Are marriage-related taxes and Social Security benefits holding back female labor supply?

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U.S. marriage-related policies

- Taxes and old age Social Security benefits depend on marital status
  - Joint income tax
  - Social Security spousal benefit
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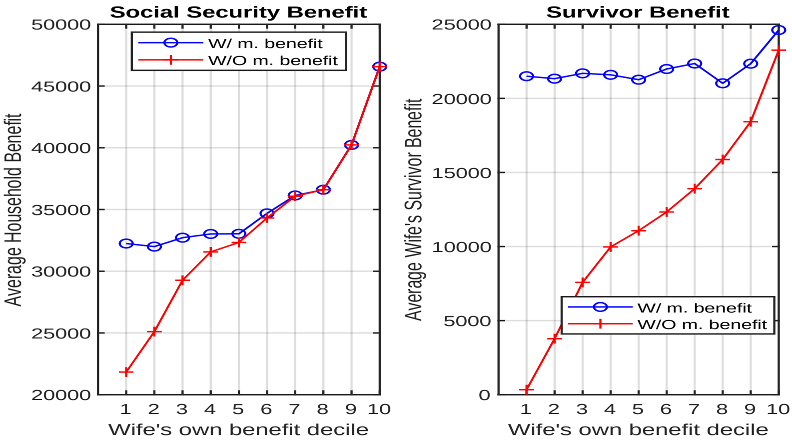
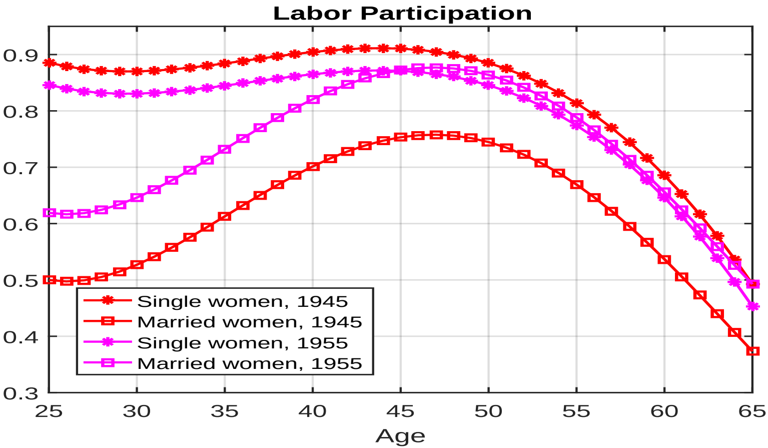
- Question: how do marriage-related policies affect
  - Labor supply of women
  - Labor supply of men
  - Savings
  - Welfare
- Labor supply of married women has been changing over time. Do the effects of these policies depend on the cohort?
  - Two cohorts (1945 cohort and 1955 birth cohorts)

Why might they matter? Marginal tax rate for women

Why might they matter? Social Security benefits



Participation for women, 1945 and 1955 cohorts



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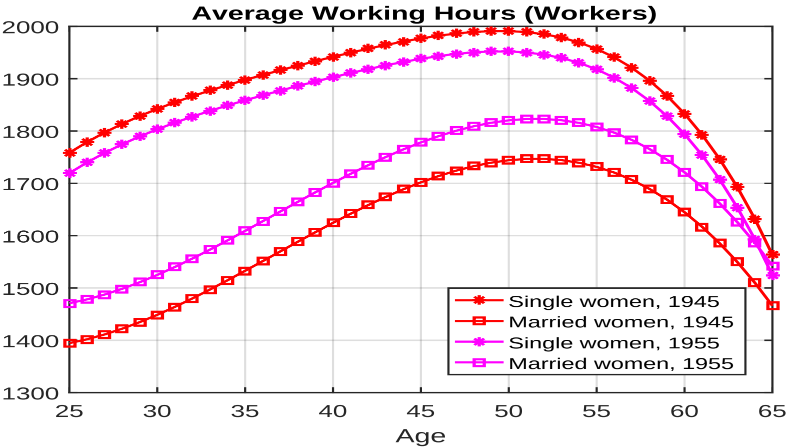
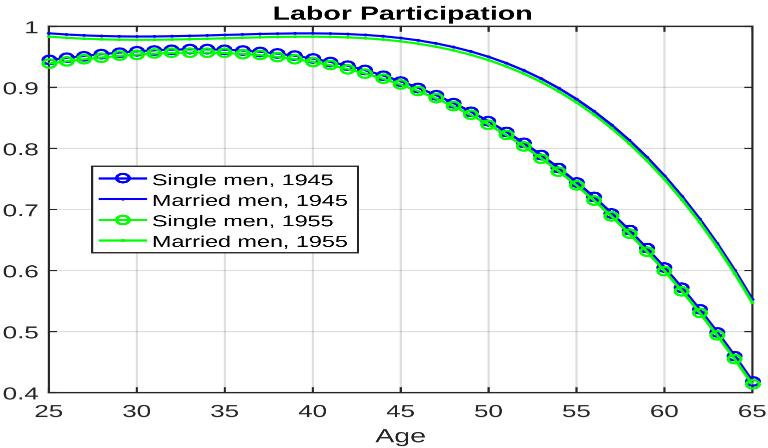
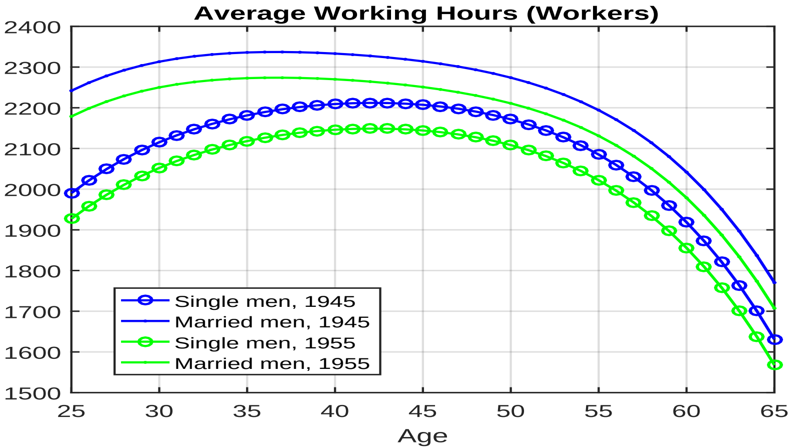


Participation for men, 1945 and 1955 cohorts



Hours for men, 1945 and 1955 cohorts



Related literature

- Female labor supply: Attanasio et al. (2008), Eckstein and Lifhitz (2012), Eckstein, Keane, and Lifhitz (2016)...
- Tax and benefit reforms: Gemici and Laufer (2012), Guner, Kaygusuz and Ventura (2012), Kaygusuz (2012), Nishiyama (2012), Groneck and Wallenius (2017), Blundell, Costa Dias, Meghir, and Shaw (2016), Low, Meghir, Pistaferri, and Voena (2016)...

Approach

- Partial equilibrium, cohort level analysis

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- Data
  - Panel Study of Income Dynamics (PSID): working period
  - Health and Retirement Study (HRS): retirement period

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- Data
  - Panel Study of Income Dynamics (PSID): working period
  - Health and Retirement Study (HRS): retirement period
- Estimate model on each cohort using the Method of Simulated moments (MSM)
- Counterfactuals: eliminate marriage-related provisions

Model's key features

- Single and married people
- Endogenous human capital
- Risks during working period and retirement
- Self-insurance: saving and labor supply (hours)

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- Single and married people
- Endogenous human capital
- Risks during working period and retirement
- Self-insurance: saving and labor supply (hours)
- Government
  - Taxes married and single people + tax progressivity
  - Social Security payments (survival and spousal benefits)
  - Old-age means-tested transfer programs

Model's key features

- Lifecycle model, period length: one year
- Working stage (t_0=25 to 61)
  - Alive for sure
  - Labor productivity shocks
  - Might get married if single
  - Risk divorce if married
  - Both spouses can work

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- Retirement stage (66 to T=99)
  - Health shocks
  - Medical costs
  - Exogenous probability of death $\rightarrow$ married people might lose their spouse

Wages

- Functions of
  - Human capital, measured as average past earnings
  - Wage shocks which follow an AR(1) that depends on gender

Marriage and divorce

- Marriage
  - Probability of marrying: function of age, gender, and wage shock
  - Conditional on getting married, probability of meeting with a partner with a certain wage shock depends on your wage shock
  - Conditional partner's productivity, distribution of partner's characteristics are assets and human capital
- Divorce probability: function of age and wage shocks of both spouses

Children

- Exogenous fertility
- Number and age structure of children depends on maternal age and marital status
- Time costs of raising children
- Monetary costs of raising children

Health risks (after age 66)

- Age, gender, marital status, and current health affect evolution of
  - Health
  - Medical expenses
  - Survival

Government

- Taxes income, progressive taxation of couples and singles

$$T(Y, i, j, t) = (1 - \lambda_t^{i,j} Y^{-\tau_t^{i,j}}) Y.$$

- Taxes labor income, up to Social Security cap $\widetilde{y}_t$, at rate τ_t^{SS} to finance old-age Social Security
- Old age means-tested cons. floor $\underline{c}(j)$ (Medicaid and SSI)

Household preferences

- β = discount factor, i = gender, j = marital status
- Time endowment: $L^{i,j}$
- Leisure $l_t^{i,j} = L^{i,j} - n_t^{i,j} - \phi_t^{i,j} I_{n_t^{i,j}}$

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- Singles

$$v(c_t, l_t) = \frac{((c_t/\eta_t^{i,j})^{\omega} l_t^{1-\omega})^{1-\gamma} - 1}{1-\gamma}$$

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- Singles

$$v(c_t, l_t) = \frac{((c_t/\eta_t^{i,j})^{\omega} l_t^{1-\omega})^{1-\gamma} - 1}{1-\gamma}$$

- Couples

$$w(c_t, l_t^1, l_t^2) = \frac{((c_t/\eta_t^{i,j})^{\omega} (l_t^1)^{1-\omega})^{1-\gamma} - 1}{1-\gamma} + \frac{((c_t/\eta_t^{i,j})^{\omega} (l_t^2)^{1-\omega})^{1-\gamma} - 1}{1-\gamma}$$

Recursive problem for working-age singles

$$W^s(t,i,a_t^i,\epsilon_t^i,\bar{y}_t^i) = \max_{c_t,a_{t+1},n_t^i}\Bigg(v(c_t,l_t^{i,j}) +$$

$$\beta(1-\nu_{t+1}(\cdot))E_t W^s(t+1,i,a_{t+1}^i,\epsilon_{t+1}^i,\bar{y}_{t+1}^i) +$$

$$\beta\nu_{t+1}(\cdot)E_t\xi_{t+1}(\cdot)\theta_{t+1}(\cdot)\hat{W}^c(t+1,i,a_{t+1}^i+a_{t+1}^p,\epsilon_{t+1}^i,\epsilon_{t+1}^p,\bar{y}_{t+1}^i,\bar{y}_{t+1}^p)\Bigg)$$

- t : Age
- i : Gender
- a_t : Net worth from previous period
- ϵ_t^i : Current productivity shock
- $\bar{y}_t^i$: Annual accumulated Social Security earnings

Recursive problem for working-age singles

$$Y_t^i = e_t^i \bar{y}_t^i \epsilon_t^i n_t^i$$

$$T(\cdot) = \tau(ra_t + Y_t^i, j)$$

$$\tau_c(i,j,t) = \tau_c^{0,5} f^{0,5}(i,j,t) + \tau_c^{6,11} f^{6,11}(i,j,t)$$

$$c_t + a_{t+1} = (1+r)a_t^i + Y_t^i(1 - \tau_c(i,j,t)) - \tau_t^{SS} \min(Y_t^i, \widetilde{y}_t) - T(\cdot)$$

$$\bar{y}_{t+1}^i = (\bar{y}_t^i(t - t_0) + (\min(Y_t^i, \widetilde{y}_t)))/(t + 1 - t_0),$$

$$a_t \geq 0, \quad n_t \geq 0, \quad \forall t$$

Early retirement stage, singles

- Single individuals don't get married anymore.
- Decide whether to retire or not.

$$V^s(t, i, a_t^i, \epsilon_t^i, \bar{y}_t^i) = \max_{D_t^i} \Big((1 - D_t^i) N^s(t, i, a_t^i, \epsilon_t^i, \bar{y}_t^i) + D_t^i S^s(t, i, a_t^i, \bar{y}_t^i, t) \Big)$$

- If retire, no longer able to work.

Early retirement stage, singles who decided not to claim SS

$$N^s(t, i, a_t^i, \epsilon_t^i, \bar{y}_t^i) = \max_{c_t, a_{t+1}, n_t^i} \left(v^i(c_t, l_t^{i,j}) + \beta E_t V^s(t+1, i, a_{t+1}^i, \epsilon_{t+1}^i, \bar{y}_{t+1}^i) \right)$$

$$Y_t = e_t^{i,j}(\bar{y}_t^i)\epsilon_t^i n_t^i,$$

$$T(\cdot) = T(Y_t + ra_t, j)$$

$$\bar{y}_{t+1}^i = (\bar{y}_t^i(t - t_0) + (\min(Y_t^i, \widetilde{y}_t)))/(t + 1 - t_0),$$

$$c_t + a_{t+1} = (1 + r)a_t^i + Y_t^i - \tau_t^{SS} \min(Y_t, \widetilde{y}_t) - T(\cdot),$$

$$a_{t+1} \geq 0$$

Early retirement stage, singles who have claimed SS

$$S^s(t, i, a_t^i, \bar{y}_r^i, tr) = \max_{c_t, a_{t+1}} \left(v^i(c_t, L^{i,j}) + \beta E_t S^s(t+1, i, a_{t+1}^i, \bar{y}_r^i, tr) \right)$$

$$Y_t = SS(\bar{y}_r^i, tr)$$

$$T(\cdot) = T(Y_t + ra_t, j)$$

$$c_t + a_{t+1} = (1+r)a_t + Y_t - T(\cdot)$$

$$a_{t+1} \geq 0.$$

Recursive problem for retired singles

$$R^s(t, i, a_t, \psi_t^i, \bar{y}_r^i, tr) = \max_{c_t, a_{t+1}} \left(v(c_t, L^{i,j}) + \beta s_t^{i,j}(\psi_t^i) E_t R^s(t+1, i, a_{t+1}, \psi_{t+1}^i, \bar{y}_r^i, tr) \right)$$

- t : Age
- i : Gender
- a_t : Net worth from previous period
- $\bar{y}_r^i$: Annual accumulated social security earnings (PI)
- ψ_t^i : Health status (good or bad)
- tr: Retirement age

Recursive problem for retired singles

$$Y_t^i = SS(\bar{y}_r^i)$$

$$T(\cdot) = \tau\left(Y_t^i + ra_t, j\right)$$

$$B(a_t, Y_t, \psi_t^i, \underline{c}(j)) = \max\left\{0, \underline{c}(j) - \left\{(1+r)a_t + Y_t - m_t^{i,j}(\psi_t^i) - T(\cdot)\right\}\right\}$$

$$c_t + a_{t+1} = (1+r)a_t + Y_t + B(a_t, Y_t^i, \psi_t^i, \underline{c}(j)) - m_t^{i,j}(\psi_t^i) - T(\cdot)$$

$$a_{t+1} \geq 0, \quad \forall t$$

Recursive problem for working-age couples

$$W^c(t, a_t, \epsilon_t^1, \epsilon_t^2, \bar{y}_t^1, \bar{y}_t^2) = \max_{c_t, a_{t+1}, n_t^1, n_t^2} \Bigg(w(c_t, l_t^{1,j}, l_t^{2,j})$$
$$+(1 - \zeta_{t+1}(\cdot))\beta E_t W^c(t+1, a_{t+1}, \epsilon_{t+1}^1, \epsilon_{t+1}^2, \bar{y}_{t+1}^1, \bar{y}_{t+1}^2)$$
$$+\zeta_{t+1}(\cdot)\beta \sum_{i=1}^{2} \Big(E_t W^s(t+1, i, a_{t+1}/2, \epsilon_{t+1}^i, \bar{y}_{t+1}^i) \Big) \Bigg)$$

- t : Age
- a_t : Net worth from previous period
- ϵ_t^i : Current productivity shock for each spouse
- $\bar{y}_t^i$: Annual accumulated SS earnings for each spouse
- Divorce probability $\zeta_t(\cdot) = \zeta_t(\epsilon_t^1, \epsilon_t^2)$

Recursive problem for working-age couples

$$
\begin{aligned}
Y_t^i &= e_t^i(\bar{y}_t^i)\epsilon_t^i n_t^i, \\
T(\cdot) &= \tau(ra_t + Y_t^1 + Y_t^2, j) \\
\tau_c(i,j,t) &= \tau_c^{0,5} f^{0,5}(i,j,t) + \tau_c^{6,11} f^{6,11}(i,j,t), \\
c_t + a_{t+1} &= (1+r)a_t + Y_t^1 + Y_t^2(1 - \tau_c(2,2,t)) \\
&\quad - \tau_t^{SS}(\min(Y_t^1, \widetilde{y}_t) + \min(Y_t^2, \widetilde{y}_t)) - T(\cdot) \\
a_t &\geq 0, \quad n_t^1, n_t^2 \geq 0, \quad \forall t
\end{aligned}
$$

Early retirement stage, couples

- Couples don't get divorced anymore.
- Decide whether to retire or not at the same time.
- If retire, no longer able to work.

$$V^c(t, a_t, \epsilon_t^1, \epsilon_t^2, \bar{y}_t^1, \bar{y}_t^2) = \max_{D_t}\Big((1 - D_t)N^c(t, a_t, \epsilon_t^1, \epsilon_t^2, \bar{y}_t^1, \bar{y}_t^2) + D_t S^c(t, a_t, \bar{y}_t^1, \bar{y}_t^2, t)\Big)$$

Early retirement stage, couples who decided not to claim SS

$$
\begin{aligned}
N^c(t, a_t, \epsilon_t^1, \epsilon_t^2, \bar{y}_t^1, \bar{y}_t^2) = \max_{c_t, a_{t+1}, n_t^1, n_t^2} \Bigg(& w(c_t, l_t^{1,j}, l_t^{2,j}) \\
& + \beta E_t V^c(t+1, a_{t+1}, \epsilon_{t+1}^1, \epsilon_{t+1}^2, \bar{y}_{t+1}^1, \bar{y}_{t+1}^2) \Bigg),
\end{aligned}
$$

$$l_t^{i,j} = L^{i,j} - n_t^i - \Phi_t^{i,j} I_{n_t^i},$$

$$Y_t^i = e_t^{i,j}(\bar{y}_t^i)\epsilon_t^i n_t^i,$$

$$T(\cdot) = T(ra_t + Y_t^1 + Y_t^2, i, j, t)$$

$$c_t + a_{t+1} = (1+r)a_t + Y_t^1 + Y_t^2 - \tau_t^{SS}(\min(Y_t^1, \widetilde{y}_t) + \min(Y_t^2, \widetilde{y}_t)) - T(\cdot)$$

$$\bar{y}_{t+1}^i = (\bar{y}_t^i(t - t_0) + (\min(Y_t^i, \widetilde{y}_t)))/(t + 1 - t_0),$$

$$a_t \geq 0, \quad n_t^1, n_t^2 \geq 0$$

Early retirement stage, couples who decided to claim SS

$$S^c(t, a_t, \bar{y}_r^1, \bar{y}_r^2, tr) = \max_{c_t, a_{t+1}} \left(w(c_t, L^{1,j}, L^{2,j}) + \beta E_t S^c(t+1, a_{t+1}, \bar{y}_r^1, \bar{y}_r^2, tr) \right),$$

$$Y_t = \max\left\{ (SS(\bar{y}_r^1, tr) + SS(\bar{y}_r^2, tr), \frac{3}{2} \max(SS(\bar{y}_r^1, tr), SS(\bar{y}_r^2, tr)) \right\}$$

$$T(\cdot) = T(Y_t + ra_t, i, j, t)$$

$$c_t + a_{t+1} = (1+r)a_t + Y_t - T(\cdot)$$

$$a_{t+1} \geq 0.$$

Recursive problem for retired couples

$$
\begin{aligned}
R^c(t, a_t, \psi_t^1, \psi_t^2, \bar{y}_r^1, \bar{y}_r^2) = \max_{c_t, a_{t+1}} \Big(& w(c_t, L^{1,j}, L^{2,j}) + \\
& \beta s_t^{1,j}(\psi_t^1) s_t^{2,j}(\psi_t^2) E_t R^c(t+1, a_{t+1}, \psi_{t+1}^1, \psi_{t+1}^2, \bar{y}_r^1, \bar{y}_r^2) + \\
& \beta s_t^{1,j}(\psi_t^1)(1 - s_t^{2,j}(\psi_t^2)) E_t R^s(t+1, 1, a_{t+1}, \psi_{t+1}^1, \bar{\bar{y}}_r^1) + \\
& \beta s_t^{2,j}(\psi_t^2)(1 - s_t^{1,j}(\psi_t^1)) E_t R^s(t+1, 2, a_{t+1}, \psi_{t+1}^2, \bar{\bar{y}}_r^2) \Big)
\end{aligned}
$$

- t : Age.
- a_t : Net worth from previous period.
- $\bar{y}_r^1$: PI for men.
- $\bar{y}_r^2$: PI women.
- ψ_t^i : Health status (good or bad) for each spouse.

Recursive problem for retired couples

$$\bar{\bar{y}}_r^i = \max(\bar{y}_r^1, \bar{y}_r^2),$$

$$Y_t = \max\left\{(SS(\bar{y}_r^1) + SS(\bar{y}_r^2), \frac{3}{2}\max(SS(\bar{y}_r^1), SS(\bar{y}_r^2))\right\}$$

$$T(\cdot) = \tau(Y_t + ra_t, j)$$

$$B(a_t, Y_t, \psi_t^1, \psi_t^2, \underline{c}(j)) = \max\left\{0, \underline{c}(j) - \left[(1+r)a_t + Y_t - m_t^{1,j}(\psi_t^1) - m_t^{2,j}(\psi_t^2) - T(\cdot)\right]\right\}$$

$$c_t + a_{t+1} = (1+r)a_t + Y_t + B(\cdot) - m_t^{1,j}(\psi_t^1) - m_t^{2,j}(\psi_t^2) - T(\cdot)$$

$$a_{t+1} \geq 0, \quad \forall t$$

Individual's Discounted Present Value of Being in a Marriage

Evaluated under optimal policies

$$\begin{aligned}\hat{W}^c(t,i,a_t,\epsilon_t^1,\epsilon_t^2,\bar{y}_t^1,\bar{y}_t^2) = v(\hat{c}_t(\cdot)/\eta_t^{i,j},\hat{l}_t^{i,j}) + \\ \beta(1-\zeta(\cdot))E_t\hat{W}^c(t+1,i,\hat{a}_{t+1}(\cdot),\epsilon_{t+1}^1,\epsilon_{t+1}^2,\bar{y}_{t+1}^1,\bar{y}_{t+1}^2) + \\ \beta\zeta(\cdot)E_t W^s(t+1,i,\hat{a}_{t+1}(\cdot)/2,\epsilon_{t+1}^i,\bar{y}_{t+1}^i)\end{aligned}$$

$$\begin{aligned}\hat{R}^c(t,i,a_t,\psi_t^1,\psi_t^2,\bar{y}_r^1,\bar{y}_r^2) = v(\hat{c}_t(\cdot)/\eta_t^{i,j},L^{i,j}) + \\ \beta s_t^{i,j}(\psi_t^i)s_t^{p,j}(\psi_t^p)E_t\hat{R}^c(t+1,i,\hat{a}_{t+1}(\cdot),\psi_{t+1}^1,\psi_{t+1}^2,\bar{y}_r^1,\bar{y}_r^2) + \\ \beta s_t^{i,j}(\psi_t^i)(1-s_t^{p,j}(\psi_t^p))E_t R^s(t+1,i,\hat{a}_{t+1}(\cdot),\psi_{t+1}^i,\bar{\bar{y}}_r^i)\end{aligned}$$

Individual's Discounted Present Value of Being in a Marriage

Evaluated under optimal policies

$$\hat{N}^c(t,i,a_t,\epsilon_t^1,\epsilon_t^2,\bar{y}_t^1,\bar{y}_t^2) = v^i(\hat{c}_t(\cdot),\hat{l}_t^{i,j}) \\ + \beta E_t \hat{V}^c(t+1,i,\hat{a}_{t+1}(\cdot),\epsilon_{t+1}^1,\epsilon_{t+1}^2,\bar{y}_{t+1}^1,\bar{y}_{t+1}^2)$$

$$\hat{S}^c(t,i,a_t,\bar{y}_r^1,\bar{y}_r^2,tr) = v^i(\hat{c}_t(\cdot),L^{i,j}) + \beta E_t S^c(t+1,i,\hat{a}_{t+1}(\cdot),\bar{y}_r^1,\bar{y}_r^2,tr)$$

$$\hat{V}^c(t,i,a_t,\epsilon_t^1,\epsilon_t^2,\bar{y}_t^1,\bar{y}_t^2) = (1-\hat{D}_t(\cdot))\hat{N}^c(t,i,a_t,\epsilon_t^1,\epsilon_t^2,\bar{y}_t^1,\bar{y}_t^2) + \\ \hat{D}_t(\cdot)\hat{S}^c(t,i,a_t,\bar{y}_r^1,\bar{y}_r^2,t)$$

Two-step estimation strategy

- First step inputs for each cohort
  - Fix some parameters to calibrated or estimated values (externally to model)
  - Estimate from data directly (taxes, demographics, wage risk, health risk, human capital accumulation function...)

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  - Estimate other parameters matching data targets for 1945 cohort

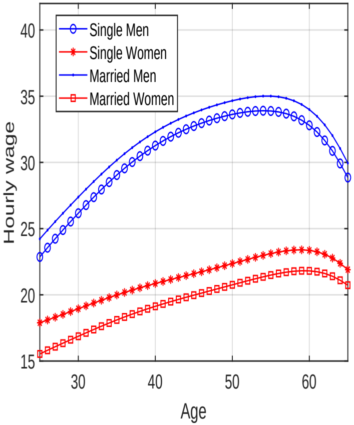
Two-step estimation strategy

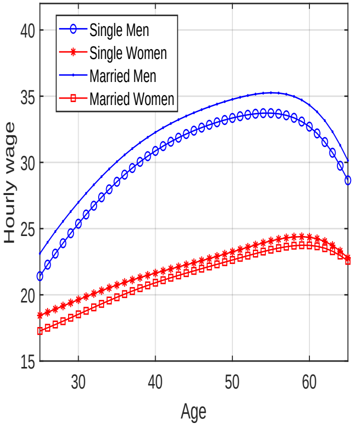
- First step inputs for each cohort
  - Fix some parameters to calibrated or estimated values (externally to model)
  - Estimate from data directly (taxes, demographics, wage risk, health risk, human capital accumulation function...)
- Second step, 1945 cohort
  - Estimate other parameters matching data targets for 1945 cohort
- Second step, 1955 cohort
  - Fix preference parameters and use rest of parameters to match data targets for 1955 cohort

Calibrated parameters

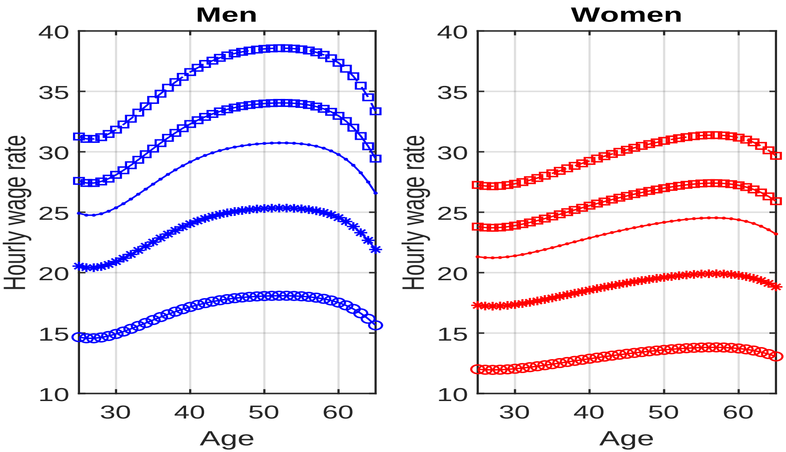
Fixed parameters		Source
Preferences and returns		
r	Interest rate	4% De Nardi et al. (2016)
γ	Utility curvature parameter	2.5 see text
η_t	Equivalence scales	PSID
Government policy		
$\lambda_t^{i,j}, \tau_t^{i,j}$	Income tax	See text
$SS(\bar{y}_r^i)$	Social Security benefit	See text
τ_t^{SS}	Social Security tax rate	See text
$\widetilde{y}_t$	Social Security cap	See text
$\underline{c}(1)$	Minimum consumption, singles	\$8,687, De Nardi et al. (2016)
$\underline{c}(2)$	Minimum consumption, couples	\$8,687*1.5 Social Security rules

PSID: Wage profiles, 1945 and 1955 cohorts





PSID: Wage profiles, 1945 cohort

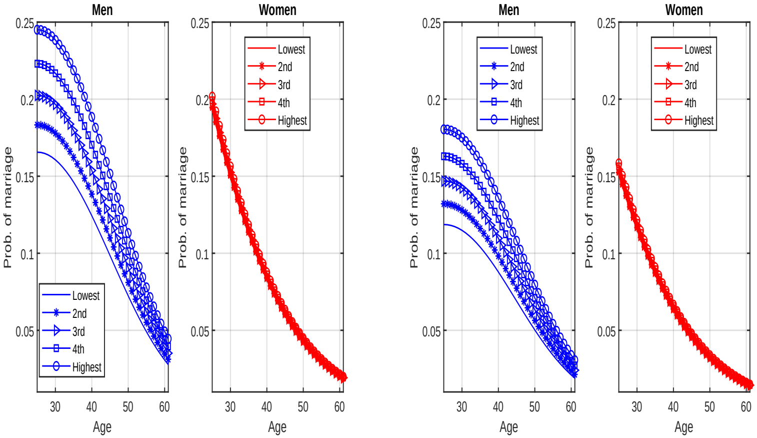


PSID: Wage processes

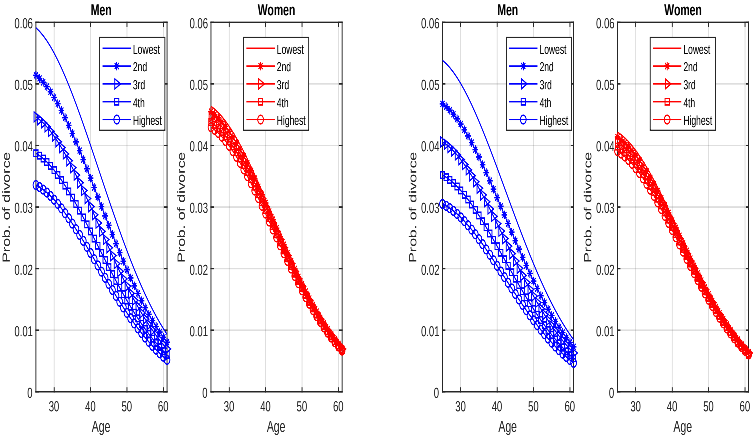
Parameter	Men	Women
Persistence	0.941	0.946
Variance prod. shock	0.026	0.015
Initial variance	0.114	0.095

Table: Estimated processes for the wage shocks for men and women, PSID data

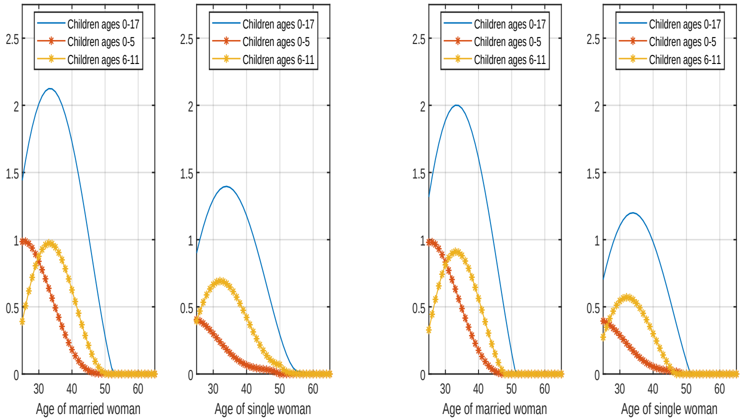
PSID: Marriage, 1945 and 1955 cohorts



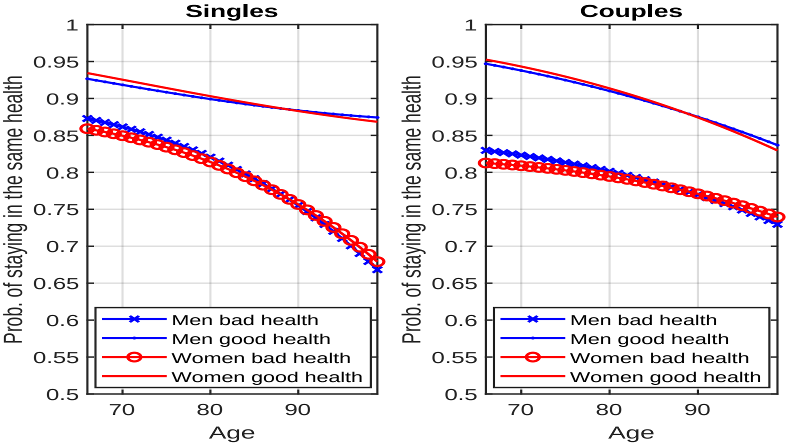
PSID: Divorce, 1945 and 1955 cohorts



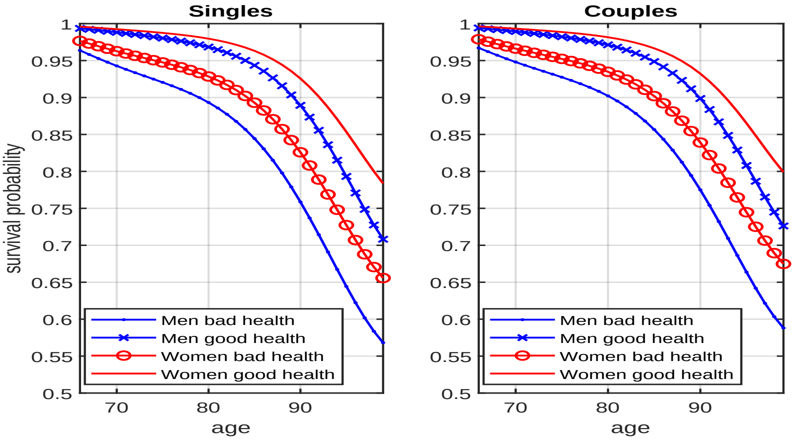
PSID: number of children, 1945 and 1955 cohorts



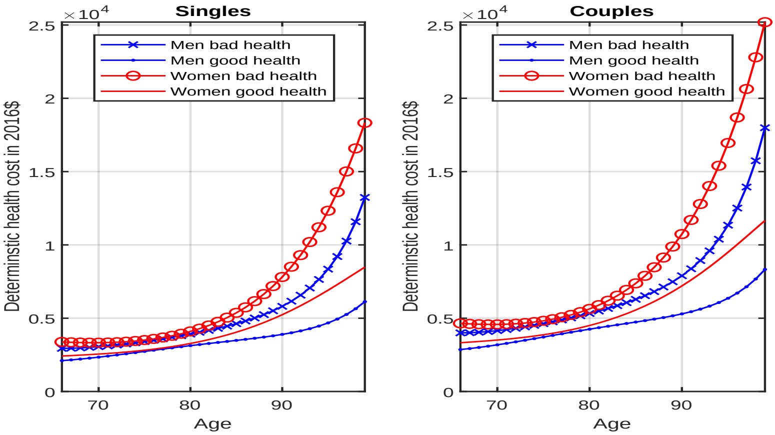
HRS: Health transition probabilities



HRS: Survival rates



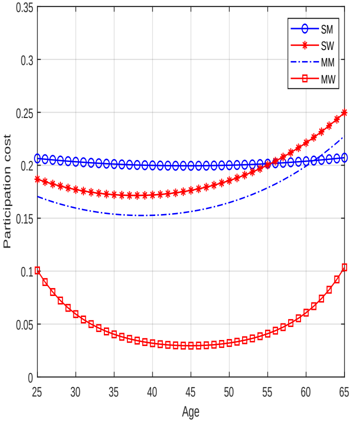
HRS: Health costs

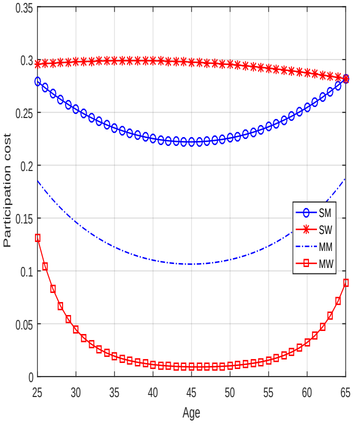


Second-step estimated model parameters

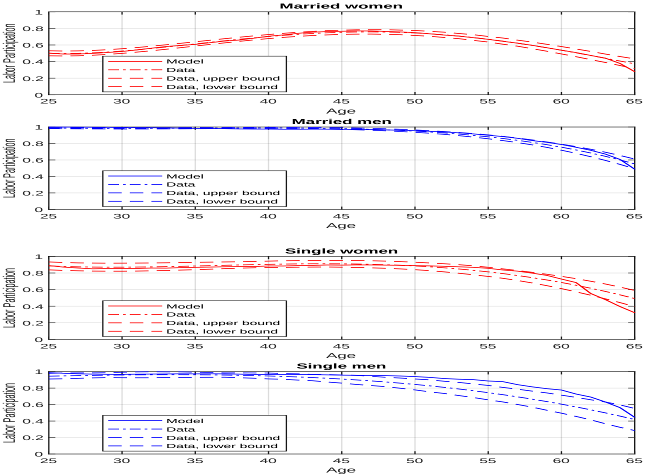
Estimated parameters	1945 cohort	1955 cohort
β: Discount factor	0.990	0.990
ω: Consumption weight	0.406	0.406
$L^{2,1}$: Time endowment (weekly hours), single women	107	112
$L^{1,2}$: Time endowment (weekly hours), married men	107	101
$L^{2,2}$: Time endowment (weekly hours), married women	88	88
$\tau_c^{0,5}$: Prop. child care cost for children age 0-5	30%	25%
$\tau_c^{6,11}$: Prop. child care cost for children age 6-11	7%	19%
$\Phi_t^{i,j}$: Partic. cost	Fig. 47	Fig. 47

Second-step participation cost estimates

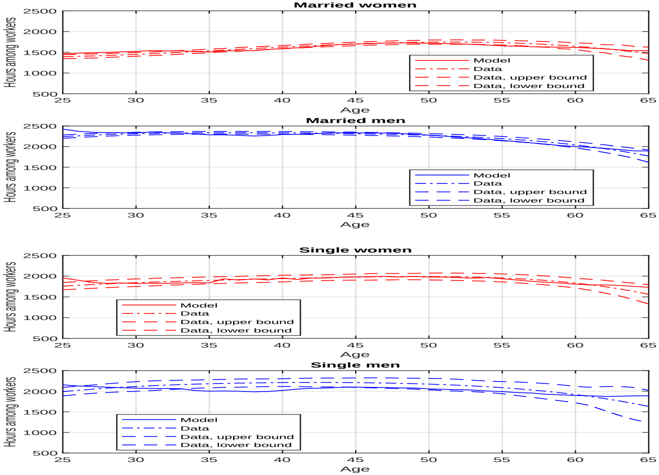




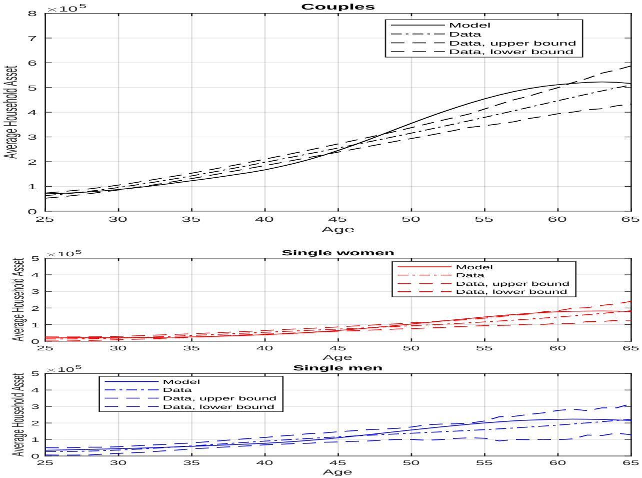
Participation, 1945 cohort



Hours. 1945 cohort



Savings, 1945 cohort

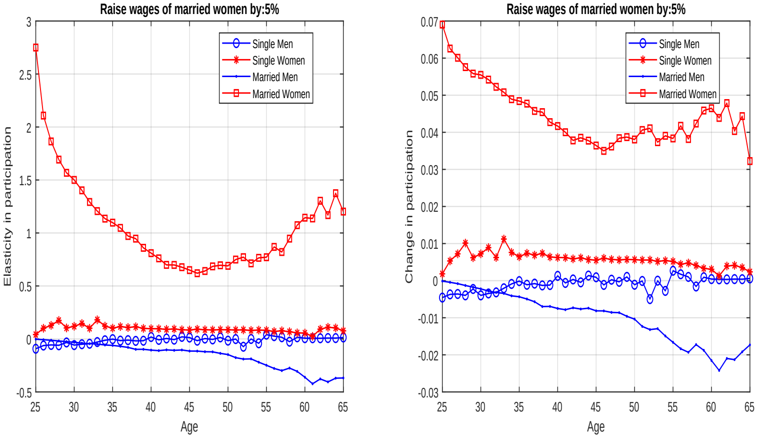


Labor supply elasticity, temporary wage change

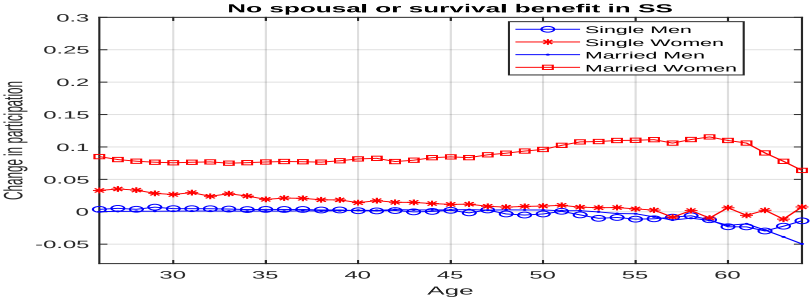
	Participation				Hours among workers			
	Married		Single		Married		Single	
	W	M	W	M	W	M	W	M
30	1.0	0.0	0.5	0.2	0.2	0.3	0.4	0.3
40	0.7	0.1	0.4	0.2	0.3	0.5	0.5	0.5
50	0.6	0.2	0.4	0.5	0.5	0.5	0.8	0.5
60	1.1	0.8	1.4	2.0	0.4	0.2	0.5	0.3

Table: Labor supply elasticity, temporary wage change, 1945 cohort

Labor supply elasticity, permanent wage change, 1945 cohort

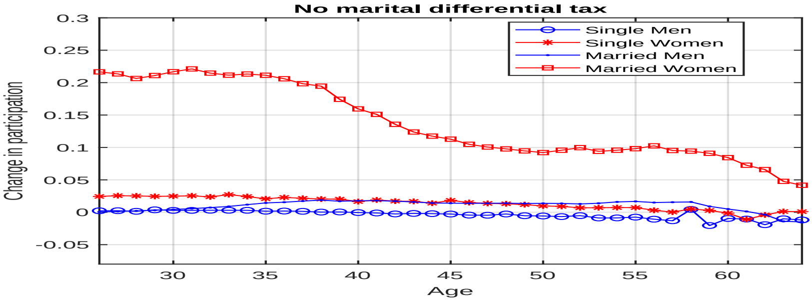


Remove both Social Security benefits, 1945 cohort

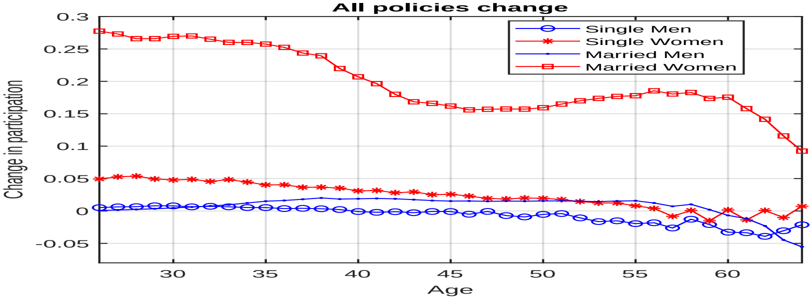


Percentage asset change	Couples	Single men	Single women
Balanced government budget	14.9%	7.8%	11.2%

Taxing everyone as singles, 1945 cohort

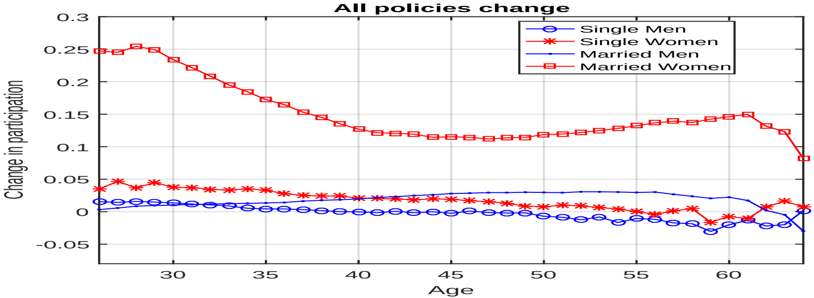


Remove Social Security benefits + joint tax, 1945 cohort



Percentage asset change	Couples	Single women	Single men
Balanced government budget	20.3%	14.8%	8.8%

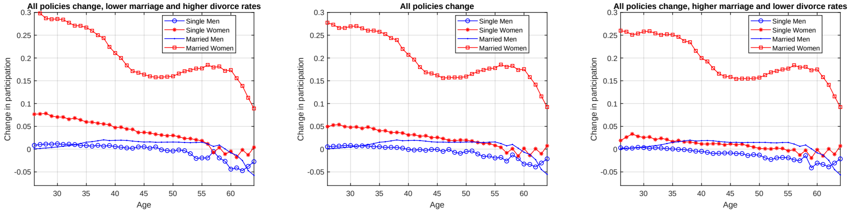
Remove Social Security benefits + joint tax, 1955 cohort



% asset change	Couples	Single women	Single men
Balanced government budget	19.7%	14.9%	8.4%

Remove Social Security benefits + joint tax, 1945 cohort

- Left: $\Downarrow$ the marriage prob. and $\Uparrow$ the divorce rate by 20%
- Middle: benchmark
- Right: $\Uparrow$ the marriage prob. and $\Downarrow$ the divorce rate by 20%



Welfare, 1945 cohort

	All			Winners			Losers		
	Couples	SW	SM	Couples	SW	SM	Couples	SW	SM
Remove Social Security spousal benefits, unbalanced budget									
Avg	-0.25	-0.23	0.31	0.00	0.00	0.31	-0.25	-0.23	-0.02
%				0.0	0.0	100.0	100.0	100.0	0.0
Remove Social Security spousal benefits, balanced budget									
Avg	0.71	0.20	1.30	0.71	0.22	1.30	0.00	-0.04	0.00
%				100.0	93.4	100.0	0.0	6.6	0.0
Remove joint income taxation, balanced budget									
Avg	0.33	-0.10	1.25	0.45	0.11	1.25	-0.09	-0.15	0.00
%				78.5	17.9	100.0	21.5	82.1	0.0
Remove all marital related polices, balanced budget									
Avg	0.83	0.03	2.24	0.84	0.31	2.24	-0.04	-0.13	0.00
%				98.9	35.8	100.0	1.1	64.2	0.0

Welfare, remove all marital related polices, balanced budget, 1945 and 1955 cohorts

	All			Winners			Losers		
	Couples	SW	SM	Couples	SW	SM	Couples	SW	SM
1945 cohort									
Avg	0.83	0.03	2.24	0.84	0.31	2.24	-0.04	-0.13	0.00
%				98.9	35.8	100.0	1.1	64.2	0.0
1955 cohort									
Avg	0.75	0.21	1.31	0.77	0.31	1.31	-0.05	-0.05	-0.02
%				97.2	70.9	100.0	2.8	29.1	0.0

Conclusions

- Estimate a rich life-cycle model of couples and singles with marriage-related policies:
  - Marital income tax,
  - Social Security spousal benefits
  - Social Security survival benefits

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  - Reduces participation of married men after age 55
  - Increases savings of couples
  - Is welfare improving for most

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  - Social Security survival benefits
- Removal of marriage-related provisions
  - Increases participation of married women over their life cycle
  - Reduces participation of married men after age 55
  - Increases savings of couples
  - Is welfare improving for most
- Effects are also large for the 1955 cohort, who had much higher labor market participation of married women to start with

Contributions

- First estimated structural model of couples and singles with participation and hours decisions (both men and women) and savings
- Study all marriage-related taxes and benefits in a unified framework
- Study two different cohorts
- Rich framework
  - Labor market experience can affect wages
  - Survival, health, and medical expenses in old age, heterogeneous by marital status and gender
  - Fit data for participation, hours worked, savings, and labor supply elasticities