Tax Smoothing

Due to the disutility of working being concave up, note $v(h_1) + v(h_2) \geq v_1\left(\frac{h_1+h_2}{2}\right)$ when v is given.

This tells us $\tau_1^* = \tau_2^*$ (minimization of distortions).

Labor Markets

P_t working age (16-65) population can be partitioned into participating (labor force) L_t and nonparticipating (early retirees, students, disabled, discouraged workers) N_t, and labor force can be further partitioned into employed E_t and unemployed (actively searching) U_t.

Unemployment rate $u_t = \frac{U_t}{L_t}$ (currently around 4.1%).

Search Model

Employed worker at wage w discounts future income at b with probability σ of separation has value $V_e(w) = w + \beta(\sigma V_u + (1-\sigma)V_e(w)) = \frac{w+\beta\sigma V_u}{1-\beta(1-\sigma)}$ then when $\sigma = 0$, $V_e(w) = \frac{w}{1-\beta}$.

Unemployed worker samples a job every period from distribution with C.D.F. $G(w)$ models an optimal stopping problem: $V_u = b + \beta \int_0^{\bar{w}} \max(V_e(w), V_u) dG(w)$

Given the reservation wage w^* such that $V_e(w^*) = V_u$, then $V_u = V_e(w^*) = \frac{w^*}{1-\beta}$.

$$V_u = b + \beta \int_0^{\bar{w}} \max\left(V_e(w), V_u\right) dG(w)$$

$$V_u - \beta V_u = b + \beta \left(\int_0^{\bar{w}} \max\left(\frac{w + \beta\sigma V_u}{1-\beta(1-\sigma)}, V_u\right) dG(w) - V_u \right)$$

$$V_u(1-\beta) = b + \beta \int_0^{\bar{w}} \max\left(\frac{w + \beta\sigma V_u}{1-\beta(1-\sigma)} - V_u, 0\right) dG(w)$$

$$w^* = b + \beta \int_0^{\bar{w}} \max\left(\frac{w - w^*}{1-\beta(1-\sigma)}, 0\right) dG(w)$$

$$w^* = b + \left(\frac{\beta}{1-\beta(1-\sigma)}\right) \int_0^{\bar{w}} \max\left(w - w^*, 0\right) dG(w)$$

$$w^* = b + \left(\frac{\beta}{1-\beta(1-\sigma)}\right) \int_{w^*}^{\bar{w}} w - w^* dG(w)$$

$$w^* = b + \left(\frac{\beta}{1-\beta(1-\sigma)}\right) \text{Ex}\left[w - w^* | w > w^*\right]$$