

MSc Macroeconomics

Problem set 5

Deadline: Friday 16th November 2007, 10:00

Each student must hand in an answer sheet. Answer sheets should be written legibly and unreadable scribbles will be ignored. Answer sheets returned after the deadline will be awarded a zero grade.

Problem 1 (compulsory)

This exercise builds upon on the continuous-time model of investment seen during the lecture. Suppose that $\pi(K) = a - bK$, and that $C(I) = \alpha I^2/2$.

- (a) What is the slope of the $\dot{q} = 0$ locus?
- (b) What is the long-run equilibrium value of K ?

Problem set 2 (compulsory)

Suppose that the central bank minimises a social loss function. The loss arises from deviations of output from a socially optimal level, denoted as \tilde{y} , and from deviations of inflation from a socially optimal level, assumed to be zero. The objective function is given by

$$L_t = (y_t - \tilde{y})^2 + \chi(\pi_t - 0)^2 \quad (1)$$

The behaviour of the economy is described by

$$y_t = \bar{y} + (\pi_t - \pi_t^e) - z_t \quad (2)$$

We assume that $\tilde{y} - \bar{y} = k > 0$.

(a) Compute the equilibrium level of inflation and the associated expected social loss under discretion (show every step of your calculations!).

(b) Compute the expected social loss under a rule stating that $\pi_t = 0$ for every t (show every step of your calculations!).

(c) Compute the expected social loss under a escape clause policy stating that $\pi_t = \frac{z_t}{1+\chi}$ (show every step of your calculations!).

(d) Under which policy is the expected social loss smallest? Why?