Lifetime utility function:

$$V = u_1\left(z, c, \eta_1\right) + \delta u_2\left(w\left(s, x\right), k, \eta_2\right)$$

$$\varepsilon \sim \text{Normal}, \quad \eta_k \sim \text{Logistic}$$

$$u_{i1} = \alpha_0 + \alpha_1 \text{parent\_college} + \alpha_2 \text{efc} + \eta_1$$

$$u_{i2} = \gamma_0 + \gamma_1 \mathbb{E} \log w_i + \gamma_2 \text{numkids} + \eta_2$$

$$\log(w_i) = \beta_0 + \beta_1 s_i + \beta_2 x_i + \beta_3 x_i^2 + \varepsilon_i$$

i chooses schooling $s_i \in \{0, 1\}$ to maximize lifetime utility:

$$\max_{s_i} V_i(s_i) = u_{i1} + \delta \cdot u_{i2}(s_i)$$

where

$$u_{i1} = \alpha_0 + \alpha_1 \text{parent\_college}_i + \alpha_2 \text{efc}_i + \eta_{i1}$$

$$u_{i2}(s_i) = \gamma_0 + \gamma_1 \mathbb{E}[\log w_i | s_i] + \gamma_2 \text{numkids}_i + \eta_{i2}$$

Expected log wage depends on first-period schooling choice:

$$\mathbb{E}[\log w_i | s_i = 0] = \beta_0 + 0 \;\; + \beta_2(\text{age}_i - 18) + \beta_3(\text{age}_i - 18)^2$$

$$\mathbb{E}[\log w_i | s_i = 1] = \beta_0 + \beta_1 + \beta_2(\text{age}_i - 22) + \beta_3(\text{age}_i - 22)^2$$

Solving the model means finding the optimal schooling decision in period 1

i chooses college if:

$$V_i(1) > V_i(0)$$

This doesn't have a closed-form solution because it depends on the η_{i1} and η_{i2} errors

But we can express optimal decisions probabilistically