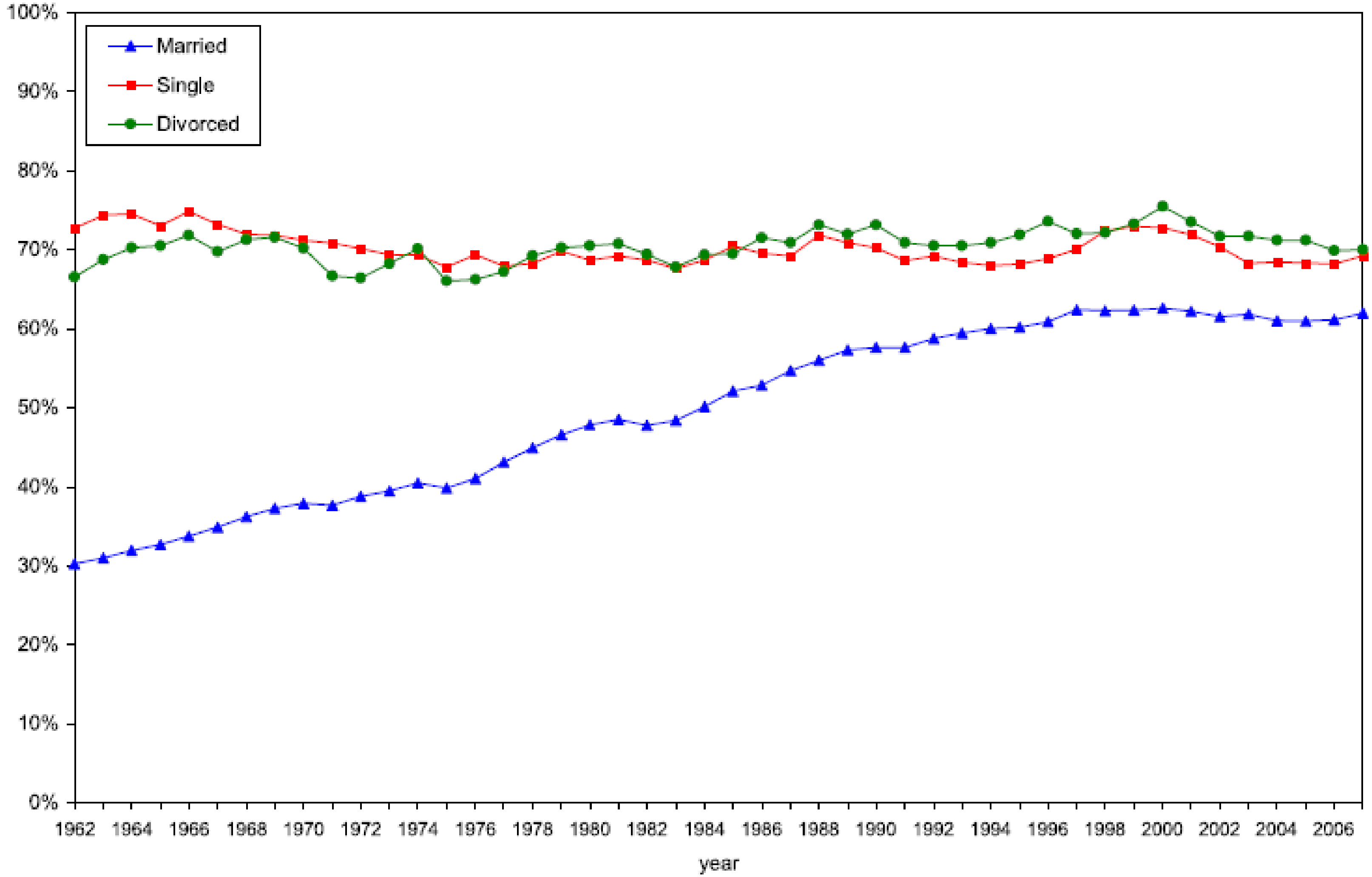

FIGURE 2.—Employment rates by marital status: Women (aged 22–65; proportion of women working 10+ weekly hours).

2. Main Facts and the Literature

Schooling

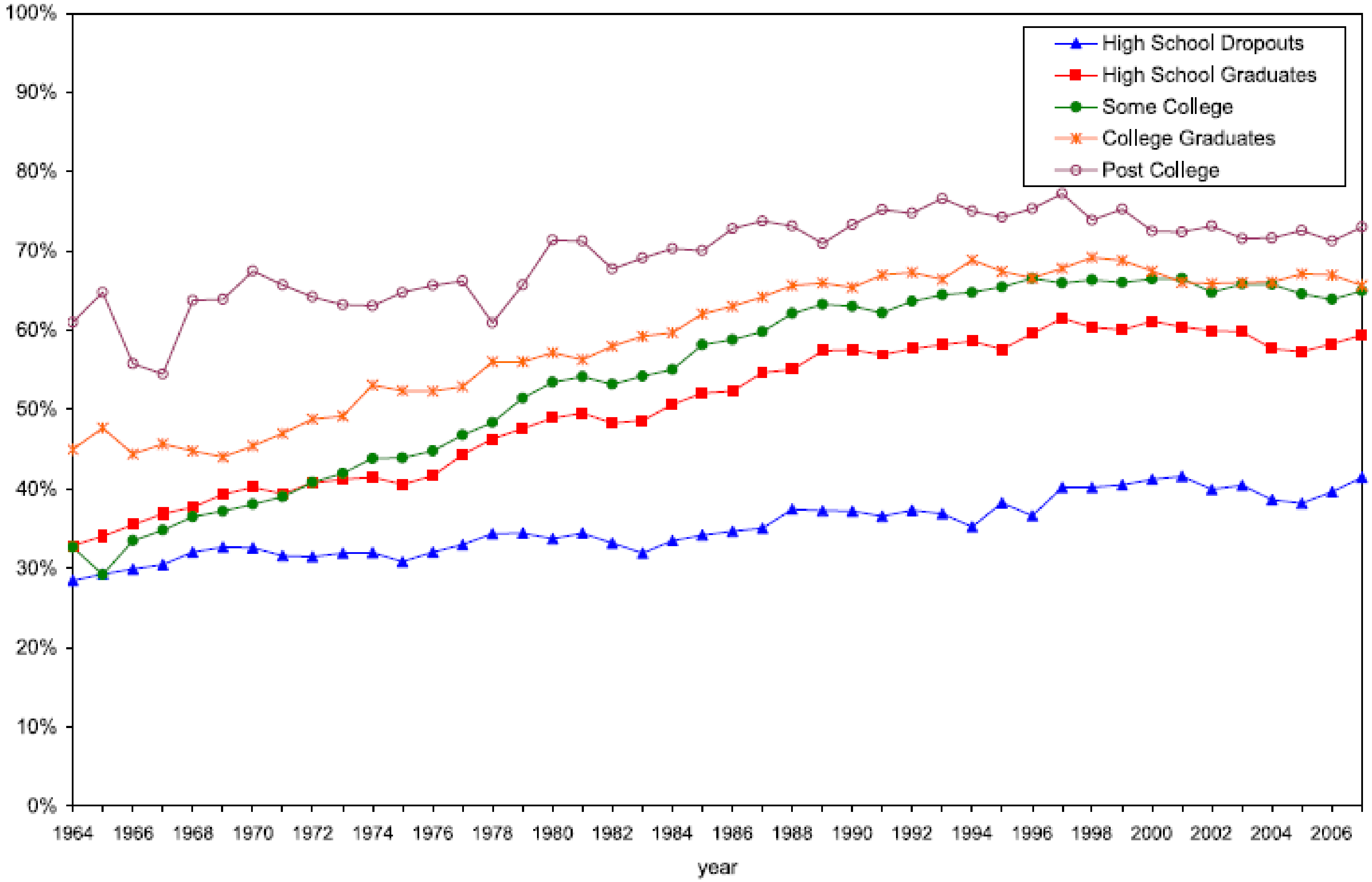

FIGURE 3.—Employment rates by level of education: married women (ages 22–65; proportion of women working 10+ weekly hours).

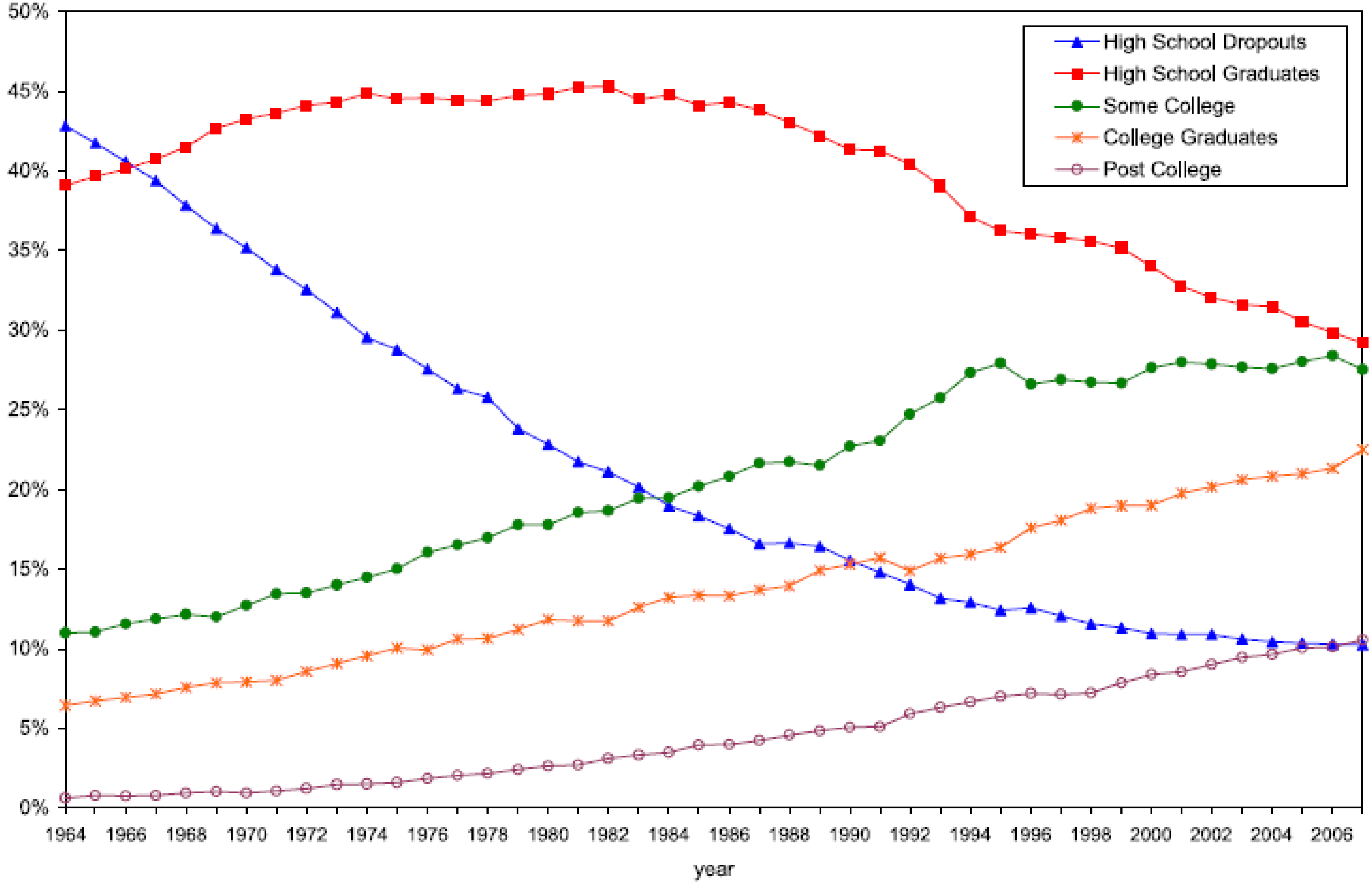

FIGURE 4.—Breakdown of married women by level of education (ages 22–65).

Earnings

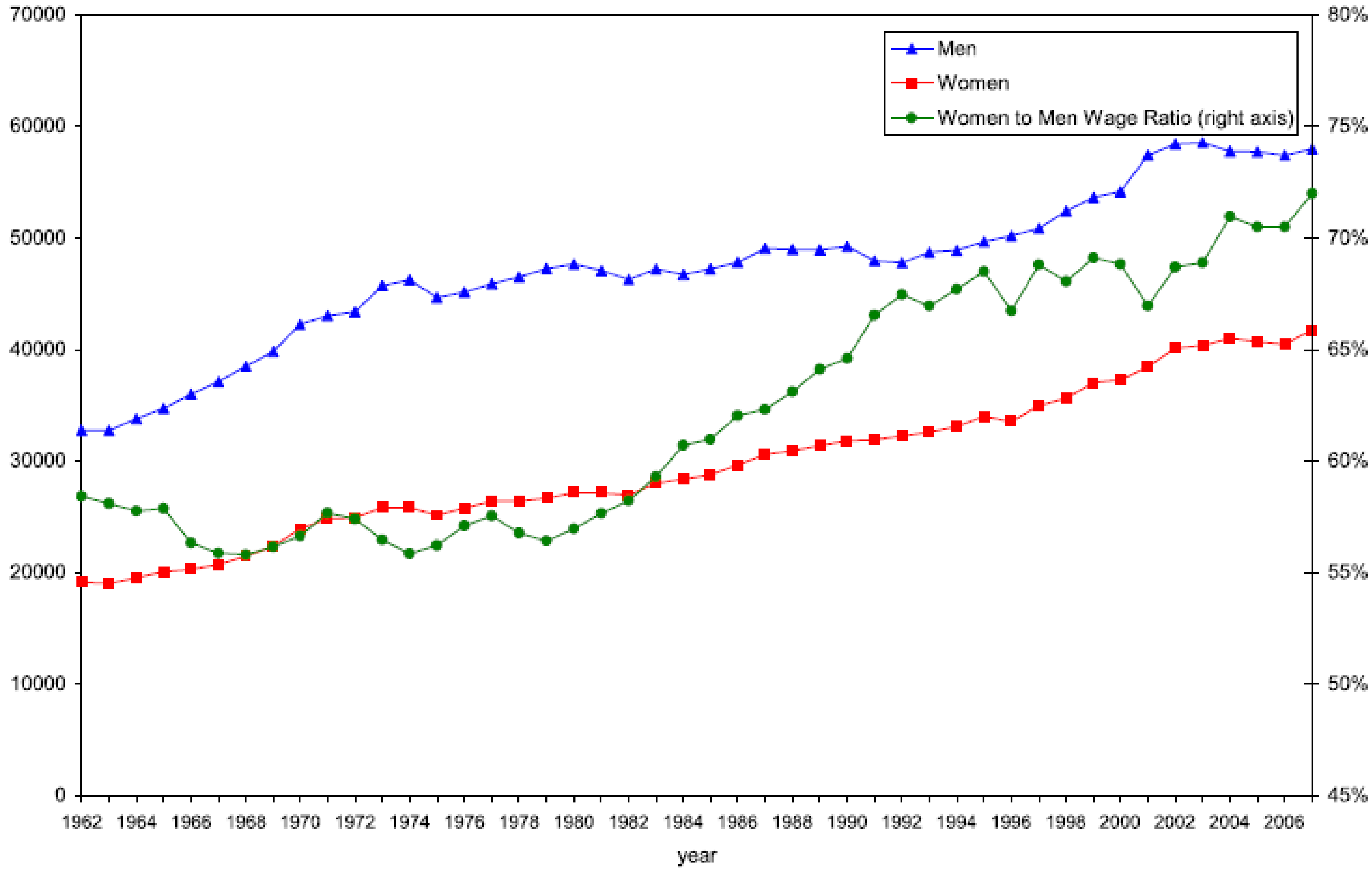

FIGURE 5.—Annual wages of full-time workers (ages 22–65; full-time full-year workers with nonzero wages; 2006 prices).

Fertility

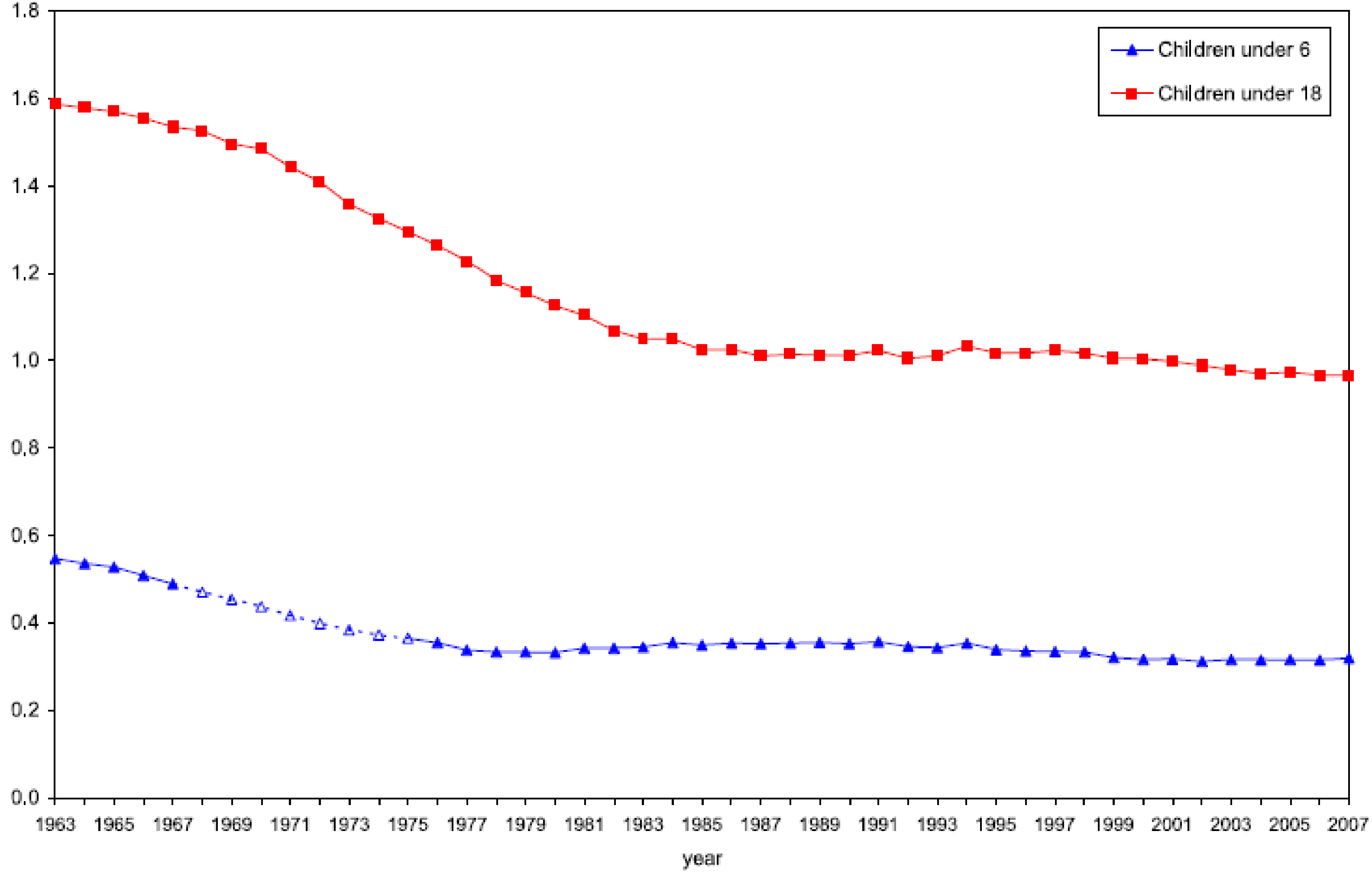

FIGURE 6.—Number of children per married woman (ages 22–65; extrapolated data for number of young children during 1968–1975).

Marriage and Divorce

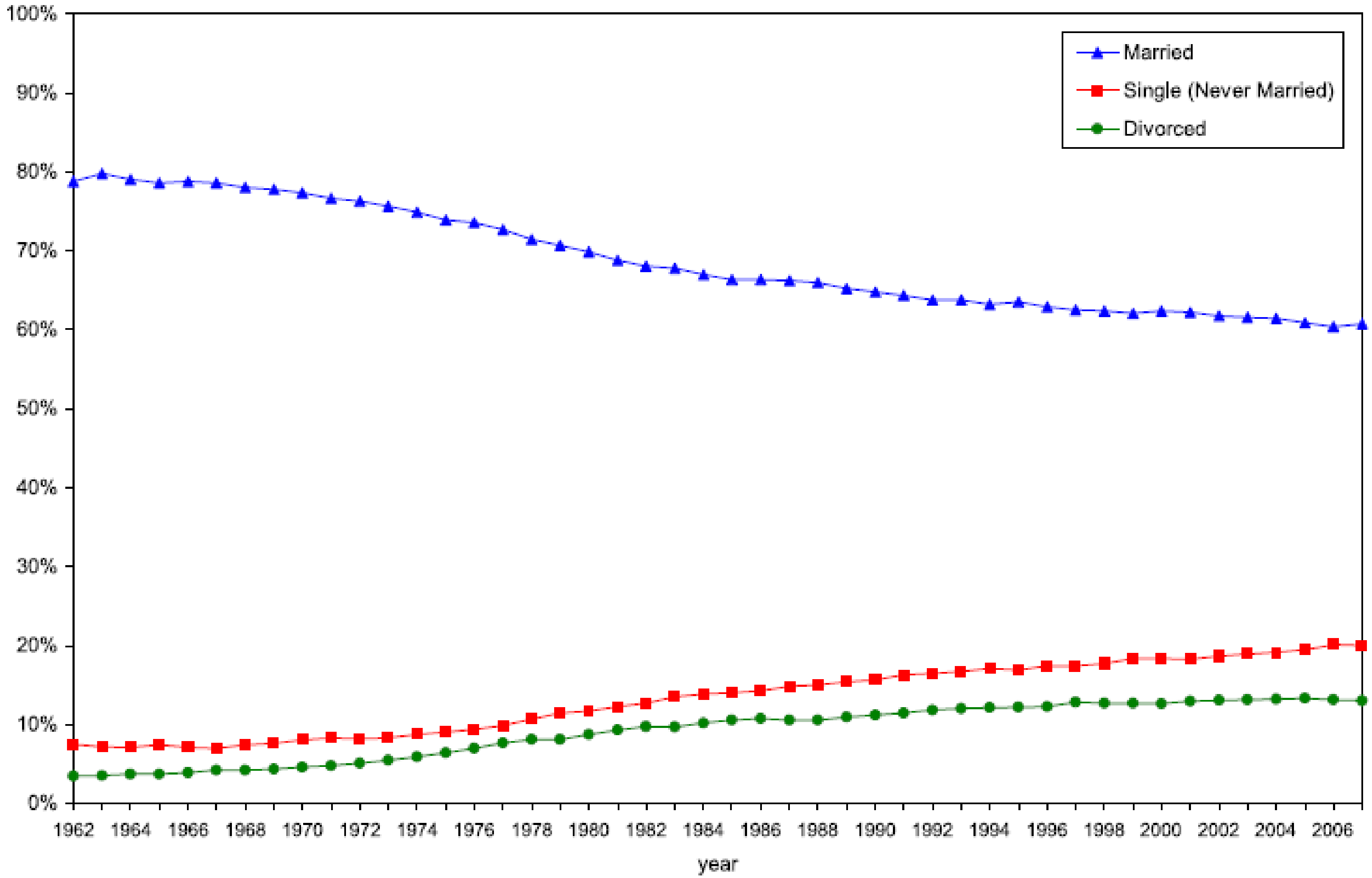

FIGURE 7.—Breakdown of women by marital status (ages 22–65).

Female Employment by Cohort: Other Explanations

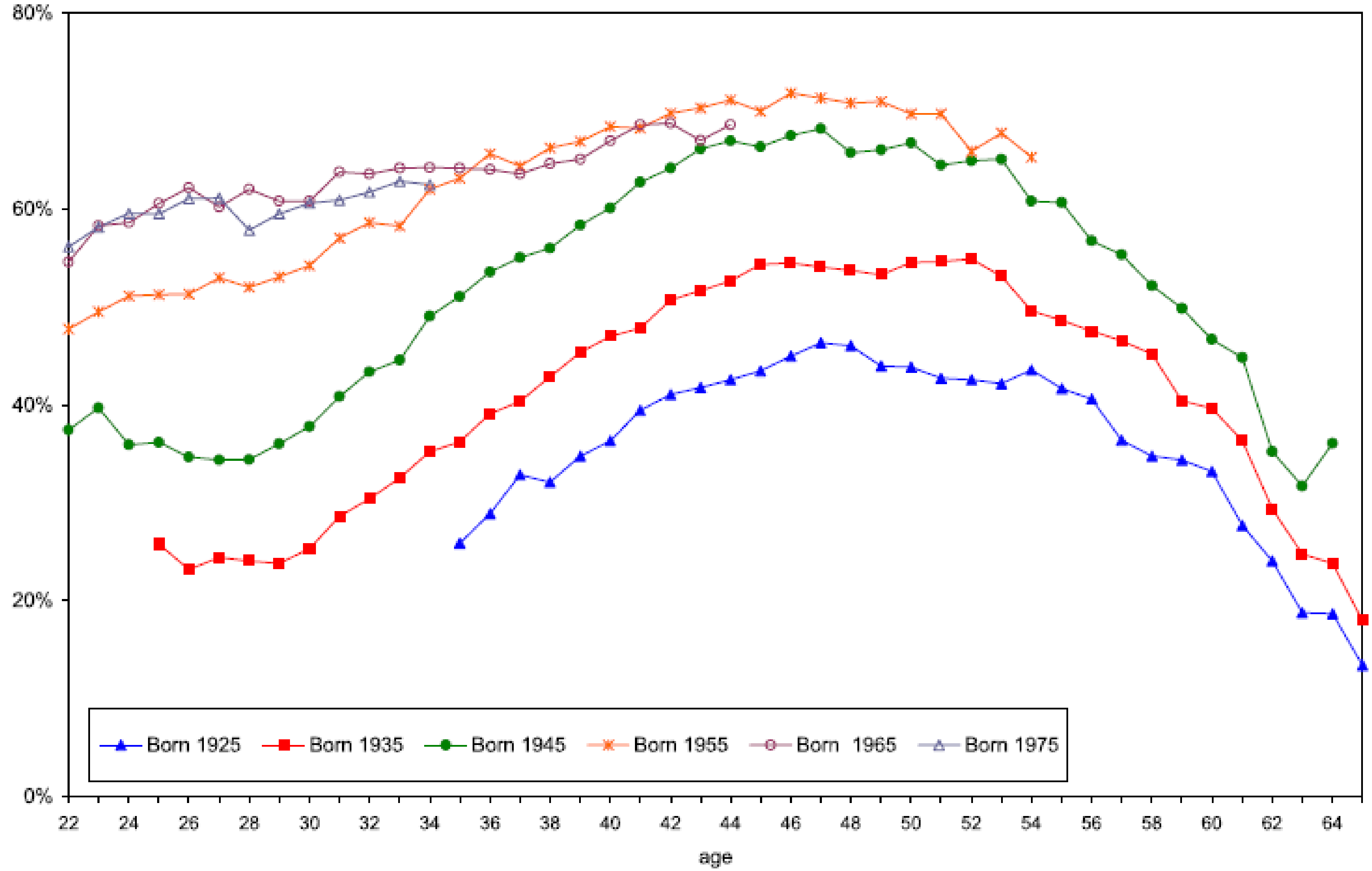

FIGURE 8.—Married female employment rates by cohort (years 1962–2007; proportion of women working 10+ weekly hours; see definitions of cohorts in Section 2).

3. A Dynamic Female Employment Model

A married female is indicated by $M_t = 1$, a single or divorced woman is denoted by $M_t = 0$, and the number of children is denoted by N_t. The objective of each female is to choose p_t from period t (the year she completes her education) until retirement, to maximize

$$(3.1) \qquad E_t\left[\sum_{k=0}^{T-t} \delta^j U(p_{t+k}, x_{t+k}, K_{t+k-1}, N_{t+k,j}\ (j=1,\ldots,J), S, M_{t+k}, v_t)\right],$$

where x_t is consumption, K_{t-1} is the number of periods that the woman has worked such that $K_t = K_{t-1} + p_t$, N_{tj} is the number of children in year t of age group j, S is the predetermined level of schooling, δ is the subjective discount factor, and T is the length of the decision horizon.

The female budget constraint is given by

$$((1-\alpha)(1-M_t)+\alpha)(y_t^w p_t + y_t^h M_t) = x_t + \sum_{j=1}^{J}(c_j + c_{jm}(1-M_t))N_{tj} + (b + b_m(1-M_t))\, p_t, \tag{3.2}$$

where α is a fraction that denotes the share of a married woman in household income, y_t^h denotes the husband's earnings, y_t^w denotes the female's earnings, $c_j + c_{jm}(1-M_t)$ is the cost in goods per child of age j, and $b + b_m(1-M_t)$ is an additional cost for maintaining the household if the woman works.

We also adopt the standard Mincer/Ben-Porath earning function

$$\ln y_t^w = \beta_0 + \beta_1 K_{t-1} + \beta_2 K_{t-1}^2 + \beta_3 S + \beta_4 t + \varepsilon_t, \tag{3.3}$$

where t is a time trend that captures aggregate growth in labor productivity and ε_t is the standard zero-mean, finite-variance, serially independent error that is uncorrelated with K and S. The number of children of age group j evolves according to

$$N_{tj} = N_{t-1,j} + n_{tj} - d_{tj}, \tag{3.4}$$

where $n_{tj} = 1$ if a child enters the age group j at t and is zero otherwise, and $d_{tj} = 1$ if a child leaves the age group j at t and is zero otherwise.

Following EW, we adopt the per period specification of utility

$$U_t = (\alpha_1 + v_t)p_t + x_t + \alpha_2 p_t x_t + \alpha_3 p_t K_{t-1} + \sum_{j=1}^{J} \alpha_{4j} N_{tj} p_t + \alpha_5 p_t S + f(N_{tj}), \tag{3.5}$$

where v_t is a preferences shock and $f(N_{tj}) = \gamma_0 N_{tj} - (\gamma_1 + \gamma_2 S_{tj}) N_{tj}^2$ is a specific functional form that is meant to capture the way in which children enter the utility function.

Following the standard dynamic programming procedure, the value function is defined as

$$V_t(K_{t-1}, \varepsilon_t, \Omega_t) = \max[V_t^1(K_{t-1}, \varepsilon_t, \Omega_t), V_t^0(K_{t-1}, \Omega_t)], \tag{3.6}$$

where $V_t^1(\cdot)$ and $V_t^0(\cdot)$ represent maximum expected discounted utility when the female is working at time t ($p_t = 1$) and when she is not ($p_t = 0$), respectively. That is,

$$\begin{aligned} V_t^1(\Omega_t, \varepsilon_t, v_t, t) &= U_t^1(K_{t-1}, \varepsilon_t, \Omega_t, v_t) \\ &\quad + \delta \cdot E(V_{t+1}(K_t, \varepsilon_{t+1}, v_{t+1}, \Omega_{t+1}) | \Omega_t, p_t = 1), \\ V_t^0(\Omega_t, t) &= U_t^0(K_{t-1}, \Omega_t) \\ &\quad + \delta \cdot E(V_{t+1}(K_t, \varepsilon_{t+1}, v_{t+1}, \Omega_{t+1}) | \Omega_t, p_t = 0), \end{aligned} \tag{3.7}$$

where current utility is derived from insertion of the budget constraint (3.2) into (3.5) such that

$$
\begin{aligned}
(3.8)\qquad & U_t^1(K_{t-1}, \varepsilon_t, v_t, \Omega_t) \\
&= \alpha_1 + v_t - (b + b_m M_t) + \alpha_3 K_{t-1} + \sum_{j=1}^{J} \alpha_{4j} N_{tj} + \alpha_5 S + f(N_{tj}) \\
&\quad + (1+\alpha_2)\Bigg(((1-\alpha)(1-M_t) + \alpha) \\
&\quad \times (\exp\{\beta_0 + \beta_1 K_{t-1} + \beta_2 K_{t-1}^2 + \beta_3 S + \beta_4 t + \varepsilon_t\} + \bar{y}_t^h M_t) \\
&\quad - \sum_{j=1}^{J} (c_j + c_{jm} M_t) N_{tj} \Bigg)
\end{aligned}
$$

and

$$U_t^0(K_{t-1}, \Omega_t) = \alpha \bar{y}_t^h - \sum_{j=1}^{J} c_j N_{tj} + f(N_{tj}).$$

We adopt the logistic form for job-offer probability

$$\text{Pr}_t = \frac{\exp(\rho_0 + \rho_1 \cdot S + \rho_2 \cdot K_{t-1} + \rho_3 \cdot K_{t-1}^2 + \rho_4 \cdot p_{t-1})}{1 + \exp(\rho_0 + \rho_1 \cdot S + \rho_2 \cdot K_{t-1} + \rho_3 \cdot K_{t-1}^2 + \rho_4 \cdot p_{t-1})}. \tag{3.9}$$

The probability of having another child is a function of the female's employment state in the previous period, age, education, marital status, and the current number of children (see Van der Klaauw (1996)), and is given by

$$\Pr(N_t = N_{t-1} + 1) = \Phi(\lambda_0 + \lambda_1 \cdot \mathrm{AGE}_t + \lambda_2 \cdot (\mathrm{AGE}_t)^2 + \lambda_3 \cdot S + \lambda_4 p_{t-1} + \lambda_5 \cdot N_{t-1} + \lambda_6 \cdot N_{t-1}^2 + \lambda_7 M_t), \tag{3.10}$$

where $\Phi(\cdot)$ is the standard normal distribution function.

$$\Pr(M_t = 0 | M_{t-1} = 1) = \Phi(\xi_0 + \xi_1 \cdot \mathrm{MT} + \xi_2 \cdot \mathrm{MT}^2 + \xi_3 \cdot N_t + \xi_4 \cdot S + \xi_5 \cdot p_t + \xi_6 y_t^h). \tag{3.12}$$

The model is solved backward from the terminal period T (age 65) assuming that $V_T(\Omega_T, T+1) = 0$.

A special case of the model is a static model where $\delta = 0$ and the female chooses to work if

$$U_t^1(K_{t-1}, \varepsilon_t, v_t, \Omega_t) > U_t^0(K_{t-1}, \Omega_t). \tag{3.13}$$

Discussion: The Choice of Models

4. Data and Estimation

The difference between these two vectors is given by the vector

$$g'(\theta) = [m_1^A - m_1^S(\theta), \ldots, m_j^A - m_j^S(\theta), \ldots, m_J^A - m_J^S(\theta)].$$

Identification

5. Estimation Results for the 1955 Cohort

Parameters

Quality of Fit

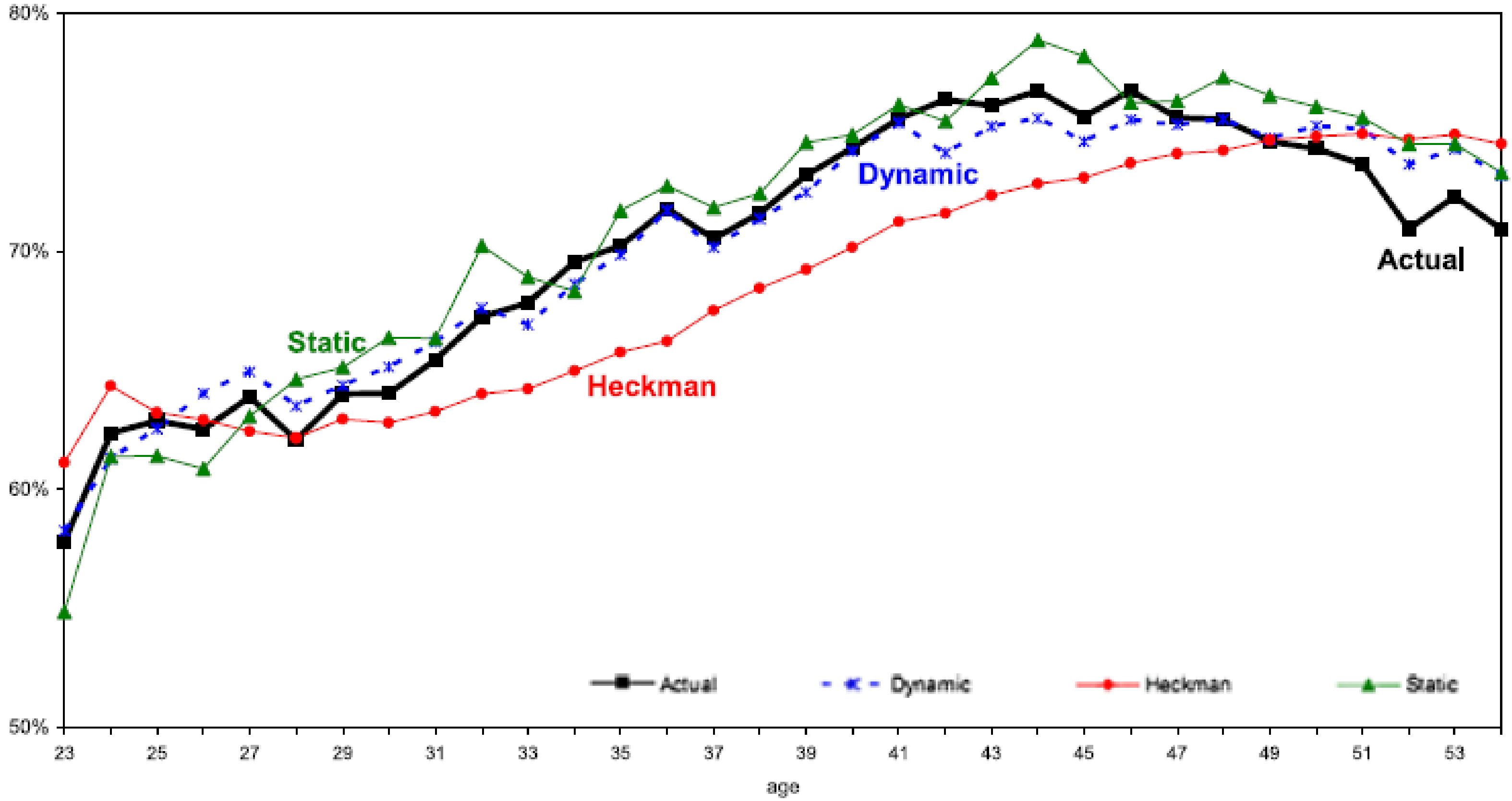

FIGURE 9.—Actual and predicted employment rates: 1955 cohort (1953–1957 cohorts for the period 1964–2007).

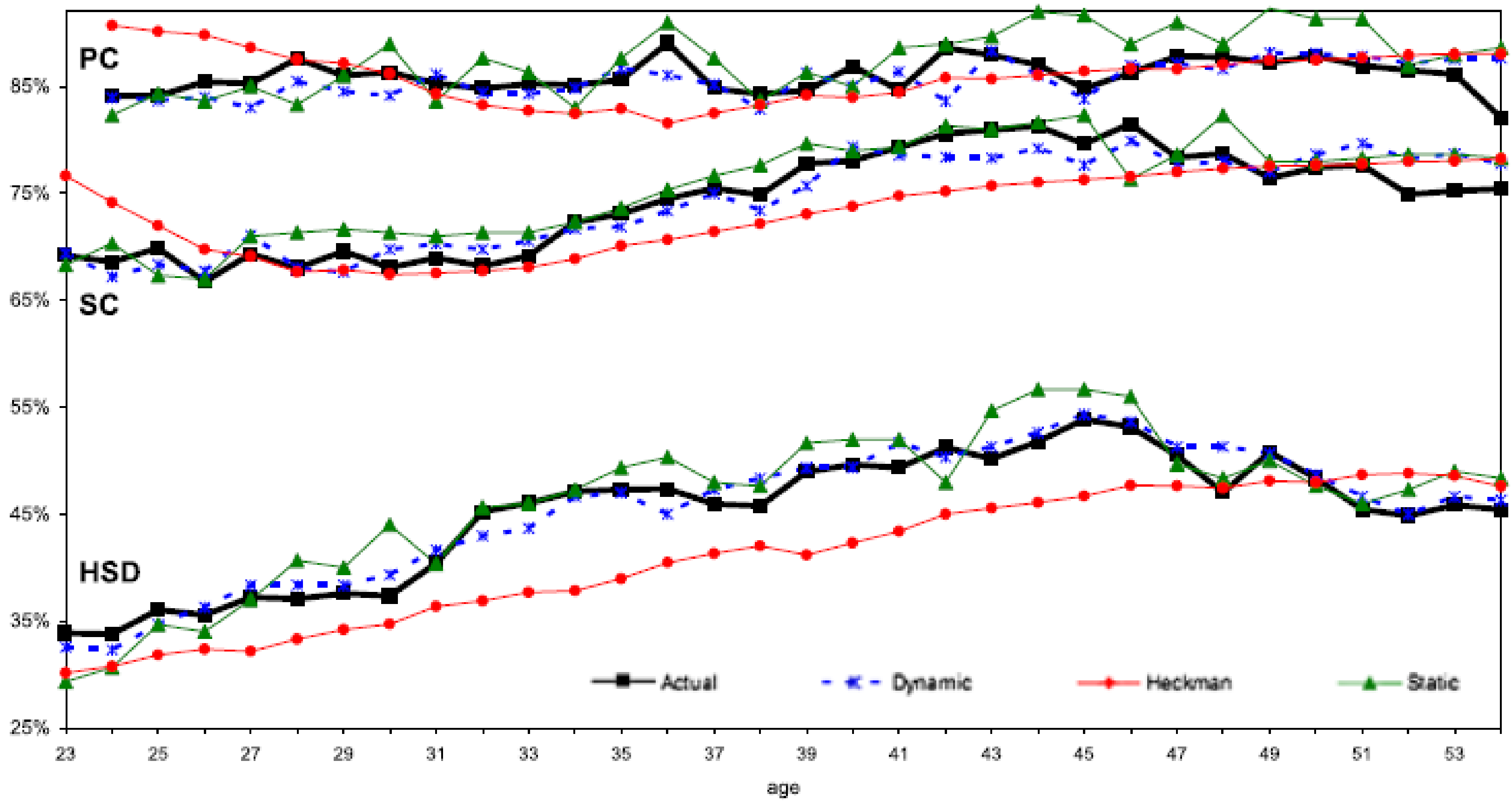

FIGURE 10.—Actual and predicted employment rates: 1955 cohort; HSD, PC, and SC (1953–1957 cohorts for the period 1964–2007).

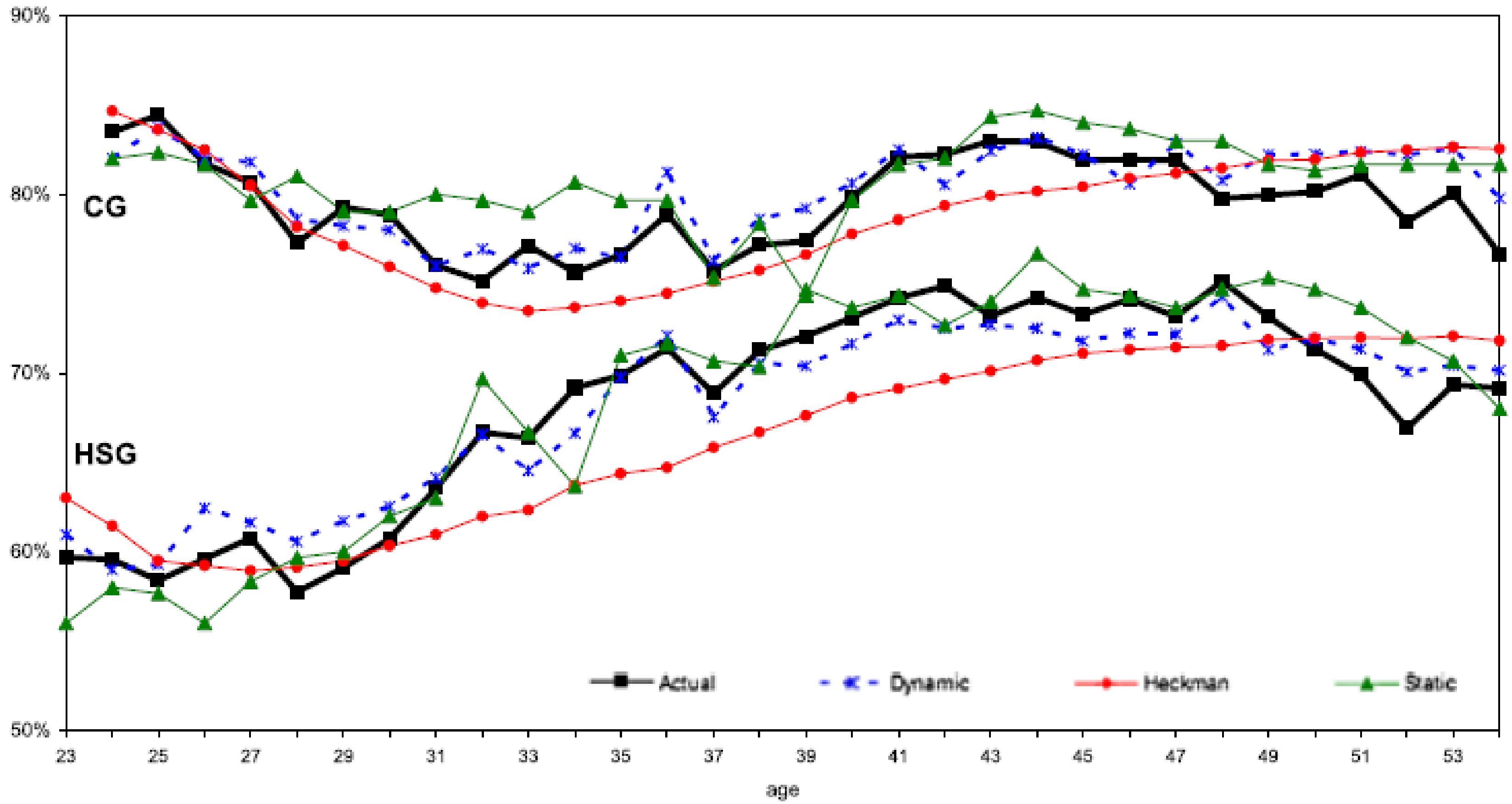

FIGURE 11.—Actual and predicted employment rates: 1955 cohort; HSG and CG (1953–1957 cohorts for the period 1964–2007).

TABLE II

GOODNESS OF FIT TESTS FOR THE THREE MODELS

	Dynamic		Static		Heckman	
	Pearson[a]	SSD[b]	Pearson[a]	SSD[b]	Pearson[a]	SSD[b]
HSD	7.96	71.93	26.65	238.42	112.53	897.94
HSG	6.24	83.44	12.58	167.33	29.60	394.77
SC	5.95	90.04	10.46	157.99	25.32	376.86
CG	4.69	75.73	10.89	175.86	11.49	180.97
PC	6.23	106.56	16.06	286.98	15.50	268.18
ALL	31.06	427.71	76.64	1026.59	194.43	2118.71

[a]Pearson's test statistic is given by

$$\chi^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i},$$

where χ^2 is the Pearson cumulative test statistic, O_i is an observed frequency, E_i is an expected (theoretical) frequency, and n is the number of cells in the table. The critical values are: $\chi^2_{(31,0.05)} = 18.5$, $\chi^2_{(31,0.01)} = 14.9$ (all groups, 77.9, 70.1).

[b]Sum of squared differences.

6. Accounting for the Increase in Female Employment

TABLE IIIA

FEMALE EMPLOYMENT RATES BY COHORTS, AGES, AND CHARACTERISTICS USING THE DYNAMIC MODEL

		Cohort									
		1925	1930	1935	1940	1945	1950	1960	1965	1970	1975
Age group:	*Actual*				**0.40**	**0.47**	**0.55**	**0.65**	**0.68**	**0.70**	**0.71**
23–27	Schooling + initial				0.57	0.59	0.62	0.63	0.63	0.65	0.65
1955 cohort	Wage				0.52	0.55	0.59	0.63	0.64	0.66	0.65
prediction	Children				0.50	0.54	0.58	0.63	0.64	0.66	0.65
rate—0.62	Marital status				0.50	0.54	0.58	0.63	0.64	0.66	0.65
	Other				**0.10**	**0.08**	**0.03**	**−0.03**	**−0.05**	**−0.04**	**−0.06**
Age group:	*Actual*			**0.36**	**0.42**	**0.49**	**0.60**	**0.68**	**0.70**	**0.73**	**0.70**
28–32	Schooling + initial			0.58	0.60	0.63	0.65	0.66	0.67	0.68	0.68
1955 cohort	Wage			0.52	0.60	0.63	0.64	0.67	0.67	0.68	0.69
prediction	Children			0.50	0.57	0.61	0.63	0.67	0.67	0.68	0.69
rate—0.65	Marital status			0.50	0.57	0.61	0.63	0.67	0.67	0.68	0.69
	Other			**0.14**	**0.15**	**0.12**	**0.03**	**−0.01**	**−0.03**	**−0.05**	**−0.01**
Age group:	*Actual*		**0.40**	**0.45**	**0.51**	**0.59**	**0.67**	**0.71**	**0.72**	**0.71**	
33–37	Schooling + initial		0.62	0.63	0.65	0.67	0.69	0.70	0.70	0.71	
1955 cohort	Wage		0.53	0.57	0.64	0.67	0.69	0.70	0.71	0.71	
prediction	Children		0.52	0.56	0.62	0.67	0.68	0.70	0.71	0.71	
rate—0.69	Marital status		0.52	0.56	0.62	0.67	0.68	0.70	0.71	0.71	
	Other		**0.12**	**0.11**	**0.12**	**0.07**	**0.01**	**−0.01**	**−0.02**	**0.00**	

(*Continues*)

TABLE IIIA—*Continued*

		Cohort									
		1925	1930	1935	1940	1945	1950	1960	1965	1970	1975
Age group:	*Actual*	**0.45**	**0.48**	**0.54**	**0.62**	**0.68**	**0.73**	**0.75**	**0.73**		
38–42	Schooling + initial	0.64	0.66	0.67	0.69	0.71	0.73	0.74	0.74		
1955 cohort	Wage	0.56	0.59	0.62	0.66	0.69	0.73	0.74	0.73		
prediction	Children	0.56	0.58	0.61	0.64	0.69	0.73	0.74	0.73		
rate—0.74	Marital status	0.56	0.58	0.61	0.64	0.69	0.73	0.74	0.73		
	Other	**0.11**	**0.09**	**0.07**	**0.01**	**0.01**	**0.00**	**−0.01**	**0.00**		
Age group:	*Actual*	**0.51**	**0.54**	**0.61**	**0.67**	**0.73**	**0.76**	**0.75**			
43–47	Schooling + initial	0.66	0.68	0.69	0.71	0.73	0.74	0.75			
1955 cohort	Wage	0.60	0.61	0.65	0.69	0.73	0.76	0.75			
prediction	Children	0.60	0.60	0.65	0.68	0.73	0.76	0.75			
rate—0.75	Marital status	0.60	0.60	0.65	0.67	0.73	0.76	0.75			
	Other	**0.08**	**0.06**	**0.04**	**0.01**	**0.00**	**0.00**	**0.00**			
Age group:	*Actual*	**0.52**	**0.56**	**0.61**	**0.67**	**0.72**	**0.75**				
48–52	Schooling + initial	0.65	0.66	0.68	0.70	0.73	0.74				
1955 cohort	Wage	0.62	0.64	0.67	0.70	0.73	0.75				
prediction	Children	0.62	0.62	0.66	0.69	0.73	0.75				
rate—0.75	Marital status	0.61	0.62	0.66	0.68	0.73	0.75				
	Other	**0.09**	**0.06**	**0.05**	**0.01**	**0.01**	**0.00**				

TABLE IIIB

FEMALE EMPLOYMENT RATES BY COHORTS, AGES, AND CHARACTERISTICS USING THE ESTIMATED STATIC MODEL

		Cohort									
		1925	1930	1935	1940	1945	1950	1960	1965	1970	1975
Age group:	*Actual*				**0.40**	**0.47**	**0.55**	**0.65**	**0.68**	**0.70**	**0.71**
23–27	Schooling + initial				0.54	0.57	0.59	0.61	0.61	0.63	0.64
1955 cohort	Wage				0.53	0.55	0.59	0.61	0.63	0.64	0.66
prediction	Children				0.48	0.54	0.59	0.62	0.64	0.65	0.67
rate—0.60	Marital status				0.48	0.54	0.59	0.62	0.64	0.65	0.67
	Other				**0.08**	**0.07**	**0.05**	**−0.04**	**−0.04**	**−0.04**	**−0.04**
Age group:	*Actual*			**0.36**	**0.42**	**0.49**	**0.60**	**0.68**	**0.70**	**0.73**	**0.70**
28–32	Schooling + initial			0.59	0.61	0.63	0.66	0.67	0.67	0.69	0.69
1955 cohort	Wage			0.57	0.59	0.62	0.66	0.67	0.68	0.70	0.70
prediction	Children			0.55	0.54	0.60	0.66	0.67	0.69	0.71	0.71
rate—0.67	Marital status			0.55	0.54	0.60	0.66	0.67	0.69	0.71	0.71
	Other			**0.19**	**0.12**	**0.11**	**0.06**	**−0.01**	**−0.01**	**−0.02**	**0.01**
Age group:	*Actual*		**0.40**	**0.45**	**0.51**	**0.59**	**0.67**	**0.71**	**0.72**	**0.71**	
33–37	Schooling + initial		0.63	0.64	0.66	0.68	0.70	0.71	0.71	0.72	
1955 cohort	Wage		0.61	0.62	0.64	0.67	0.70	0.71	0.71	0.72	
prediction	Children		0.60	0.60	0.61	0.67	0.70	0.71	0.71	0.72	
rate—0.71	Marital status		0.59	0.60	0.60	0.67	0.70	0.71	0.71	0.72	
	Other		**0.20**	**0.15**	**0.10**	**0.07**	**0.03**	**0.00**	**−0.01**	**0.01**	

(*Continues*)

TABLE IIIB—*Continued*

		Cohort									
		1925	1930	1935	1940	1945	1950	1960	1965	1970	1975
Age group:	*Actual*	**0.45**	**0.48**	**0.54**	**0.62**	**0.68**	**0.73**	**0.75**	**0.73**		
38–42	Schooling + initial	0.65	0.67	0.68	0.70	0.72	0.74	0.75	0.75		
1955 cohort	Wage	0.62	0.64	0.66	0.68	0.71	0.74	0.75	0.75		
prediction	Children	0.61	0.63	0.66	0.67	0.71	0.74	0.75	0.75		
rate—0.75	Marital status	0.60	0.63	0.66	0.67	0.71	0.74	0.75	0.75		
	Other	**0.15**	**0.15**	**0.11**	**0.05**	**0.03**	**0.01**	**0.00**	**0.02**		
Age group:	*Actual*	**0.51**	**0.54**	**0.61**	**0.67**	**0.73**	**0.76**	**0.75**			
43–47	Schooling + initial	0.69	0.70	0.71	0.73	0.75	0.77	0.77			
1955 cohort	Wage	0.66	0.68	0.70	0.72	0.74	0.77	0.77			
prediction	Children	0.64	0.67	0.69	0.71	0.74	0.77	0.77			
rate—0.77	Marital status	0.64	0.67	0.69	0.71	0.74	0.77	0.77			
	Other	**0.12**	**0.13**	**0.08**	**0.04**	**0.01**	**0.01**	**0.02**			
Age group:	*Actual*	**0.52**	**0.56**	**0.61**	**0.67**	**0.72**	**0.75**				
48–52	Schooling + initial	0.66	0.68	0.70	0.71	0.74	0.76				
1955 cohort	Wage	0.63	0.65	0.68	0.70	0.73	0.76				
prediction	Children	0.62	0.65	0.67	0.70	0.73	0.76				
rate—0.76	Marital status	0.61	0.64	0.67	0.69	0.73	0.76				
	Other	**0.10**	**0.08**	**0.06**	**0.02**	**0.00**	**0.00**				

TABLE IIIC

FEMALE EMPLOYMENT RATES BY COHORTS, AGES, AND CHARACTERISTICS USING THE HECKMAN MODEL

		Cohort									
		1925	1930	1935	1940	1945	1950	1960	1965	1970	1975
Age group:	*Actual*				**0.40**	**0.47**	**0.55**	**0.65**	**0.68**	**0.70**	**0.71**
23–27	Schooling + initial				0.56	0.59	0.62	0.63	0.64	0.66	0.67
1955 cohort	Wage				0.57	0.59	0.62	0.63	0.64	0.66	0.67
prediction	Children				0.49	0.57	0.62	0.64	0.65	0.67	0.67
rate—0.63	Marital status				0.49	0.57	0.62	0.64	0.65	0.67	0.67
	Other				**0.09**	**0.10**	**0.07**	**−0.01**	**−0.04**	**−0.03**	**−0.05**
Age group:	*Actual*			**0.36**	**0.42**	**0.49**	**0.60**	**0.68**	**0.70**	**0.73**	**0.70**
28–32	Schooling + initial			0.55	0.57	0.60	0.62	0.63	0.64	0.65	0.66
1955 cohort	Wage			0.55	0.57	0.60	0.62	0.63	0.63	0.65	0.65
prediction	Children			0.46	0.50	0.58	0.61	0.63	0.64	0.65	0.65
rate—0.63	Marital status			0.46	0.50	0.58	0.61	0.63	0.64	0.65	0.65
	Other			**0.10**	**0.09**	**0.09**	**0.02**	**−0.05**	**−0.06**	**−0.07**	**−0.05**
Age group:	*Actual*		**0.40**	**0.45**	**0.51**	**0.59**	**0.67**	**0.71**	**0.72**	**0.71**	
33–37	Schooling + initial		0.57	0.58	0.60	0.63	0.65	0.66	0.66	0.67	
1955 cohort	Wage		0.57	0.58	0.60	0.63	0.65	0.65	0.66	0.67	
prediction	Children		0.50	0.52	0.57	0.63	0.65	0.66	0.65	0.66	
rate—0.66	Marital status		0.50	0.52	0.57	0.63	0.65	0.66	0.65	0.66	
	Other		**0.10**	**0.07**	**0.07**	**0.03**	**−0.01**	**−0.06**	**−0.07**	**−0.05**	

(*Continues*)

TABLE IIIC—*Continued*

		Cohort									
		1925	1930	1935	1940	1945	1950	1960	1965	1970	1975
Age group:	*Actual*	**0.45**	**0.48**	**0.54**	**0.62**	**0.68**	**0.73**	**0.75**	**0.73**		
38–42	Schooling + initial	0.60	0.61	0.63	0.65	0.68	0.69	0.70	0.71		
1955 cohort	Wage	0.60	0.61	0.63	0.65	0.67	0.69	0.70	0.70		
prediction	Children	0.56	0.57	0.60	0.65	0.68	0.70	0.70	0.69		
rate—0.70	Marital status	0.56	0.57	0.60	0.65	0.68	0.70	0.70	0.69		
	Other	**0.11**	**0.08**	**0.06**	**0.02**	**0.00**	**−0.03**	**−0.05**	**−0.04**		
Age group:	*Actual*	**0.51**	**0.54**	**0.61**	**0.67**	**0.73**	**0.76**	**0.75**			
43–47	Schooling + initial	0.63	0.65	0.67	0.69	0.71	0.73	0.73			
1955 cohort	Wage	0.64	0.65	0.67	0.69	0.71	0.73	0.73			
prediction	Children	0.61	0.63	0.66	0.69	0.72	0.73	0.73			
rate—0.73	Marital status	0.61	0.63	0.66	0.69	0.72	0.73	0.73			
	Other	**0.09**	**0.09**	**0.05**	**0.02**	**−0.02**	**−0.03**	**−0.02**			
Age group:	*Actual*	**0.52**	**0.56**	**0.61**	**0.67**	**0.72**	**0.75**				
48–52	Schooling + initial	0.65	0.67	0.68	0.70	0.73	0.74				
1955 cohort	Wage	0.65	0.67	0.69	0.71	0.73	0.74				
prediction	Children	0.65	0.67	0.69	0.71	0.73	0.75				
rate—0.75	Marital status	0.65	0.67	0.69	0.71	0.73	0.75				
	Other	**0.13**	**0.10**	**0.07**	**0.03**	**0.01**	**0.00**				

TABLE IV

AVERAGE SHARE OF CHANGE IN FEMALE EMPLOYMENT RATES FOR THE COHORTS OF 1925–1975 BY EACH MODEL

	Dynamic	Static	Heckman
1925–1935			
Schooling + initial	36%	33%	42%
Wage	23%	10%	0%
Children	4%	5%	14%
Marital status	0%	1%	0%
Other	37%	51%	43%
Other, less than 38		No data	
Other, over 38	34%	48%	45%
1940–1950			
Schooling + initial	33%	32%	39%
Wage	22%	9%	1%
Children	8%	7%	5%
Marital status	1%	0%	0%
Other	36%	51%	55%
Other, less than 38	55%	63%	55%
Other, over 38	18%	40%	55%
1960–1975			
Schooling + initial	35%	26%	20%
Wage	20%	11%	1%
Children	2%	6%	4%
Marital status	1%	0%	0%
Other	42%	57%	75%
Other, less than 38	42%	50%	71%
Other, over 38		No data	

Robustness

7. Changes by Cohort and Aggregate Fit

TABLE V

CHANGE IN ESTIMATED UTILITY/COST OF LEISURE AND YOUNG CHILDREN BY COHORT: DYNAMIC MODEL[a]

	Parameters		Parameters Interpreted—Change in Dollar Value per Hour	
Cohort	α_1 – Constant	α_{41} Young Children (0–6)	α_1 – Constant	α_{41} Young Children (0–6)
1925	−25481.9	−8818.78	4.912	3.167
1930	−25360.5	−8818.78	4.851	3.167
1935	−24570.3	−8818.78	4.456	3.167
1940	−15658.1	−8980.07		3.251
1945	−15658.1	−8641.53		3.075
1950	−15658.1	−6804.98		2.119
1955	**−15658.1**	**−2733.36**		
1960	−15658.1	−1006.18		−0.899
1965	−15658.1	−606.78		−1.107
1970	−15658.1	−600.26		−1.110
1975	−15658.1	−620.11		−1.100

[a]To interpret α_1 we divided the difference between the value of the parameter in the specific cohort and the value of the parameter in 1955 by 2000 (number of hours worked per year). To interpret α_{41} we divided the difference between the value of the parameter in the specific cohort and the value of the parameter in 1955 by the value of $(1 + \alpha_2)$ and then by 2000 (number of hours worked per year).

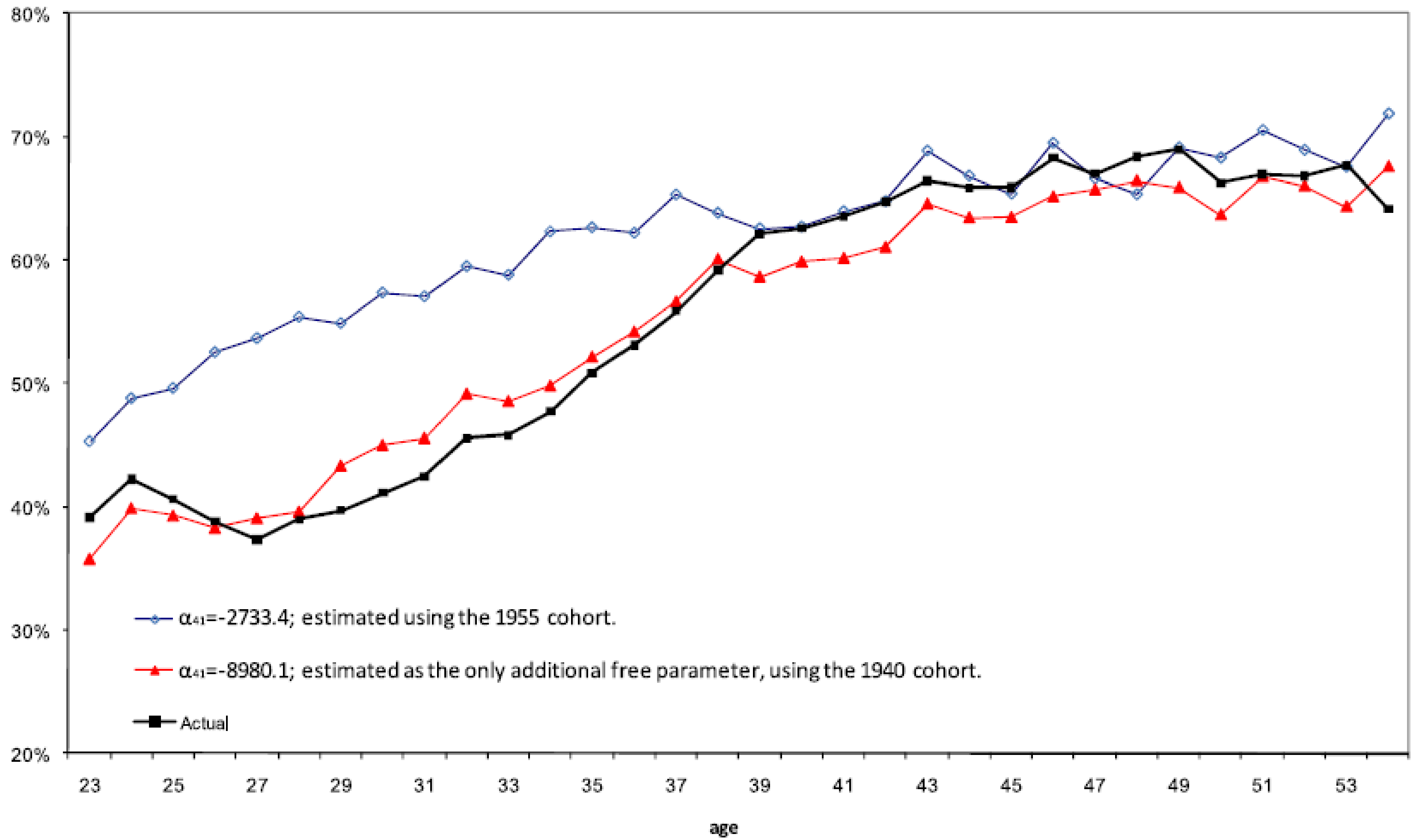

FIGURE 12A.—Actual and predicted employment rates: 1940 cohort ($\alpha_1 = -15{,}658.1$, $\alpha_{41} = -2733.4$ (estimated from the 1955 cohort); $\alpha_{41} = -8980.1$ (estimated when this parameter was unconstrained for this cohort)).

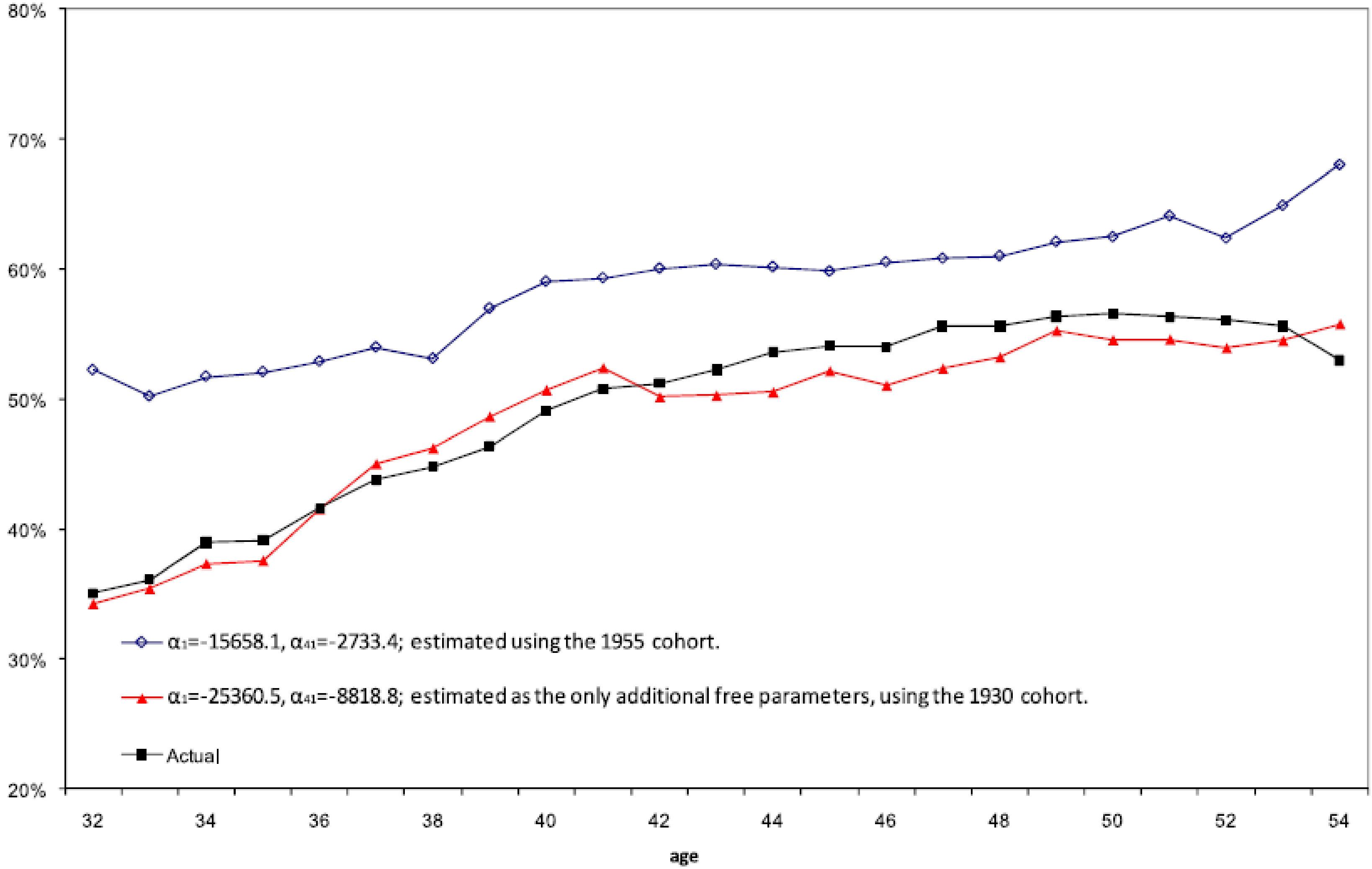

FIGURE 12B.—Actual and predicted employment rates: 1930 cohort ($\alpha_1 = -15{,}658.1$, $\alpha_{41} = -2733.4$ (estimated from the 1955 cohort); $\alpha_1 = -25{,}360.5$, $\alpha_{41} = -8818.8$ (estimated when the two parameters were unconstrained for this cohort)).

Aggregate Fit

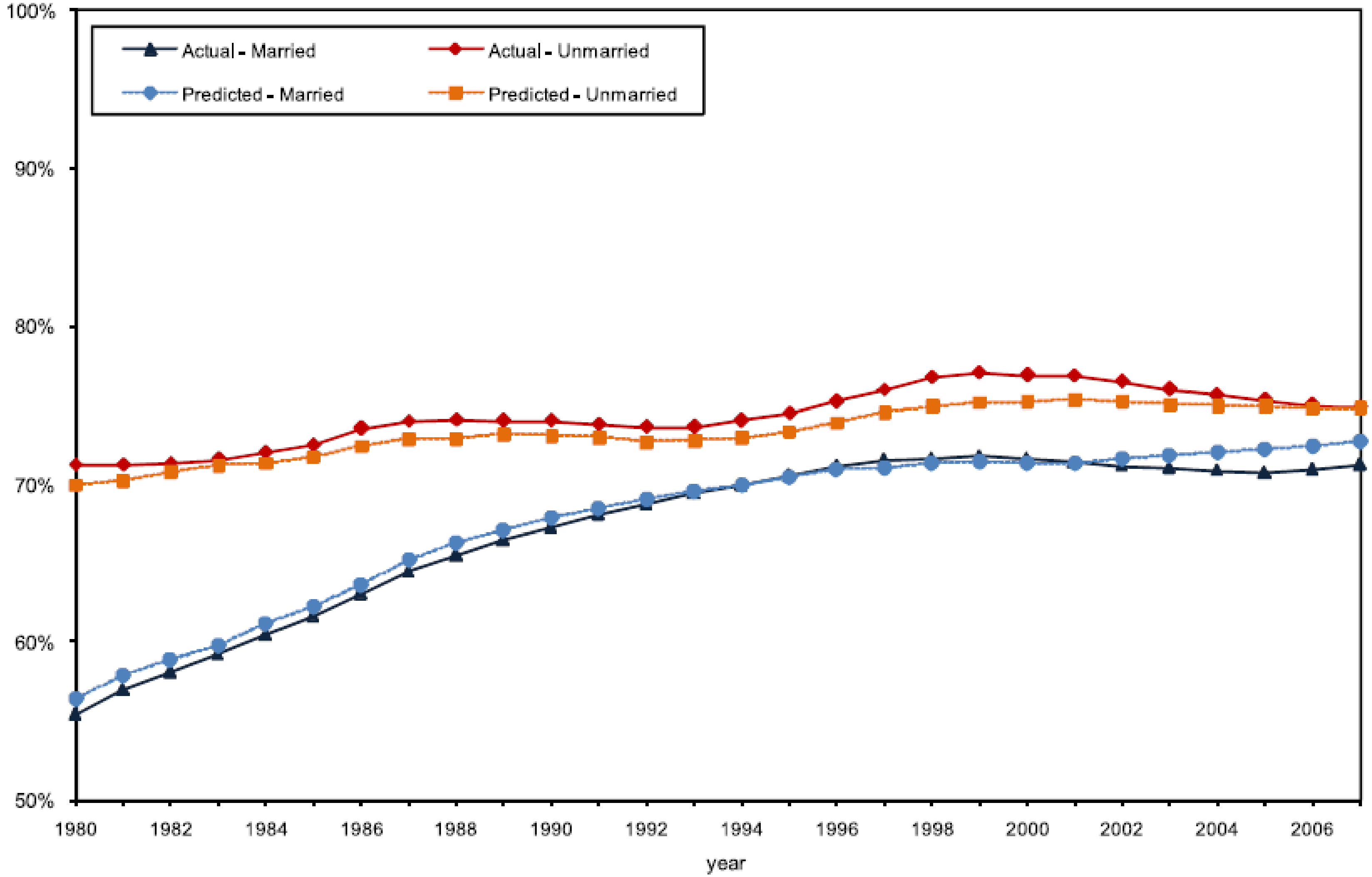

FIGURE 13.—Aggregate employment rates of females, aged 83–54.

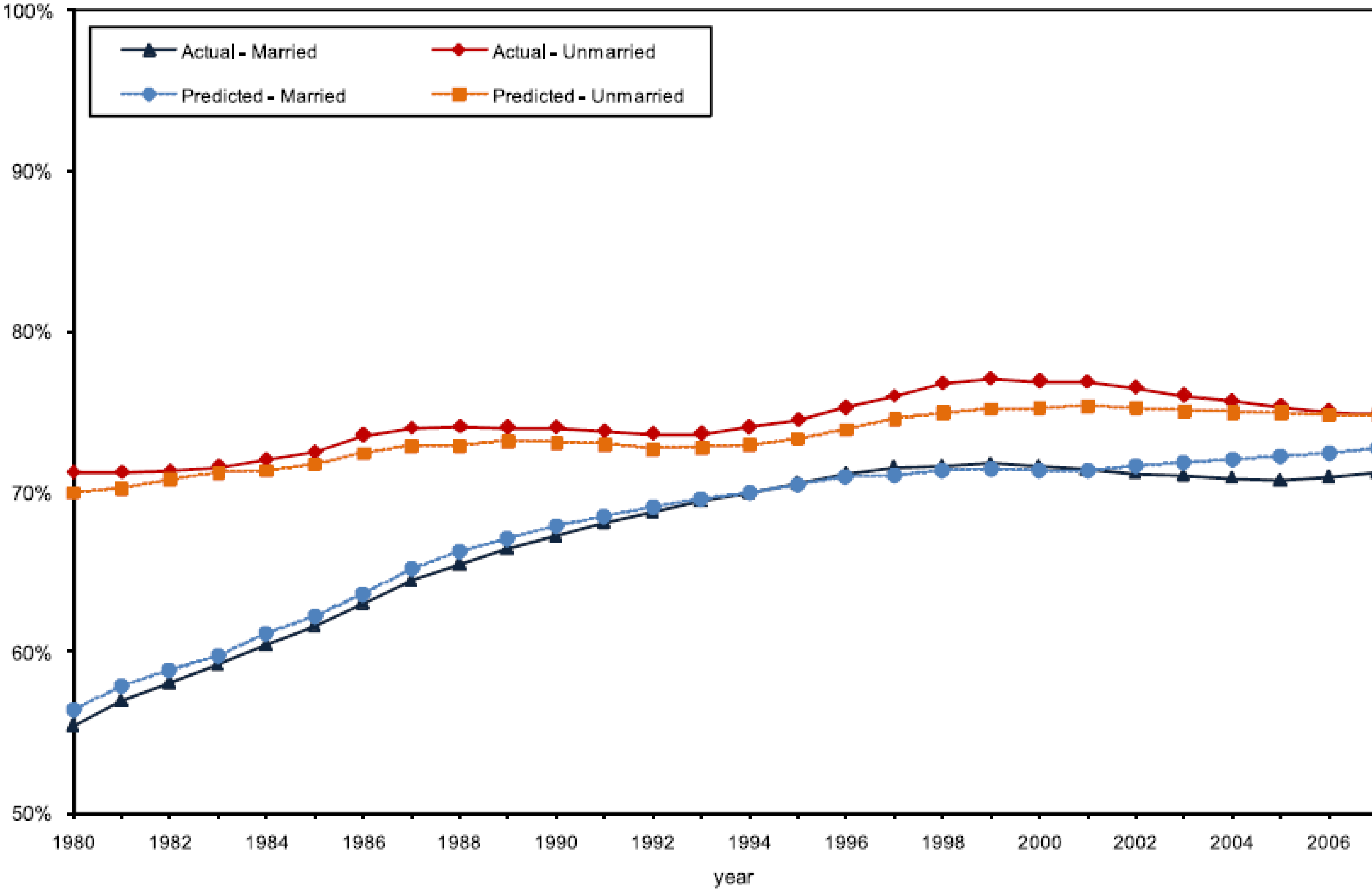

FIGURE 13.—Aggregate employment rates of females, aged 83–54.

8. Concluding Remarks

TABLE VI

Married and Unmarried, Actual and Fitted Female Employment Rates by Cohort and Age: Dynamic Model

	Cohort																			
	1925		1930		1935		1940		1945		1950		1960		1965		1970		1975	
Age Group	Actual	Fitted	Actual	Fitted	Actual	Fitted	Actual	Fitted	Actual	Fitted	Actual	Fitted	Actual	Fitted	Actual	Fitted	Actual	Fitted	Actual	Fitted
23–27																				
Married							0.32	0.30	0.39	0.39	0.48	0.48	0.60	0.61	0.64	0.63	0.66	0.64	0.65	0.65
Unmarried							0.74	0.70	0.73	0.72	0.71	0.69	0.71	0.69	0.72	0.72	0.72	0.72	0.76	0.74
28–32																				
Married					0.30	0.31	0.36	0.40	0.43	0.45	0.55	0.57	0.65	0.68	0.68	0.69	0.69	0.68	0.66	0.67
Unmarried					0.71	0.70	0.69	0.71	0.70	0.69	0.73	0.71	0.72	0.71	0.73	0.73	0.79	0.75	0.76	0.75
33–37																				
Married			0.36	0.38	0.41	0.41	0.47	0.49	0.56	0.59	0.63	0.64	0.70	0.71	0.70	0.71	0.68	0.71		
Unmarried			0.68	0.67	0.67	0.66	0.67	0.67	0.72	0.71	0.75	0.73	0.74	0.71	0.77	0.75	0.76	0.74		
38–42																				
Married	0.40	0.42	0.45	0.47	0.51	0.50	0.59	0.59	0.66	0.65	0.71	0.70	0.73	0.74	0.72	0.73				
Unmarried	0.72	0.73	0.69	0.67	0.67	0.66	0.72	0.73	0.75	0.76	0.78	0.75	0.78	0.75	0.76	0.75				
43–47																				
Married	0.48	0.46	0.51	0.49	0.58	0.57	0.64	0.63	0.72	0.71	0.75	0.74	0.75	0.75						
Unmarried	0.70	0.71	0.68	0.69	0.71	0.71	0.73	0.75	0.77	0.76	0.78	0.76	0.76	0.75						
48–52																				
Married	0.48	0.49	0.53	0.53	0.59	0.58	0.65	0.65	0.71	0.71	0.74	0.74								
Unmarried	0.66	0.70	0.67	0.67	0.69	0.68	0.73	0.73	0.76	0.75	0.76	0.77								