Review Questions: Dynamic Contracts

Prof. Lutz Hendricks - December 9, 2009

1 Income versus Incentives

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

1.1 Answer to 19.5

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

Take first-order conditions and simplify to

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

If participation does not bind (presumably in low 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.

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.