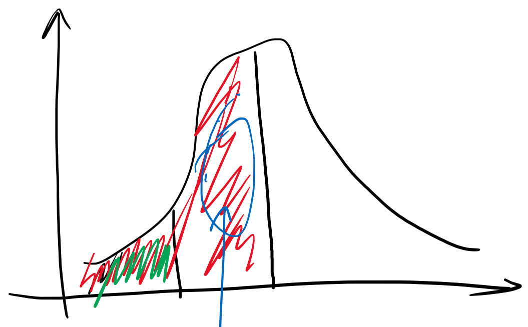
Lecture notes, Nov 12th, 2020



$$\max_{\{c_t\}} \mathbb{E}\, \beta^t \sum_{t=0}^{\infty} u(c_t)$$

s.t. $c_t + a_{t+1} \leq y_t + R a_t$

$$\boxed{\beta \cdot R \cdot \mathbb{E} \frac{u'(c')}{u'(c)} = 1}$$ Euler

y_t – exogenous, stochastic

β, R — constants

u — risk-averse
time seperable

$$\beta \cdot \mathbb{E}\left(\frac{u'(c')}{u'(c)} \cdot R\right) = 1$$

$$\Downarrow$$

$$\beta \cdot R \cdot \mathbb{E} \frac{u'(c')}{u'(c)} = 1$$

$$\beta \cdot R \cdot \mathbb{E}(b_1 - b_2 c') = b_1 - b_2 \cdot c$$

$$\cancel{b_1} - \cancel{b_2} \mathbb{E}\, c' = \cancel{b_1} - \cancel{b_2} \cdot c$$

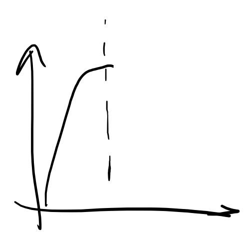
$$\mathbb{E}(c') = c$$

$$\mathbb{E}_t(c_{t+1}) = c_t$$

$$\underline{\mathbb{E}_t(c_{t+2})} = \mathbb{E}_t\left(\mathbb{E}_{t+1}(c_{t+2})\right) = \mathbb{E}_t(c_{t+1}) = \underline{c_t}$$

strict PIH

$$u(c) = b_1 \cdot c - \frac{1}{2} b_2 c^2$$



$$c + a' \leq y + R \cdot a$$

b.c. $a' \geq 0 \; \ldots (\lambda)$

Euler: $\beta \cdot R \cdot \mathbb{E}[u'(c')] = u'(c) + \lambda \quad (\lambda > 0)$