Written Exam for the B.Sc. in Economics summer 2013

Macro B

Final Exam

August 20 2013
(3 hours closed-book exam)

Please note that the language used in your exam paper must correspond to the language of the title for which you registered during exam registration. I.e. if you registered for the English title of the course, you must write your exam paper in English. Likewise, if you registered for the Danish title of the course or if you registered for the English title which was followed by "eksamen på dansk" in brackets, you must write your exam paper in Danish.

This exam question consists of 4 pages in total including this page.

All questions of both problems should be answered

Problem A

Consider the following model of a small open economy with a fully credible fixed exchange rate regime

$$\begin{aligned} \pi &= e^r_{-1} + \pi^f - \frac{1}{\beta_1}(y - \bar{y} - z), \quad \beta_1 > 0 && \text{(A.1)} \\ \text{where} \quad z &\equiv -\beta_2\left(r - r^f\right) + \beta_3(g - \bar{g}) + \beta_4\left(y^f - \bar{y}^f\right) + \beta_5(\ln\varepsilon - \ln\bar{\varepsilon}) \\ \pi &= \pi^f + \gamma(y - \bar{y}) + s, \quad \gamma > 0 && \text{(A.2)} \\ \text{where} \quad s &= (1+\gamma)(\ln\bar{a} - \ln a) \\ e^r &= e^r_{-1} + \pi^f - \pi && \text{(A.3)} \end{aligned}$$

where variables being as normal. Unless otherwise stated, both z and s are zero.

1. Explain equations (A.1) – (A.3). In particurlarly interpret $\beta_1$and explain why the AD curve (A.1) is downward sloping in a (y, π) −diagram.

2. Long-run equilibrium requires that $e^r = e^r_{-1}$. Explain why this is so. Show that in long-run equilibrium $y = \bar{y}$ and $\pi = \pi^f$.

3. Assume the economy has been hit by a negative demand shock so that it in period 1 is in a situation where $y_1 < \bar{y}$ and $\pi_1 < \pi^f$. Explain how the economy adjusts to long-run equilibrium and illustrate this in a diagram, where you have y at the first axis and π at the second axis. Compare with the adjustment process in the closed economy described in the textbook.

Defining $\hat{y}_t = y_t - \bar{y}_t$ and $\hat{\pi}_t = \pi_t - \bar{\pi}_t$ equation (A.1) – (A.3) may be restated as

$$\begin{aligned} \hat{\pi}_t &= e^r_{-1} - \frac{1}{\beta_1}(\hat{y}_t - z_t) && \text{(A.1')} \\ \hat{\pi}_t &= \gamma\hat{y}_t + s_t && \text{(A.2')} \\ e^r_t &= e^r_{t-1} + \hat{\pi}_t && \text{(A.3')} \end{aligned}$$

4. Show that the system of equations (A.1') – (A.3') may be transformed into the following first order difference equation

$$\hat{y}_{t+1} = \beta\hat{y}_t + \beta(z_{t+1} - z_t) - \beta\beta_1 s_{t+1} \quad \text{where} \quad \beta = \frac{1}{1+\gamma\beta_1} \qquad \text{(A.4)}$$

5. Explain why the economy is stable *i.e.* the economy converges towards the long-run values of y and π. Also explain the importance of γ and β_1 in determing the speed of convergence in the economy. What is the economic intuition behind this?

6. Now assume the domestic economy initially (period 0) is in a long-run equilibrium. Furthermore, assume that govenment consumption is neutral (*i.e.* $g = \bar{g}$) until period 1 where fiscal policy is loosened ($g_1 > \bar{g}$). From period 2 and onwards fiscal policy is neutral again. Explain why the induced expansion in the domestic economy is followed by a long period where $y < \bar{y}$. Illustrate.

7. Assume the economy has been hit by a severe negative demand shock so that activity and inflation in period 0 is significantly below the long-run equilibrium values. Now assume authorities seek to stimulate economic activity through an unexpected devaluation of the currency in period 0. In addition, assume policymakers promise they are committed to the new peg and that economic agents find this promise fully credible. Compare this situation to the situation where policy makes do not devaluate. Explain why policy makers might be tempted to follow such a policy. Why does this policy not affect e^e_{+1}, explain. Are inflation expectations π^e_{+1} affected? Are interest rates affected? Explain. Describe and illustrate the short-run and long-run effects on activity from the unexpected devaluation under these conditions. Explain why these assumptions on private sector expectations are optimistic/unrealistic.

Problem B

1. In the textbook the social loss function takes the form

$$SL = \sigma_y^2 + \kappa\sigma_\pi^2, \quad \kappa > 0$$

   Explain why the policy maker is concerned with the variability of output and inflation. Also, comment on the thoughts behind the choise of target values for activity and inflation.

2. Explain the so-called "Impossible Trinity" which states that a macroeconomic policy regime simultaneously can include at most two of the following three policy goals:

   a. Free cross-border capital flows

   b. A fixed exchange rate

   c. Independent monetary policy

3. Discuss the relationship between the short-term interest rate and the long-term interest rate.