Unemployment Insurance: Isn't Marriage Enough?

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The Context

- An unemployment insurance [UI] is a mechanism by which society protects its members from adverse idiosyncratic employment shocks.
- To the extent that spouses' incomes streams are not perfectly correlated, marriage helps couples smooth out consumption.
- The literature on the optimality of UI disregards the insurance effect of marriage.
- Recent emphasis (e.g., Bush administration) on role of marriage in alleviating poverty
  → is risk-sharing through marriage also important?

Questions

1 Does accounting for marriage in models of optimal UI significantly reduce the generosity of the replacement ratio?

2 How does the presence of marriage possibilities affect the votes of heterogeneous agents on the best UI program?

3 How do shirking possibilities affect these votes? What is the quantitative effect of moral hazard in a model with marriage?

Methodology

- Take a heterogeneous economy. Agents differ in
  - skills
  - employment probabilities
  - income prospects
  - marriage status
  - asset holdings
- Ask agents to vote on a UI program and scrutinize their votes.

The literature

1 Optimal UI

– Baily (JPuE 78): first attempt to characterize optimal UI

– Hansen & İmrohoroğlu (JPE 92): moral hazard $\rightarrow UI \Downarrow$
Zhang (95), Wang-Williamson (CRPP 96): Same finding

– Pallage & Zimmermann (IER 01): effect of moral hazard not so large after all

2 Marriage

– Becker (JPE 73): sorting role of marriage market

– Kotlikoff & Spivak (JPE 81): family as substitute for annuities market

– Hess (2001): role of love vs. insurance, empirical predictions

3 Substitution of private by public insurance

– extant studies: deleterious effects of public schemes on private risk sharing
  closest example: Attanasio & Rios-Rull (EER 2000)
  closest empirical work: Cullen & Gruber (JLE 2000)

– here: opposite question (relevance of marriage to optimal generosity of UI)

The model

General equilibrium model with unemployment insurance.

8 education groups ($j = 1, \ldots, 8$) with invariant measure.

2 genders ($g = f, m$)

9 marriage states ($k = 1, \ldots, 9$): married to $j = 1$, …, married to $j = 8$, single

Preferences $\mathcal{U}(c^{gjk}, l^{gjk}) = E \sum_{t=0}^{\infty} \beta^t U(c_t^{gjk}, l_t^{gjk})$

Marriage Joint decision following random matching among singles

Job opportunity i.i.d. lottery $s \in \{e, u\}$

Indivisible labor If a worker, individual g, j, k works $\hat{h}$ hours and produces y^{gj} units of output.

Disposable income

$$y^{gjkd} = \begin{cases} y^{gj}(1-\tau) & \text{if } s^{gj} = e \text{ and } \eta^{gjk} = 1 \\ \theta y^{gj}(1-\tau) & \text{if } \mu^{gjk} = 1 \\ 0 & \text{if } \mu^{gjk} = 0 \end{cases}$$

Unemployment insurance

$$\mu^{gjk} = 1 \begin{cases} \text{with probability 1 if } s^{gj} = u \\ \text{with probability } \pi \text{ if } s^{gj} = e, \eta^{gjk} = 0 \end{cases}$$

$\mu^{gjk} = 0$ otherwise.

Decision making

1. Single agents (drop index k):

$\max E \sum_{t=0}^{\infty} \beta^t U(c_t^{gj}, l_t^{gj})$

s.t.: $a_t^{gj} = a_{t-1}^{gj} + y_t^{gjd} - c_t^{gj}$

2. Couples:

$\max E \sum_{t=0}^{\infty} \beta^t \{\frac{1}{2} U(c_t^{mjk}, l_t^{mjk}) + \frac{1}{2} U(c_t^{fkj}, l_t^{fkj})\}$

s.t.: $\underbrace{a_t^{mjk} + a_t^{fkj}}_{a_t^{kj}} = \underbrace{a_{t-1}^{mjk} + a_{t-1}^{fkj}}_{a_{t-1}^{kj}} + y_t^{mjkd} + y_t^{fkjd} - c_t^{mjk} - c_t^{fkj}$

s.t.: participation constraints: $c_t^{mjk}, l_t^{mjk}, c_t^{fkj}, l_t^{fkj}$ such that household members prefer staying married that divorce.

Divorce Divides assets equally between spouses.

Equilibrium

A voting equilibrium is an allocation of work, assets and consumption for all agents, together with a pair (θ, τ) such that:

- single agents solve their individual intertemporal problem, given (θ, τ);
- married agents solve their joint intertemporal problem, given (θ, τ);
- the government balances its budget;
- there does not exist $\theta' \neq \theta$ which would rally a majority of votes.

Females	Males: grad. ≤ 4	grad. 5-8	grad. 9-11	high sch.	some col.	ass. deg.	bach. deg.	adv. deg.	single
grad. ≤ 4	19.60	15.75	7.43	4.54	1.93	0.14	0.34	0.14	50.14
grad. 5-8	3.34	21.04	13.10	17.32	3.05	1.25	0.82	0.26	39.82
grad. 9-11	0.71	4.70	19.24	25.21	5.80	1.89	1.70	0.54	40.22
high sch.	0.21	1.93	5.41	38.34	8.79	4.46	4.02	1.14	35.71
some col.	0.09	0.61	2.92	22.94	20.86	6.46	8.13	2.38	35.60
ass. deg.	0.11	0.59	2.32	20.02	14.68	14.97	11.12	3.66	32.53
bach.	0.01	0.20	1.09	12.65	11.99	7.19	28.73	6.90	31.25
adv. deg.	0.05	0.30	0.43	7.73	10.08	6.75	28.11	22.79	23.77

Males	Females: grad. ≤ 4	grad. 5-8	grad. 9-11	high sch.	some col.	ass. deg.	bach. deg.	adv. deg.	single
grad. ≤ 4	20.55	12.11	4.18	3.97	0.94	0.43	0.07	0.29	57.46
grad. 5-8	4.20	19.40	7.08	9.27	1.58	0.57	0.50	0.42	56.98
grad. 9-11	1.20	7.31	17.56	15.78	4.56	1.37	1.66	0.37	50.21
high sch.	0.21	2.77	6.60	32.07	10.26	3.38	5.51	1.90	37.29
some col.	0.18	1.00	3.10	15.03	19.09	5.07	10.69	5.06	40.78
ass. deg.	0.03	0.89	2.18	16.45	12.76	11.16	13.83	7.32	35.39
bach.	0.04	0.30	1.02	7.69	8.34	4.30	28.70	15.82	33.78
adv. deg.	0.04	0.23	0.78	5.30	5.92	3.44	16.74	31.13	36.41

Source: US Bureau of the Census, Current Population Report: Educational Attainment in the United States, March 1997

Education	All	grad. ≤ 4	grad. 5-8	grad. 9-11	high sch.	some col.	ass. deg.	bach. deg.	adv. deg.
Male	100	1.78	6.15	10.06	32.13	17.19	6.49	16.75	9.44
Female	100	1.56	6.13	10.12	35.25	17.24	7.99	15.38	6.34
Marr. males	65.43	49.86	60.20	59.79	64.30	64.41	67.48	68.75	76.23
Marr. fem.	58.79	41.10	41.75	47.87	61.46	57.65	63.71	65.30	63.39
Male lab. for.	75.42	46.29	48.16	61.35	75.24	79.56	85.79	84.76	83.03
Fem. lab. for.	59.44	20.40	22.08	37.00	57.54	65.76	74.50	74.02	79.98
Male un. rate	4.67	8.32	7.94	10.44	5.51	4.39	3.17	2.31	1.74
Fem. un. rate	4.08	14.84	8.15	11.23	4.43	4.05	2.80	2.00	1.93
Male earn.	1	0.36	0.47	0.59	0.78	0.94	0.97	1.25	1.94
Fem. earn.	0.59	0.26	0.28	0.32	0.45	0.54	0.61	0.77	1.11

Source: US Bureau of the Census, Current Population Report: Educational Attainment in the United States, March 1997

$$U(c_t, l_t) = \frac{\left(c_t^{1-\sigma} l_t^{\sigma}\right)^{1-\rho} - 1}{1-\rho}$$

with $\sigma = 0.67$ and $\rho = 2.5$, discount factor β= 0.96, period length= 1 year; a worker spends 45% of its time endowment at work.

Voting

Agents vote on steady states: “helicopter-drop” voting.

When voting, agents know who they are and their current state. Each agent, of zero-measure, is offered to move from the status quo to the alternative while maintening his current state.

All agents in labor force vote (lower skilled agents vote as frequently as others).

Very preliminary results

No moral hazard yet:

	optimal θ	θ from votes
Model without marriage	100%	80%
Model with marriage	100%	100%