Unemployment Insurance under Moral Hazard and Limited Commitment: Public versus Private Provision

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Aims and Objectives

- To examine private (unemployment) insurance markets
  - where no enforcement mechanism
  - with a continuum of agents
- To examine interaction of public and private insurance provision (crowding out)
  - government has better enforcement mechanism but less information (monitoring ability)

Model

- Continuum of agents, infinite time horizon
- p: probability of illness (*iid*) – no aggregate risk
- w: wage b: unearned income
- $u(c)$: utility if working; $v(c)$: utility if not working; $v(c) - d$: utility if not working due to illness
  - Employed have short-term loss
    - $u(b+w-\tau) - u(b+w) < 0$
  - Long-term gain from risk-sharing
  - Exclusion if you renege
  - Make transfer when employed provided
    - Discounted long-term gains > short-term loss
    - The expected discounted surplus is non-negative

Notation

- discount factor: δ
- history: h_t
- consumption when employed: $c_e(h_t)$
- consumption when unemployed: $c_u(h_t)$
- employed transfer: $\tau(h_t)$
- unemployed receive: $\zeta(h_t)$

Dynamic Informal Insurance

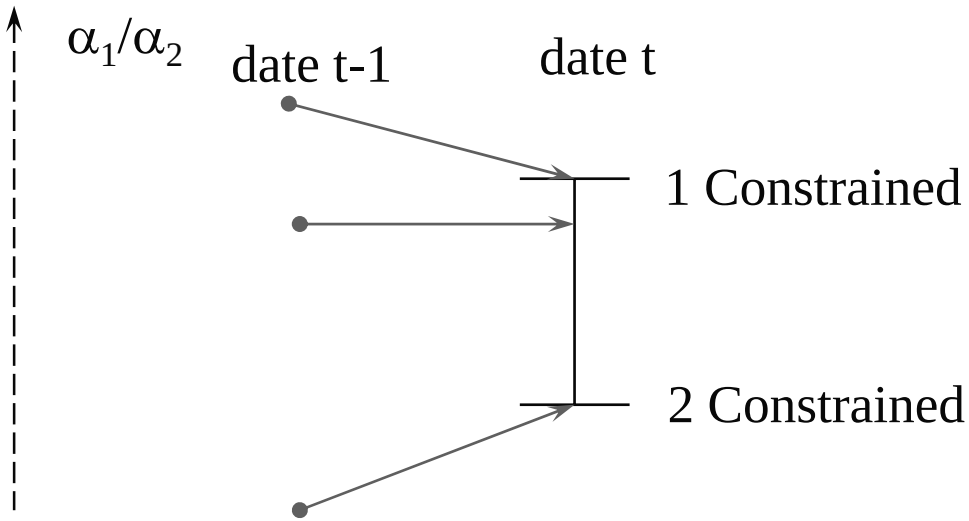
- Horizontal equity
  - Any two agents with the same history receive the same consumption allocation – rules out random and alternating schemes
- Risk-sharing is feasible

$$\theta = (v'(b)-u'(b+w))/u'(b+w) > (1-\delta)/(\delta(1-p))$$

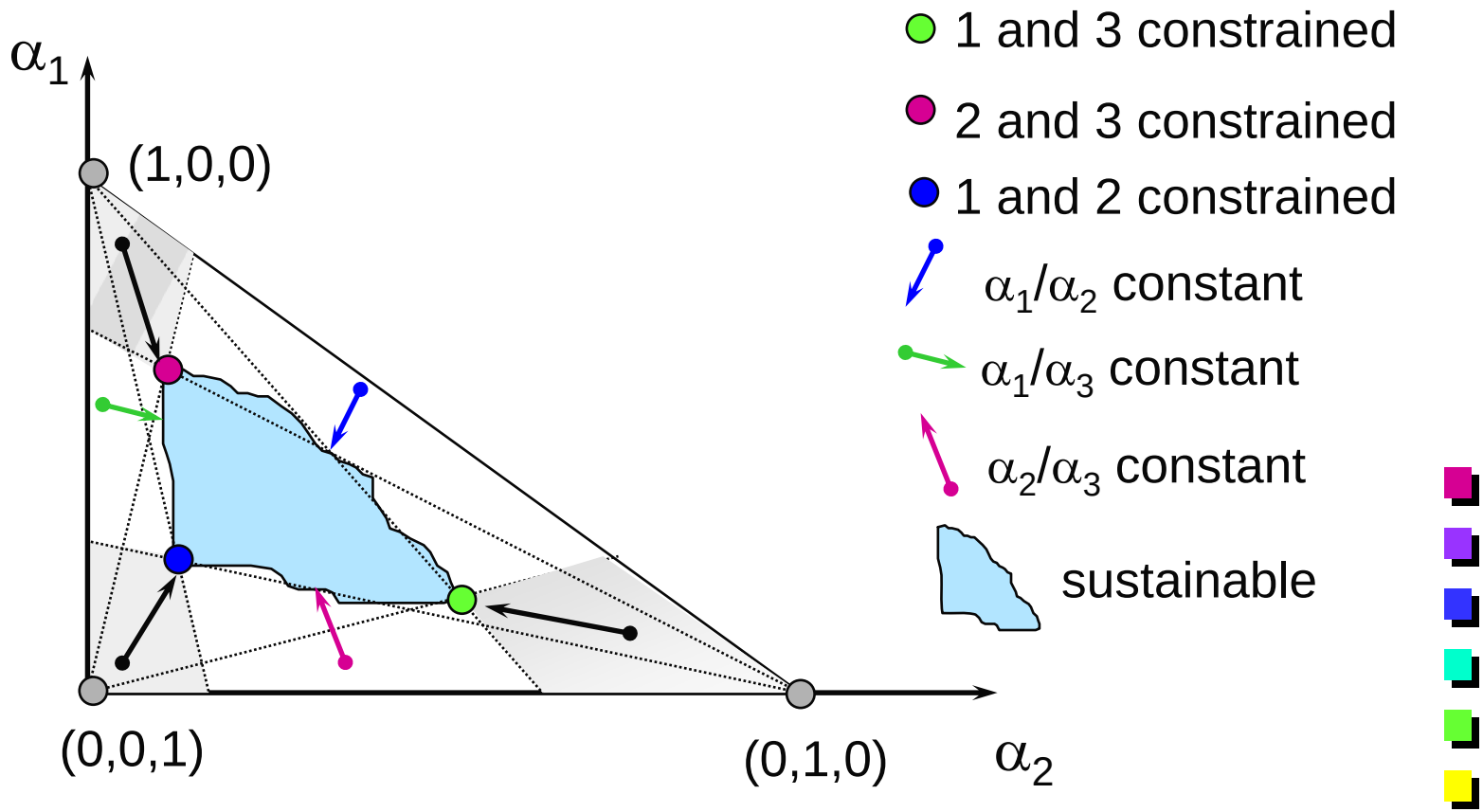
- Full insurance not feasible
- Moral hazard
  - We can ignore moral hazard (feigning illness) as shirking will be observed and punished and since employment is preferred.

Two Person Updating Rule

- Keep ratio of marginal utilities constant if possible
- $\alpha_i = Mu^i/(Mu^1 + Mu^2)$
- Keep α_1/α_2 constant if possible



Three Person Updating Rule



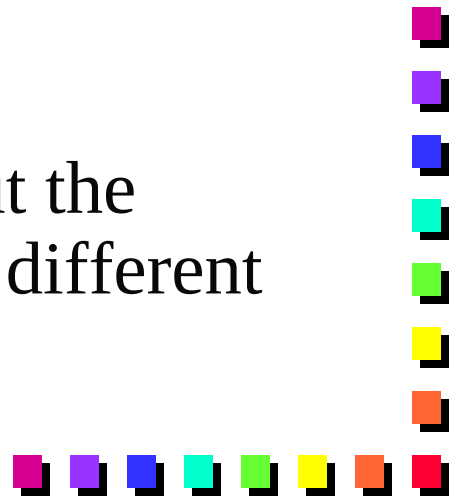
Theorem 1:

- At any time t the transition rule from t-1 is determined by two numbers $\underline{c}_e(t) < b+w$ and $g(t) > 0$ such that:
  - consumption when employed, $c_e(h_{t-1}, t)$ is s.t.
    - $c_e(h_{t-1}, t) = \underline{c}_e(t)$
  - consumption when unemployed, $c_u(h_{t-1}, t)$ is s.t.
    - $Mu(c_u(h_{t-1}, t))/Mu(h_{t-1}) = g(t)$ if $c_u(h_{t-1}, t) > b$
    - $c_u(h_{t-1}, t) = b$ otherwise

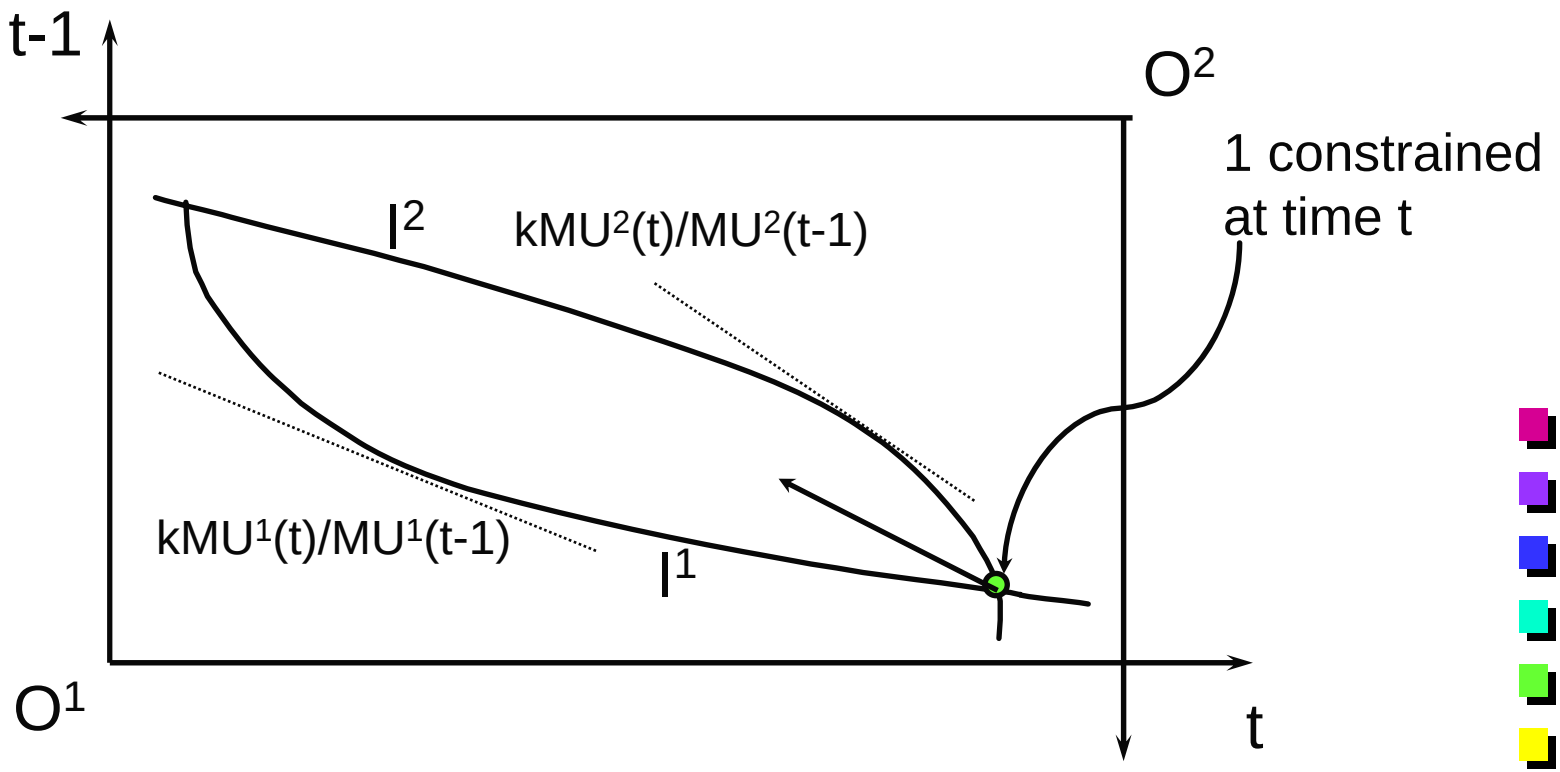
Two Lemmas

A. All unconstrained have the same growth rate in marginal utilities
   - Indifference curves are tangent

B. Constrained agents have a lower growth rate in marginal utility than the unconstrained
   - The unconstrained are the same but the constrained may be constrained in different ways



Growth Rate in Marginal Utility



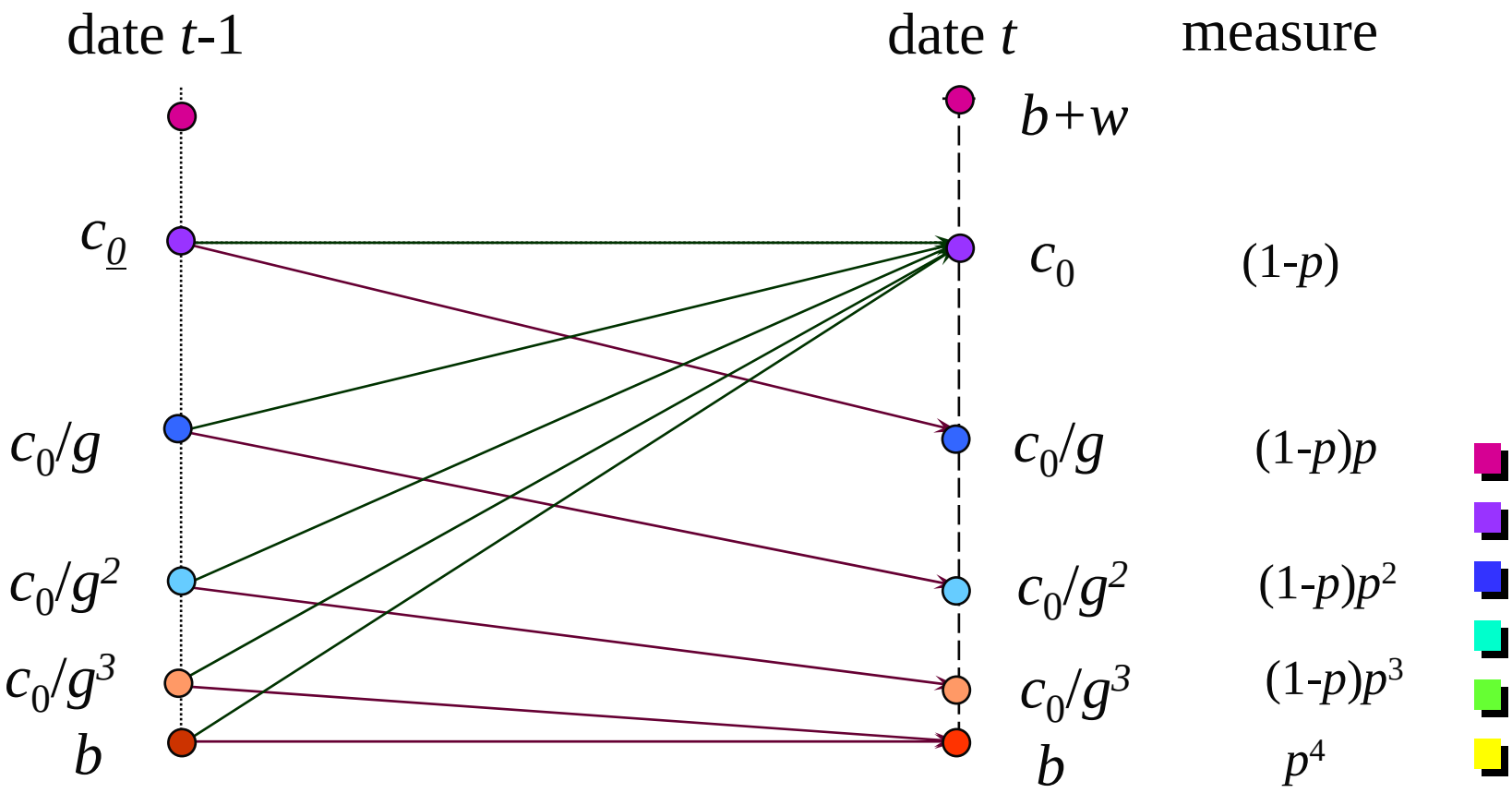
Three More Lemmas

C. Positive growth rate in marginal utility
   - If not, then aggregate consumption rises which is impossible

D. A constrained unemployed worker gets no subsidy and makes no transfer
   - If subsidy, then some future surplus is negative which is impossible
   - If transfer, then constrained consumption of unemployed must fall, but consumption bounded below

E. An employed agent is constrained

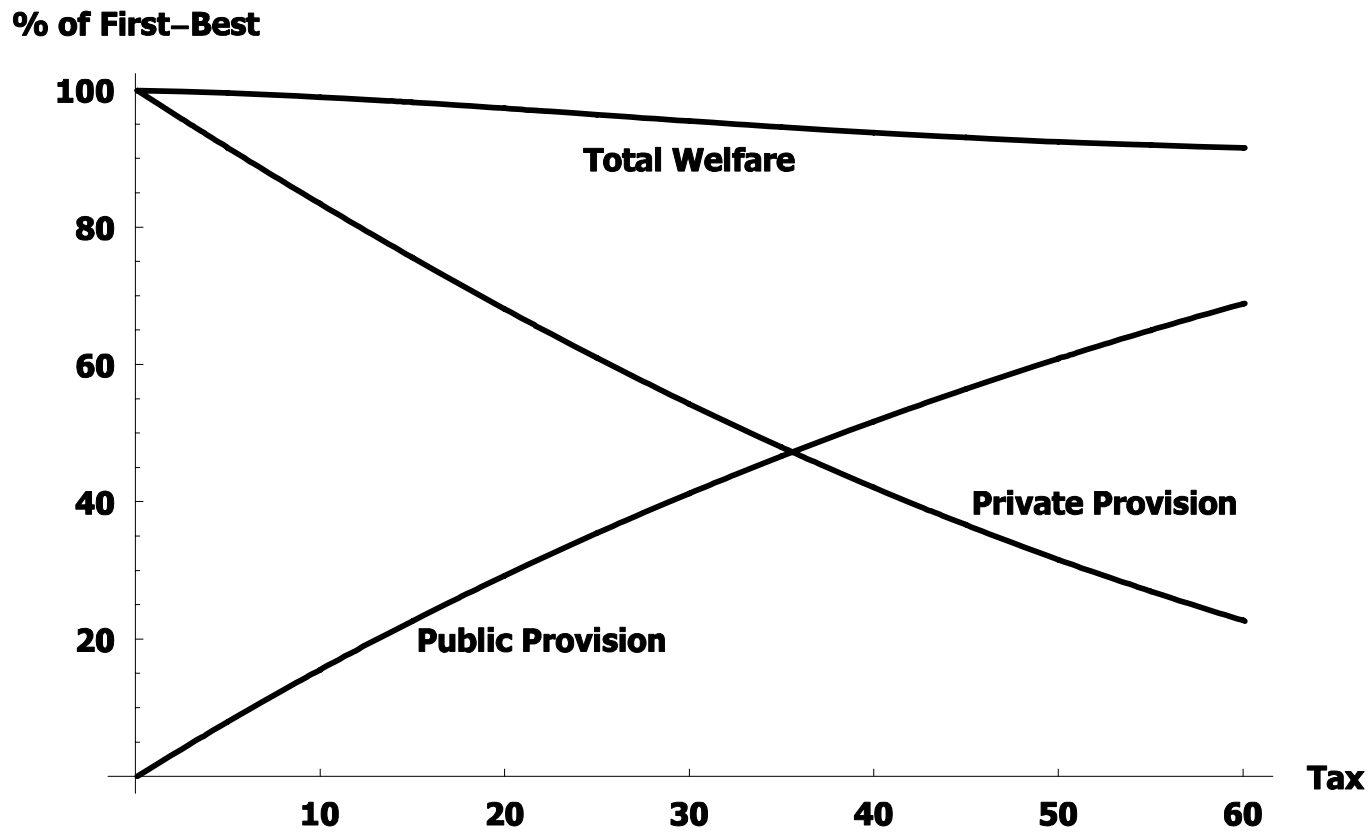
Steady-State Transitions



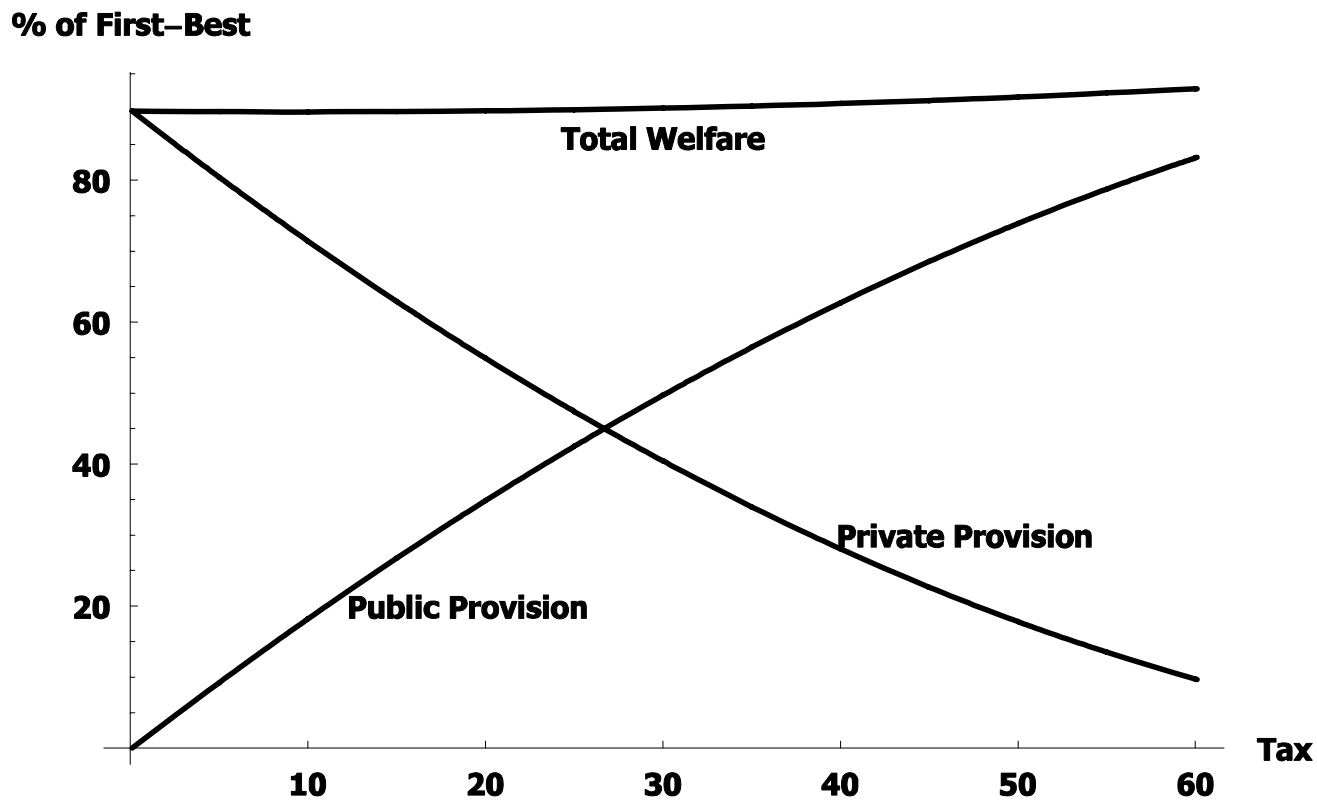
Moral Hazard & Crowding Out

- Public Insurance
  - Tax θ and subsidy σ
  - Revenue neutral: $(1-p)\theta = p\sigma$
  - depends only on current employment status
- Public insurance crowds out private insurance
  - Changes fall-back position and reduces variance
  - reduces punishment
- The relevant moral hazard constraint is
  - $v(b+\sigma) \leq u(b+w-\theta)$

Crowding Out



An Optimal Mix



Conclusions

- Continuum is the simple case
- Steady-state easy to characterise
- Potential conflict between public and private insurance
- Can be an optimum mix of public and private insurance
- Further Work
  - Convergence to steady-state? Is the steady-state efficient?
  - Adverse selection or alternative moral hazard model
  - Extending Model of Public Insurance