Review Questions: Dynamic Contracts
Econ720. Fall 2015. Prof. Lutz Hendricks. November 18, 2015

1 Income versus Incentives

- Ljungqvist & Sargent, "Recursive methods...," 2nd ed., problems 19.5

1.1 Answer to 19.5

$$\begin{aligned} P(v) &= \max_{T_s,w_s} \sum_s \Pi_s \{T_s - g_s + \beta P(w_s)\} && (1)\\ &+ \mu \left\{ v - \sum_s \Pi_s [W(T_s) + \beta w_s] \right\} && (2)\\ &+ \sum_s \lambda_s \{W(g_s) + \beta w_{AUT} - W(T_s) - \beta w_s\} && (3) \end{aligned}$$

Take first-order conditions and simplify to

$$\begin{aligned} W'(T_s)[P'(v)\Pi_s + \lambda_s] &= \Pi_s && (4)\\ \Pi_s [P'(w_s) - P'(v)] &= \lambda_s && (5) \end{aligned}$$

If participation does not bind (presumably in high g states): $\lambda_s = 0$ and thus $w_s = v$. Also, the foc for T_s establishes that T_s decreases in v and thus remains constant as well - complete insurance.

If participation binds, then $\lambda_s > 0$ and $P'(w_s) > P'(v)$. In good states, the country gets rewarded for giving up some revenue by getting a higher continuation value: $w_s < v$. Now solve the foc to see that T_s is an increasing function of w_s – when the country is rewarded, it is rewarded today and in the future.

2 Optimal Unemployment Insurance

- Ljungqvist & Sargent, "Recursive methods...," 2nd ed., problems 21.2, 21.3, 21.4.
  - Answer to 21.2: only the value of V^e changes to $\frac{u(w-\tau)}{1-\beta}$.
  - 21.3 is a good problem.