— LECTURE 6 —

SLIDE 29

$$c^i_t(s^t) = c^j_t(s^t)\left(\frac{\mu_i}{\mu_j}\right)^{-\frac{1}{\gamma}} \qquad (*)$$

$$\sum_i c^i_t(s^t) = \sum_i y^i_t(s^t) = \bar{y}_t(s^t)$$

Assume $c^i_t = \alpha_i \bar{y}_t \quad , \quad \sum \alpha_i = 1$

$$(*) \qquad \alpha_i \bar{y}_t = \alpha_j \bar{y}_t \left(\frac{\mu_i}{\mu_j}\right)^{-\frac{1}{\gamma}}$$

$$\alpha_i = \alpha_j \left(\frac{\mu_i}{\mu_j}\right)^{-\frac{1}{\gamma}}$$

$$\alpha_j = \left(\frac{\mu_i}{\mu_j}\right)^{\frac{1}{\gamma}} \alpha_i$$

$$\sum_j \alpha_j = 1 = \sum_j \left(\frac{\mu_i}{\mu_j}\right)^{+\frac{1}{\gamma}} \alpha_i \Rightarrow \alpha_i = \left(\sum_j \left(\frac{\mu_i}{\mu_j}\right)^{+\frac{1}{\gamma}}\right)^{-1}$$

i is "poor" $\Rightarrow \mu_i$ is large $\Rightarrow \alpha_i$ is small.

price formula: $\beta^t u'(c_t^i(s^t))\,\pi_t(s^t) = \mu_i\, q_t^0(s^t)$

CRRA $\quad \beta^t \left[\alpha_i\, \bar{y}_t(s^t)\right]^{-\gamma} \pi_t(s^t) = \mu_i\, q_t^0(s^t)$

$$\Rightarrow q_t^0(s^t) = \mu_i^{-1}\, \alpha_i^{-\gamma}\, \beta^t \left(\bar{y}_t(s^t)\right)^{-\gamma} \pi_t(s^t)$$

$\rightarrow$ normalize $\mu_1^{-1}\alpha_1^{-\gamma} = 1$

$$\Rightarrow q_t^0(s^t) = \beta^t \left[\bar{y}_t(s^t)\right]^{-\gamma} \pi_t(s^t)$$

— SLIDE 30 —

How to find α_i?: $\quad c_t^i(s^t) = \alpha_i \, \bar{y}_t(s^t)$

agent i BC: $$\sum_t \sum_{s^t} q_t^0(s^t) \underbrace{c_t^i(s^t)}_{\alpha_i \bar{y}_t(s^t)} = \sum_t \sum_{s^t} q_t^0(s^t) \, y_t^i(s^t)$$

$$\Leftrightarrow \quad \alpha_i = \frac{\sum_t \sum_{s^t} q_t^0(s^t) \, y_t^i(s^t)}{\sum_t \sum_{s^t} q_t^0(s^t) \, \bar{y}_t(s^t)}$$