

Exam set for International Monetary Economics

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This page is not to be used or distributed at the exam.

There are 8 questions in the set, all count equally, and each will be given points from 0-10.

QUESTION 1:

Evaluate whether the following statements are true or false. Explain your answers.

- (1) In the simple New-Keynesian model with price rigidities only, optimal stabilization of cost-push shocks is the same under discretion and commitment.
- (2) In a two-country New-Keynesian model where all goods are internationally traded, the welfare-relevant inflation variable to target for the Home country is its consumer-price inflation rate.
- (3) In the Calvo pricing model, expectations about future marginal costs are irrelevant for firms that by chance are able to reset their prices.

QUESTION 2:

Consider the following log-linear model of a closed economy:

$$\tilde{y}_t = \mathbf{E}_t \{\tilde{y}_{t+1}\} - \sigma^{-1} (i_t - \mathbf{E}_t \{\pi_{t+1}\} - \rho), \quad \sigma > 0, \quad \rho > 0 \quad (1)$$

$$\pi_t = \beta \mathbf{E}_t \{\pi_{t+1}\} + \kappa \tilde{y}_t, \quad 0 < \beta < 1, \quad \kappa > 0, \quad (2)$$

where \tilde{y}_t is the output gap, i_t is the nominal interest rate (the monetary policy instrument), π_t is goods price inflation. $\mathbf{E}_t \{.\}$ is the rational expectations operator conditional upon all information up to and including period t . Inflation is assumed to be observed with some error such that

$$\pi_t^o = \pi_t + e_t, \quad (3)$$

where π_t^o denotes observed inflation, and e_t is a mean-zero, serially uncorrelated shock. It is assumed that the central bank sets the nominal interest rate according to a simple rule:

$$i_t = \rho + \phi \pi_t^o, \quad \phi > 1. \quad (4)$$

- (4) Solve for \tilde{y}_t and π_t [Hint: Conjecture that solutions are linear functions of e_t .], and explain how the policy-rule parameter ϕ affects output gap and inflation fluctuations.
- (5) Does this model lend support to the view that a central bank should respond strongly towards inflation? Why/Why not?

QUESTION 3:

Consider the following log-linear model of a closed economy:

$$\tilde{y}_t = \mathbb{E}_t \{\tilde{y}_{t+1}\} - \sigma^{-1} (i_t - \mathbb{E}_t \{\pi_{t+1}\} - \rho - r_t^n), \quad \sigma > 0, \quad \rho > 0 \quad (1)$$

$$\pi_t = \beta \mathbb{E}_t \{\pi_{t+1}\} + \kappa \tilde{y}_t, \quad 0 < \beta < 1, \quad \kappa > 0, \quad (2)$$

where \tilde{y}_t is the output gap, i_t is the nominal interest rate (the monetary policy instrument), π_t is goods price inflation and r_t^n is the natural rate of interest, which is assumed to be a mean-zero, serially uncorrelated shock. $\mathbb{E}_t \{.\}$ is the rational expectations operator conditional on all information up to and including period t .

- (6) Assume that the monetary authority wants to minimize the loss function

$$L = \frac{1}{2} \mathbb{E}_0 \left\{ \sum_{t=0}^{\infty} \beta^t [\lambda \tilde{y}_t^2 + \pi_t^2] \right\}, \quad \lambda > 0. \quad (3)$$

Discuss the micro-economic foundations for this loss function, and explain how κ affects λ .

- (7) Derive the optimal values of \tilde{y}_t and π_t under discretionary policymaking [Hint: Consider \tilde{y}_t the policy instrument, and acknowledge that under discretion the optimization problem becomes a sequence of static problems as expected values can be taken as given]. Discuss the solutions, and describe how the nominal interest rate will move with the natural rate of interest.
- (8) Assume that the monetary policymaker instead follows a rule for nominal interest-rate setting given as

$$i_t = \rho + \phi \pi_t, \quad \phi > 1. \quad (4)$$

Derive the solutions for \tilde{y}_t and π_t for the system (1), (2) and (4). [Hint: Conjecture that the solutions are linear functions of the period's natural rate of interest, r_t^n , and remember that $\mathbb{E}_t r_{t+1}^n = 0$]. Discuss the differences between these solutions and the ones obtained under discretionary policymaking. Can the monetary policy rule (4) be parameterized such that it will “deliver” the outcomes under discretionary policymaking?