MACRO L3 - 2014-2015

Lecture 5

F. PORTICR

Session 4

These notes are those I wrote during class. They are posted "for the record".

Session 4

Nov 13, 2014

Utility maximisation

$$\max_{n_t, m_t} \quad m_t + \gamma \log n_t$$

$$s.t. \; 1 \times m_t + p_t n_t = w_t$$

$$\Leftrightarrow \max_{n_t} \quad w_t - p_t n_t + \gamma \log n_t$$

FOC $\quad -p_t + \frac{\gamma}{n_t} = 0 \Leftrightarrow n_t = \frac{\gamma}{p_t}$

optimal choice for m_t?

Budget constraint:

$$m_t = w_t - p_t n_t$$

$$= w_t - p_t \times \frac{\gamma}{p_t}$$

$$m_t = w_t - \gamma$$

$$A_{t+1} - A_t = \dot{y}_t^n$$

$$g_t^A = \frac{A_{t+1} - A_t}{A_t} = \frac{\dot{y}_t^n}{A_t} = \frac{A_t^{\varepsilon} L_t^{n\,\gamma} 1^{1-\alpha}}{A_t}$$

$$g_t^{An} = A_t^{\varepsilon - 1} L_t^{An\,d}$$

$$g_t^r = \frac{n_{t+1} - n_t}{n_t} = \frac{y_t^m}{n_b}$$

$$g_t^r = \frac{n_t^{\varepsilon} \, z_t^n}{n_t} = n_t^{\varepsilon - 1} \, z_t^n$$

Period t

state variables L_t, A_t, Π_t

they cannot be changed in t

Adults choose

- where they work
- how much children and clothes they "buy" = food

manuf good

They choose given prices (P_t, W_t)

Then we look for (p_t, w_t)

s.t

- the M market
  the food market
  the labor market

clear

- This determines $n_t \to L_{t+1}$
  $y^A_t \to A_{t+1}$
  $y^n_t \to n_{t+1}$