

Macroeconomic Policy Homework III (aka exercise set 11)

Please write full answers to all the questions and put your homework in the course work post box outside room CB 304 by 5 p.m. Wednesday 24th of January. You are strongly encouraged to work in groups if you so like (you will get full marks anyway). If you do so, you *HAVE* to write the names of the other members of the group. Failing to do so is considered plagiarism and is a serious college offense.

Work submitted after the deadline will not be marked.

1. (33 points) Suppose an economy in which the classical dichotomy holds, agents have perfect foresight and money market equilibrium is described by

$$\frac{M_t}{P_t} = \frac{Y_t}{1 + \pi_t^e}, \quad (1)$$

with $Y_t = 1$ and constant over time. The rate of growth on the nominal supply of money M_t has been constant at 20% for a long time and agents expected it to stay at that value for the infinite future. At time t , though, the government pledges that it will cut the rate of money growth to 10% from time $t + 2$ onwards. Derive the path of prices and expected inflation over time in the case in which:

1. the government announcement is fully credible;
 2. agents do not believe the announcement and expect the rate of money growth to stay at 20% from $t + 2$ onwards.
2. (33 points) Consider the following problem. The economy is described by the SRAS curve

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

where y_t is the current output level and \bar{y} is its equilibrium, full-employment level. π_t is actual inflation and π_t^e is the private sector expectation of the inflation rate. Private sector expectations are rational and formed before the authorities determine actual inflation. The government's welfare function is given by

$$W = -(y_t - k\bar{y})^2 - \gamma\pi_t^2, \quad (3)$$

where $k > 1$.

- i Suppose the government can credibly commit on an inflation-target rule $\pi_t = \alpha$, where α is a constant parameter. What is the optimal value of α and the associated values of the expected and actual inflation rate, output and government welfare?
- ii Suppose that the government decides, instead, to appoint an independent central banker. The central banker has the same preferences as the government and her pay is tied to her inflation performance and given by $m = b + 2c\pi$ where b and c are parameters. So the central banker maximizes

$$W' = -(y_t - k\bar{y})^2 - \gamma\pi_t^2 + m. \quad (4)$$

What are the corresponding levels of the expected and actual inflation rate, output and government welfare? What are the values of b and c that maximize the government objective function? Confront the outcome evaluated at the optimal b and c with the one in part i.

3. (33 points) “An economy can be stuck in liquidity trap only if agents expect a deflation or if the equilibrium real interest rate is negative”

Comment on the above sentence. Support your claims with graphs or maths.

Which shocks may plunge the economy in such a bad equilibrium? Highlight the role played by price rigidities. Explain possible solutions to restore full employment.