Exercise Session 6
Solving the IS-MP-PC Model, Rational Expectations, Time Inconsistency
Part 1

TASK 1: Solving the model

    a) Consider the two-equation model of the lecture. Which model variables are exoge-nously determined, and which are determined endogenously? How can we infer the nominal and real interest rate?

    b) Solve the model for inflation and describe what determines the level of inflation fun-damentally (i.e. shocks are assumed to be zero for now).

    c) Based on the equation for inflation, what happens to the dynamics if the central bank becomes more active?

    d) Explain how supply and demand shocks affect the current level of inflation.

    e) Solve the model for output and describe what determines output fundamentally (i.e. shocks are assumed to be zero for now).

    f) Explain how supply and demand shocks affect output.

    g) Calculate partial derivatives illustration how inflation and output change with an in-crease in inflation expectations c.p.

TASK 2: Rational Expectations Solution

    a) Rederive the rational expectations solution of the model.

    b) Which assumptions must be made regarding the shock processes?

    c) What is the solution's intuition for the anchoring of inflation expectations?

TASK 3: Unstable solutions

    a) What does stability in case of difference equations imply?

    b) What is the intuition behind an unstable solution to our model, i.e. for values $1 < \theta < \infty$?

TASK 4: Time Inconsistency

    a) Describe your intuition for the central bank's Social Loss Function in the time incon-sistency problem:

$$SL_t = (y_t - y_t^e)^2 + \kappa \pi_t^2$$
$$y_t^e = y_t^* + \omega$$

    b) Rederive the first-order condition under the so-called „cheating solution".

c) Compare the social loss from the cheating solution and the rule-based solution.
d) Why will the cheating solution not be implemented by the central bank? What is the consequence?