Universal Basic Income versus Unemployment Insurance

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[1]The views expressed here are those of the authors and do not necessarily reflect the views of the Federal Reserve System, the Board of Governors, or the regional Federal Reserve Banks.

The Context

- Renewed interest in universal income (CH, USA, elsewhere)
- Old idea (Meade 1935, Friedman 1968, Simon 2000)
- Very political
- Surprisingly little formal work

Arguments

- Fairness (uniformity)
- Overhead (monitoring cost)
- Insurance
- Capabilities

Universal Basic Income

- Unconditional allocation
- Financed through taxation

Unemployment Insurance

- Conditional allocation to some unemployed
- Administrative and monitoring costs
- Finance through taxation

This Paper

- Is UBI a good alternative to UI?
- Worries: labor supply, savings
- Positives: insurance, administration, moral hazard

Plan

- Draw a minimalist model
- Parametrize it
- Compute optimal policies
- Compare outcomes

What we need

- Idiosyncracy
- Endogenous labor supply
- Opportunities for moral hazard
- Endogenous savings
- A welfare criterion

Labor specifics

- Labor lottery $s_t \in \{0, 1\}$
  $p(s_t|s_{t-1})$ Markov
- Labor income

$$y_t^d = \begin{cases} (1-\tau)(1+\omega) & \text{work} \\ (1-\tau)(\theta+\omega) & \text{UI benefits} \\ (1-\tau)\omega & \text{otherwise} \end{cases}$$

- π shirkers success

Decisions

$$\max_{\{m_{t+1},\mu_t\}_{t=0}^{\infty}} \quad \mathrm{E}\sum_{t=0}^{\infty}\beta^t u(c_t, l_t)$$

$$\text{S.T.} \quad m_{t+1} + c_t = m_t + y_t^d$$

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

Value function representation

$$
\begin{aligned}
V(e,m) &= \max_{\mu} \\
&\left\{ \mu \max_{m'} \left[u((1-\tau)(1+\omega)+m-m', 1-\bar{h}) + \sum_{s'} p(s'|e) V(s',m') \right] \right. \\
&+(1-\mu)(1-\pi) \max_{m'} \left[u((1-\tau)\omega+m-m', 1) + \sum_{s'} p(s'|e) V(s',m') \right] \\
&\left. +(1-\mu)\pi \max_{m'} \left[u((1-\tau)(\theta+\omega)+m-m', 1) + \sum_{s'} p(s'|e) V(s',m') \right] \right\} \\
V(u,m) &= \max_{m'} \left[u((1-\tau)(\theta+\omega)+m-m', 1) + \sum_{s'} p(s'|u) V(s',m') \right]
\end{aligned}
$$

Steady-state Equilibrium

- $\mu(s,m)$, $m\prime(s,m)$,
- $V(s,m)$, $f(s,m)$,
- θ, ω, τ

such that

- households optimize
- $f(s,m)$ is invariant
- $\tau[1+\omega+\theta h] = \omega + \theta h + \lambda h$,
  where $h = p(u|u)u + p(u|e)e + \pi\mu(e,.)[p(e|u)u + p(e|e)e]$,
- max $\bar{V}$

What is going on?

- Idiosyncratic labor market histories
- Incomplete markets
- UI, UBI, Buffer stock savings
- Different decisions

Parametrization, preferences

$$u(c_t, l_t) = \frac{[c_t^{1-\sigma} l_t^{\sigma}]^{1-\gamma} - 1}{1-\gamma},$$

$\beta = 0.995$ (12 weeks), $\gamma = 2.5$, $\sigma = 0.67$, $\bar{h} = 0.45$,

Parametrization, labor market

$\lambda = \frac{500}{104{,}257} = 0.0048.$

	1990	2011
u rate	6%	9%
u dur.	12w	36w
$p(e\|u)$	0.500	0.167
$p(u\|u)$	0.500	0.833
$p(e\|e)$	0.989	0.984
$p(u\|e)$	0.011	0.016

Results UI, 1990, $\pi = 0.2$

θ	τ	$\bar{V}$	$\bar{u}$	$\bar{u}+$	$\bar{m}$
0	0	-110.7749	0.06	0.0000	2.82
0.05	0.0035	-110.7328	0.06	0.0000	2.20
0.10	0.0070	-110.6931	0.06	0.0091	1.80
0.15*	0.0108	-110.6909	0.06	0.0209	1.46
0.20	0.0151	-110.7360	0.06	0.0352	1.16
0.25	0.0200	-110.8332	0.06	0.0518	0.91
0.30	0.0256	-110.9870	0.06	0.0697	0.68
0.35	0.0318	-111.1998	0.06	0.0890	0.50
0.40	0.0386	-111.4552	0.06	0.1077	0.36

Results UI, 2011, $\pi = 0.2$

θ	τ	$\bar{V}$	$\bar{u}$	$\bar{u}+$	$\bar{m}$
0	0	-112.8519	0.09	0.0000	7.27
0.05	0.0054	-112.6159	0.09	0.0023	5.31
0.10	0.0107	-112.3922	0.09	0.0111	4.12
0.15	0.0163	-112.2290	0.09	0.0226	3.16
0.20	0.0225	-112.1350	0.09	0.0370	2.36
0.25*	0.0292	-112.0963	0.09	0.0519	1.70
0.30	0.0366	-112.1332	0.09	0.0689	1.16
0.35	0.0449	-112.2727	0.09	0.0887	0.72
0.40	0.0541	-112.4968	0.09	0.1097	0.39

Results, UBI, 1990

ω	τ	$\bar{V}$	$\bar{u}$	$\bar{u}+$	$\bar{m}$
0	0	-110.7749	0.06	0.0000	2.82
0.01	0.0105	-110.7585	0.06	0.0000	2.61
0.0125*	0.0131	-110.7581	0.06	0.0018	2.58
0.0150	0.0158	-110.7596	0.06	0.0039	2.55
0.0175	0.0184	-110.7629	0.06	0.0064	2.52
0.02	0.0210	-110.7647	0.06	0.0077	2.49
0.03	0.0315	-110.7921	0.06	0.0168	2.37
0.05	0.0526	-110.9219	0.06	0.0396	2.15
0.10	0.1073	-111.7223	0.06	0.1078	1.68
0.20	0.2249	-115.6647	0.06	0.2507	1.00
0.30	0.3569	-124.6774	0.06	0.3994	0.53

Results, UBI, 2011

ω	τ	$\bar{V}$	$\bar{u}$	$\bar{u}+$	$\bar{m}$
0	0	-112.8519	0.09	0.0000	7.2739
0.01	0.0109	-112.7925	0.09	0.0022	6.59
0.0125	0.0136	-112.7834	0.09	0.0035	6.49
0.0150	0.0163	-112.7774	0.09	0.0057	6.39
0.0175	0.0190	-112.7705	0.09	0.0066	6.29
0.02	0.0217	-112.7689	0.09	0.0093	6.20
0.0225*	0.0244	-112.7626	0.09	0.0102	6.11
0.0250	0.0271	-112.7669	0.09	0.0134	6.02
0.0275	0.0298	-112.7633	0.09	0.0143	5.93
0.03	0.0325	-112.7714	0.09	0.0179	5.84
0.05	0.0541	-112.8397	0.09	0.0360	5.21
0.10	0.1100	-113.5896	0.09	0.1011	3.90
0.20	0.2305	-117.7240	0.09	0.2422	2.08
0.30	0.3639	-126.9929	0.09	0.3856	0.95

Compare policies, 1990

	θ, ω	τ	$\bar{V}$	$\bar{u}$	$\bar{u}+$	$\bar{m}$
Opt UBI	0.0125	0.0131	-110.7581	0.06	0.0018	2.58
Opt UI (π=0)	0.70	0.0431	- 110.0127	0.06	0	0.00
Opt UI (π=0.1)	0.30	0.0206	- 110.5311	0.06	0.0259	0.72
Opt UI (π=0.2)	0.15	0.0108	-110.6909	0.06	0.0209	1.46
Opt UI (π=0.3)	0.05	0.0036	- 110.7456	0.06	0.0043	2.20
Opt UI (π=0.5)	0.0250	0.0019	-110.7765	0.06	0.0019	2.44
Opt UI (π=1)	0.01	0.0009	- 110.7952	0.06	0	2.61
Self-insurance	n.a.	0	-110.7749	0.06	0	2.82

Compare policies, 2011

	θ, ω	τ	$\bar{V}$	$\bar{u}$	$\bar{u}+$	$\bar{m}$
Opt UBI	0.0225	0.0244	-112.7626	0.09	0.0102	6.11
Opt UI (π=0)	0.65	0.0608	- 110.2378	0.09	0	0
Opt UI (π=0.1)	0.55	0.0608	-111.2316	0.09	0.0716	0.25
Opt UI (π=0.2)	0.25	0.0292	-112.0963	0.09	0.0519	1.70
Opt UI (π=0.3)	0.15	0.0180	-112.4240	0.09	0.0405	3.12
Opt UI (π=0.5)	0.0750	0.0093	-112.6666	0.09	0.0260	4.64
Opt UI (π=1)	0.02	0.0027	-112.8323	0.09	0.0093	6.24
Self-insurance	n.a.	0	-112.8519	0.09	0	7.27

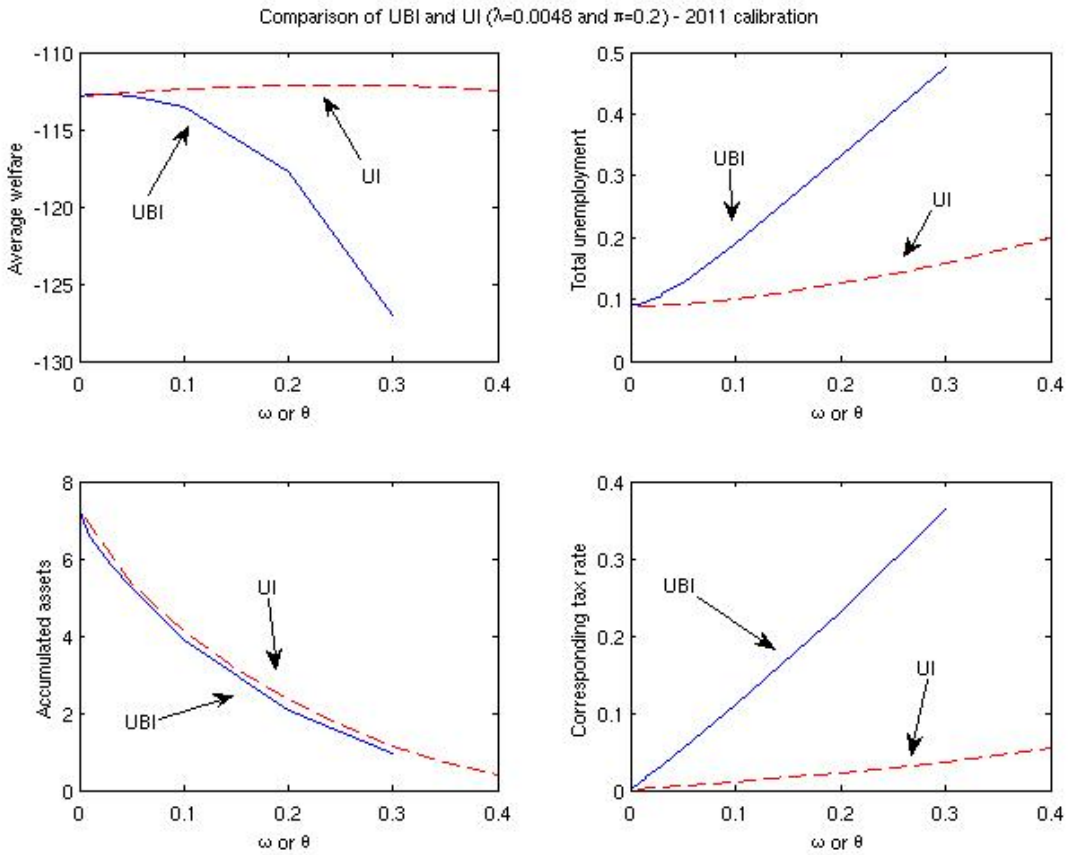
Do monitoring costs matter? 1990

	θ, ω	τ	$\bar{V}$	$\bar{u}$	$\bar{u}+$	$\bar{m}$
Opt UBI	0.0125	0.0131	-110.7581	0.06	0.0018	2.58
Opt UI, λ=0	0.15	0.0104	-110.6402	0.06	0.0209	1.46
Opt UI, λ=0.001	0.15	0.0105	-110.6529	0.06	0.0209	1.46
Opt UI, λ=0.0048	0.15	0.0108	-110.6909	0.06	0.0209	1.46
Opt UI, λ=0.01	0.10	0.0073	-110.7393	0.06	0.0091	1.20
Self-insurance	n.a.	0	-110.7749	0.06	0	2.82

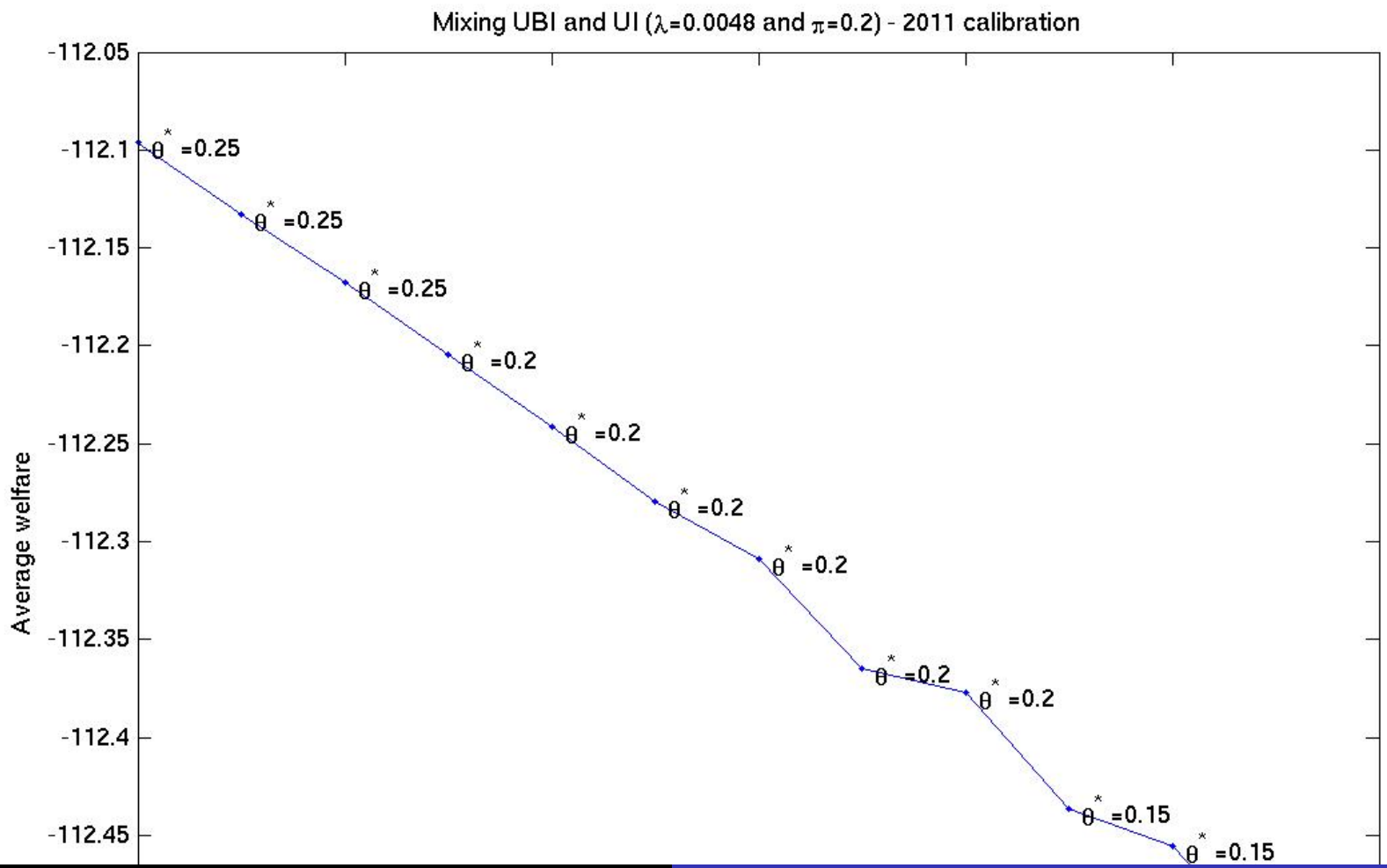
Do monitoring costs matter? 2011

	θ, ω	τ	$\bar{V}$	$\bar{u}$	$\bar{u}+$	$\bar{m}$
Opt UBI	0.0225	0.0244	-112.7626	0.09	0.0102	6.11
Opt UI, λ=0	0.25	0.0284	-112.0027	0.09	0.0521	1.70
Opt UI, λ=0.001	0.25	0.0286	-112.0226	0.09	0.0521	1.70
Opt UI, λ=0.0048	0.25	0.0292	-112.0963	0.09	0.0519	1.70
Opt UI, λ=0.01	0.25	0.0300	-112.1992	0.09	0.0517	1.70
Self-insurance	n.a.	0	-112.8519	0.09	0	7.27

Why?


Comparison of UBI and UI (λ=0.0048 and π=0.2) - 2011 calibration
Average welfare
Total unemployment
Accumulated assets
Corresponding tax rate
ω or θ
UBI
UI

Mixing policies



Again, why?

- UBI expensive $\Rightarrow$ high tax distortion
- UI administration not that costly
- UI targets better
- UBI high "shirking"
- Important to consider self-insurance option

Robustness

- High moral hazard
- High monitoring cost
- More elaborate UI
- Skill heterogeneity
- Never-in-the-labor-force
- Transition costs

Conclusions

- UBI dominated by UI in terms of insurance
- Reason: UI is better targeted
- And moral hazard does not matter enough
- Difficult to think of extension that would reverse this

The end?

UBI can still have a role

- Replace other transfers
- Monetary/fiscal policy tool