Optimal Welfare Programs with Search, Work, and Training

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Introduction

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- Large variety of policy instruments targeting the unemployed
- Most governments use a mix of policy instruments
- *A welfare program is a government expenditure program that combines different policies*
- *A policy is a prescription of an activity (search, work, train, or rest) to the unemployed, with associated transfer*

What we do

1. We develop a dynamic contracting framework to study welfare programs from a normative perspective

   - *An optimal welfare program maximizes the unemployed agent ex-ante utility, for a given level of government expenditures*

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2. We characterize:

   - optimal sequence of policies
   - optimal level and time-path of consumption (benefits during unemployment, taxes/subsidies upon re-employment)

3. We compare existing (U.S.) to efficient program: evaluation based on *National Evaluation of Welfare-to-Work Strategies (NEWWS)*

Preferences, endowments, markets

- Agent is infinitely lived, discounts future at rate $\beta = q$
- Intra-period utility $u(c) - a$
  - Separable in consumption c and effort $a \in \{0, e\}$
  - $u(\cdot)$ increasing, strictly concave, smooth, and u^{-1} has convex first derivative (Newman, 1995)
- Agent endowed with human capital h
- No access to either storage or borrowing

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- Secondary production technology
  - Output is $\underline{\omega}$, independent of h
  - Access to this technology is frictionless, i.e. readily available

Search technology

- Search activity yields at most one contact per period
- Stock-flow approach (Coles-Smith, 1999) in three stages:

  1. Application: number of job opportunities $\eta(h, a)$, where $\eta(h, e) > \eta(h, 0) \equiv 0,\ \eta(\cdot, e)$ increasing in h

  2. Contact: probability of being recontacted by firm μ

  3. Hire: upon contact, prob. of being retained by firm $\lambda(r)$, where worker's action $r \in \{0, 1\}$ and $\lambda(1) = \lambda > \lambda(0) = 0$

  $\Rightarrow$ Job finding probability: $\pi(h, e, r) = \lambda(r)[1 - (1 - \mu)^{\eta(h,e)}]$

- Both search effort a and retention action r are private information to the agent (and under her control)

Matching technology

- Matching is superior technology to search, but costly
- It allows to skip the first two steps of the search process
  i.e., application & re-contact
- Upon payment of κ^M, a contact is created without search effort
  - $\mu^M = 1 \Rightarrow$ job finding rate is $\lambda(r)$
  - Hire still subject to worker's retention action

Human capital depreciation

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  - duration dependence in hazard rate, since $\pi(h, \cdot)$

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- Training technology offsets depreciation and rebuilds human capital

Principal-Agent relationship

- The risk-neutral principal offers a contract that specifies:

  1. use of technology: search, matching, secondary production
  2. recommendations on the effort level a and retention action r
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- Recursive formulation: three state variables
  1. (primary) employment status $s \in \{0, 1\}$ (with $s = 1$ absorbing)
  2. human capital $h \iff$ duration d
  3. continuation utility U promised by the contract

Options of contract as policies of welfare program

- Combination of recommendations on effort, retention action $(r = 1)$, and use of search, matching and work technologies leads to five policy instruments:
  - $\mathbf{UI}$: Unemployment Insurance (search, high effort)
  - $\mathbf{JA}$: Job-search Aid (matching, low effort)
  - $\mathbf{SA}$: Social Assistance (no use of technologies, low effort)
  - $\mathbf{MW}$: Mandatory Work (work, high effort)
  - $\mathbf{TW}$: Transitory Work (matching+work, high effort)

Unemployment Insurance (UI)

$$V^{UI}(U,h) = \max_{c,U^s,U^f} -c + \beta\left[\pi(h,e)W(U^s,h') + (1-\pi(h,e))\,\mathbf{V}(U^f,h')\right]$$

subject to

$$u(c) - e + \beta[\pi(h)U^s + (1-\pi(h))U^f] \geq u(c) + \beta U^f \qquad (IC-S)$$

$$U = u(c) - e + \beta\left[\pi(h)U^s + (1-\pi(h))U^f\right] \qquad (PK)$$

$$h' = (1-\delta)h$$

where

$$\mathbf{V}(U,h) = \max\left\{V^{UI}(U,h), V^{JA}(U,h), V^{SA}(U,h), V^{MW}(U,h), V^{TW}(U,h)\right\}$$

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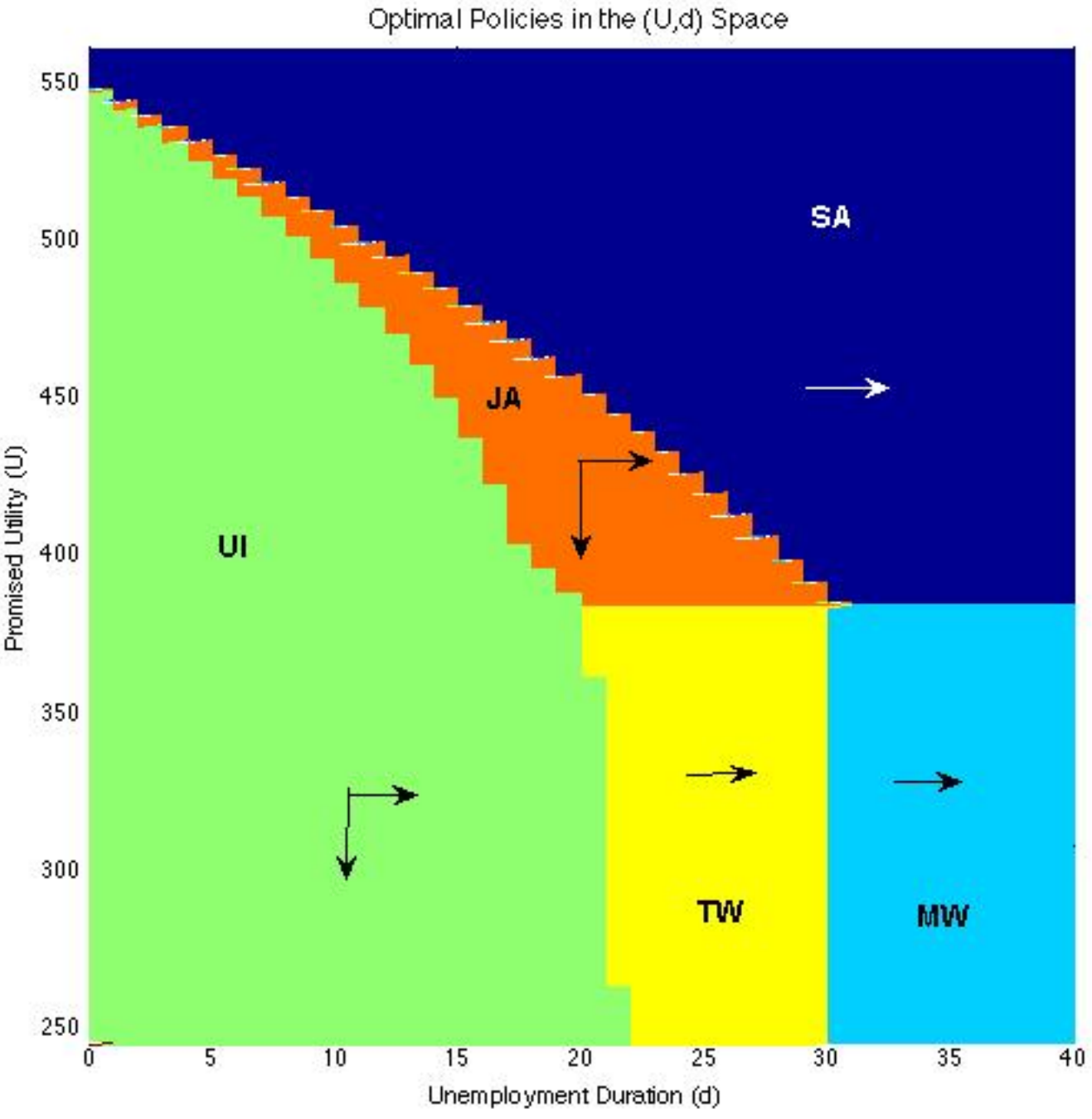
- 'Net' returns to search/matching (UI, JA, & TW): increasing in h and decreasing in U
- Incentive costs

Search (UI): $$U^s - U^f \geq \frac{e}{\beta\pi(h)} \qquad \text{(IC-S)}$$

Retention (JA & TW): $$U^s \geq U^f \qquad \text{(IC-R)}$$

  - IC-S costs decreasing in h
  - Both IC-S and IC-R costs increasing in U, since u^{-1} has convex first derivative


Optimal Policies in the (U,d) Space
SA
JA
UI
TW
MW
Promised Utility (U)
Unemployment Duration (d)
550
500
450
400
350
300
250
0
5
10
15
20
25
30
35
40

Optimal policy transitions and benefits

- **Proposition 1**: Without human capital depreciation, there is no policy transition within an optimal welfare program, i.e. every policy is absorbing.

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- **Proposition 2**: With human capital depreciation:

  (i) SA and MW are absorbing policies

  (ii) the possible optimal policy sequences are:

  1. $UI \rightarrow JA \rightarrow SA$
  2. $UI \rightarrow TW \rightarrow MW$

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  (ii) the possible optimal policy sequences are:

  1. $UI \rightarrow JA \rightarrow SA$
  2. $UI \rightarrow TW \rightarrow MW$

- **Proposition 3**: Optimal benefits are decreasing during UI and JA, and constant during SA, TW, and MW.

Application: United States

- Federal legislation attributes to States power to administer/design welfare programs

- *National Evaluation of Welfare-to-Work Strategies (NEWWS)*: government-sponsored large-scale longitudinal study based on random assignment of 40,000 individuals between 1991-1999 in five distinct U.S. locations

- Two sets of WTW programs with different features:

  - Labor Force Attachment (LFA): emphasis on work

  - Human Capital Developm. (HCD): emphasis on training