Seminar2 - ECON 4325 Monetary Policy

February 17/19, 2016

Seminar presentations

• Linn (on Wednesday) and Saskia/Caroline (on Friday) will present the ECB decision from 21 January.
• Stian (on Wednesday) and Iman (on Friday) will present the BoE decision from 4 February (with inflation report).

Seminar problem 1

Let period utility be non-separable in leisure (assuming $\sigma \neq 1$):

$$U(C_t, N_t) = \frac{1}{1-\sigma}[C_t(1-N_t)^{\upsilon}]^{1-\sigma} - \frac{1}{1-\sigma}$$

(a) Derive and explain the household optimality conditions when the maximization problem for the household is like in equations (1) and (2) from lecture 3 (assuming no preference shifter Z_t).

(b) Log-linearize the labor supply equation around its steady state.

(c) Show that the log-linearized consumption Euler equation, around its steady state, can be written as (hint: use the intratemporal optimality condition found under 1(a)):

$$c_t = E_t\{c_{t+1}\} - \frac{1}{\sigma+\upsilon(\sigma-1)}(i_t - E_t\{\pi_{t+1}\} - \rho) - \frac{\upsilon(\sigma-1)}{\sigma+\upsilon(\sigma-1)}E_t\{\Delta\omega_{t+1}\},$$

and give an intuitive explanation for why consumption now depends on (expected) real wage growth.

Seminar problem 2

The lecture 3 slides show equilibrium behavior of prices in the classical monetary model when assuming an exogenous path for money supply$\{m_t\}$. Use slides from lecture 3 and Gali, section 2.4.3 (both books) to solve the following problem:

(a) Show that the following expression for the price level:

$$p_t = \left(\frac{\eta}{1+\eta}\right) E_t\{p_{t+1}\} + \left(\frac{1}{1+\eta}\right) m_t, \tag{1}$$

can be solved forward to obtain:

$$p_t = \frac{1}{1+\eta} \sum_{k=0}^{\infty} \left(\frac{\eta}{1+\eta}\right)^k E_t\{m_{t+k}\}, \tag{2}$$

(b) Show that equation 2 can be rewritten in terms of expected future growth rate of money as:

$$p_t = m_t + \sum_{k=1}^{\infty} \left(\frac{\eta}{1+\eta}\right)^k E_t\{\Delta m_{t+k}\}, \tag{3}$$

(c) We now assume that money growth follows the AR(1) process: $\Delta m_t = \rho_m \Delta m_{t-1} + \varepsilon_t^m$. Given this AR(1) process, solve equation 3 to obtain the following behavior of the price level (Hint: $E_t\{\varepsilon_t^m\} = 0$):

$$p_t = m_t + \frac{\eta \rho_m}{1 + \eta(1-\rho_m)} \Delta m_t, \tag{4}$$

Interpret the solution.

Seminar problem 3

Problem 2.2.a in Gali (both books. Solve the version in the book you have. Solution proposal for both versions of the book will be provided at the seminar).