

Exam - monetary policy

ISEG

(Each group is worth 4 points)

June 8, 2012

Group 1

Suppose that you have the following data for two countries A and B:

Year	Country A			Country B		
	GDP	Potential GDP	Inflation	GDP	Potential GDP	Inflation
2007	99	100	3 %	100	104	2%
2008	100	100.5	2.7 %	103	105	1.9%
2009	101	100.6	2.5 %	100	104	1.8 %
2010	100	100.7	2 %	101	104	1.9 %

a) Compute the output gap as a function of potential GDP for both countries. Interpret the information that the output gap is providing for 2010, both in terms of aggregate demand and supply conditions and the implications for future inflation.

b) Assume that the long-run nominal equilibrium interest rate is 2 per cent in country A and 2.5 per cent in country B and that the definition of price stability in these countries is the same as the one of the ECB. Compute a Taylor rule for each country and year with the coefficient values of your choice. Please ensure your rule respects the “Taylor principle”. Comment your results.

Group 2

What are the two pillars of the monetary policy strategy of the ECB? How are they used to arrive at interest rate decisions?

Group 3

Suppose that a policymaker can control inflation perfectly and that the Phillips curve is given by:

$$u_t = u^n - 2(\pi_t - \pi_t^e)$$

where π is inflation and u unemployment, π^e expected inflation and u^n the natural rate of unemployment. Knowing that the policymaker's loss function is given by:

$$Loss = \pi_t^2 + 2(u_t - u^n)^2$$

Compute the equilibrium rate of inflation and the loss function in the cases where the policymaker: a) Follows a monetary policy rule. b) Acts in a discretionary way.

Group 4

Assuming that there are no frictions and that firms operate in perfect competition, please compute the optimality conditions of firms and households assuming the following information:

- Utility function: $U(C_t, N_t) = \ln C_t - \frac{N_t^{1+\varphi}}{1+\varphi}$
- Production function: $Y_t = A_t N_t^\alpha$
- Budget constraint: $P_t C_t + Q_t B_t \leq B_{t-1} + W_t N_t - T_t$

Group 5

Please explain the meaning of each of the following equations of the new keynesian model:

$$\begin{aligned}\pi_t &= \beta E_t \pi_{t+1} + \kappa \tilde{y}_t \\ \tilde{y}_t &= E_t \tilde{y}_{t+1} - \frac{1}{\sigma} (i_t - E_t \pi_{t+1} - r_t^n) \\ i_t &= \rho + \phi_\pi \pi_t + \phi_y \tilde{y}_t + v_t\end{aligned}$$

How do GDP, inflation, consumption and employment react to a monetary policy shock in this model?