

Discussion of “Optimal Policy with Endogenous Fiscal Constitutions”

by

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Introduction

- Characterization of constrained-efficient allocations in a private information environment with endogenous labor supply
- Decentralization with wealth- and income-specific taxes
- Quantitative characterization of the optimal tax system

Outline

- The model (in comparison to Atkeson and Lucas (1995))
- Constrained-efficient allocations and their decentralization: three wedges
- Comments (better: questions) about assumptions and their role for the (preliminary) quantitative results

The Model

- Continuum of agents of measure 1
- One nonstorable consumption good per period
- Preference shocks $\theta_t \in \Theta$, a finite ordered set, *iid* over time, people

The Model

- Preferences over consumption $c_t \geq 0$ and effort $a_t \in [0, \bar{a}] = \mathcal{A}$

$$E_0(1 - \beta) \sum_t \beta^t \{u(c_t) - \theta_t v(a_t)\}$$

- Technology: one unit of effort produces one unit of the consumption good

Atkeson and Lucas (1995) vs. Albanesi and Sleet (2002)

- Atkeson and Lucas (1995)
 - $\Theta = \{\theta_1, \theta_2 = \infty\}$ so that $a(\theta_2) = 0$
 - $v(a_t) = a_t$
- Albanesi and Sleet (2002)
 - $\Theta = \{\theta_1, \theta_2, \dots, \theta_N\}$
 - $u(c_t)$ and $v(a_t)$ arbitrary *bounded* functions.

The Model: Recursive Dual

- Cost functions $C(.) = u^{-1}(.)$ and $A(.) = v^{-1}(.)$
- State variable w
- Control variables $u_1, u_2, v_1, v_2, w_1, w_2$

The Model: Bellman Equation (of Social Planner or Financial Intermediary)

$$J(w) = \min_{\substack{u_1, u_2 \in \mathcal{U} \\ v_1, v_2 \in \mathcal{V} \\ w_1, w_2 \in [\underline{U}, \bar{U}]}} \sum_{j=1,2} \pi(\theta_j) \left\{ C(u_j) - A(v_j) + \frac{1}{R} J(w_j) \right\}$$

s.t.

$$w = \sum_{j=1,2} \pi(\theta_j) \left\{ (1 - \beta) [u_j - \theta_j v_j] + \beta w_j \right\} \quad (\text{PK})$$

$$(1 - \beta) [u_1 - \theta_1 v_1] + \beta w_1 \geq (1 - \beta) [u_2 - \theta_1 v_2] + \beta w_2 \quad (\text{TIC})$$

The Model: Determination of Intertemporal Price

- For given $\frac{1}{R}$, probabilities $\pi(\theta_j)$ and policy functions $w_j(w)$ induce Markov process for utility promises w . Denote associated stationary distribution by μ^R .
- Intertemporal price $\frac{1}{R^*}$ is determined from resource constraint

$$\int_{\mathcal{W}} \sum_{j=1,2} \pi(\theta_j) \{C(u_j(w)) - A(v_j(w))\} d\mu^{R^*} = 0$$

Three Wedges

- Intertemporal wedge $ITW = \frac{1}{R} - \frac{\beta E_{\theta'}[u'(c(w', \theta'))]}{u'(c(w, \theta))}$
- Insurance wedge $ISW = C'(u(w, \theta)) - \lambda$
- Effort wedge $EFW = C'(u(w, \theta)) - \frac{A'(v(w, \theta))}{\theta}$
- Note: if (TIC) and the boundary conditions are not binding, then $ITW = ISW = EFW = 0$

Qualitative Features of Constrained-Efficient Allocations: Dependence on the Shock

- Let $\theta_2 > \theta_1$. Then $v_2(w) \leq v_1(w)$, $u_2(w) \leq u_1(w)$ and $w_2(w) \leq w_1(w)$.
- Rogerson (1985)

$$[u'(c(w, \theta))]^{-1} = E_{\theta'} \left\{ [\beta R u'(c(w', \theta'))]^{-1} \right\}$$

Qualitative Features of Constrained-Efficient Allocations: Dependence on Wealth

- Off corners, $v_j(w)$ is decreasing in w .
- Off corners (and with appropriate assumptions on A), $s_j(w) := u_j(w) + \frac{\beta}{1-\beta}w_j(w)$ is increasing in w .
- Off corners (and with appropriate assumptions on C, A), $EFW_j(w) = C'(u_j(w)) - \frac{A'(v_j(w))}{\theta_j}$ is increasing in w .

Decentralization

- Can one find a tax system $T(w, v)$ (or $T(b, a)$) that decentralizes the constrained-efficient allocation? Paper shows that if Θ is a compact interval, then always can find smooth tax function, such that agents, faced with budget constraint

$$b = c(\theta) - a(\theta) + T(b, a(\theta)) + \frac{1}{R}b'(\theta)$$

choose constrained-efficient allocation. Key: Tax function reproduces the wedges of the constrained-efficient allocation.

- Note: Tax function effectively introduces history-specific wages and returns since b (or w) completely summarizes θ^t .

Qualitative Features of the Optimal Tax Function _

- Dependence on the parametrization
- Intertemporal wedge small (i.e. small taxes on returns to saving)
- Tax on effort (income) wealth-dependent

Comments

- In order to guarantee stationary utility distribution one needs lower bound for utility promises $w \geq \underline{U}$. (see Atkeson and Lucas (1992) vs. (1995)). This bound is not derived from fundamentals (if it reflects limited commitment, this should be modeled explicitly). Tax policy could affect this lower bound (see Krueger and Perri (2001)).
- Strong informational requirements to implement tax function: government at each period of taxation needs to observe an agents' effort (income) and asset position.

Comments (continued)

- After taxes have been assessed, no private side trades between agents allowed (even though these may be mutually beneficial, since different agents face different after-tax prices (wages and returns)).
- Quantitatively: shocks to labor productivity easier to calibrate than preference shocks (but for these shocks the *iid* assumption is impossible to defend empirically).

Conclusion

- Optimal tax policy without restrictions of the tax instruments: the right approach
- But how does the optimal tax system look like in a quantitative (and even a qualitative) sense?
- Are the main features robust to different parameterizations of the preference shocks or alternative formulations of private information?