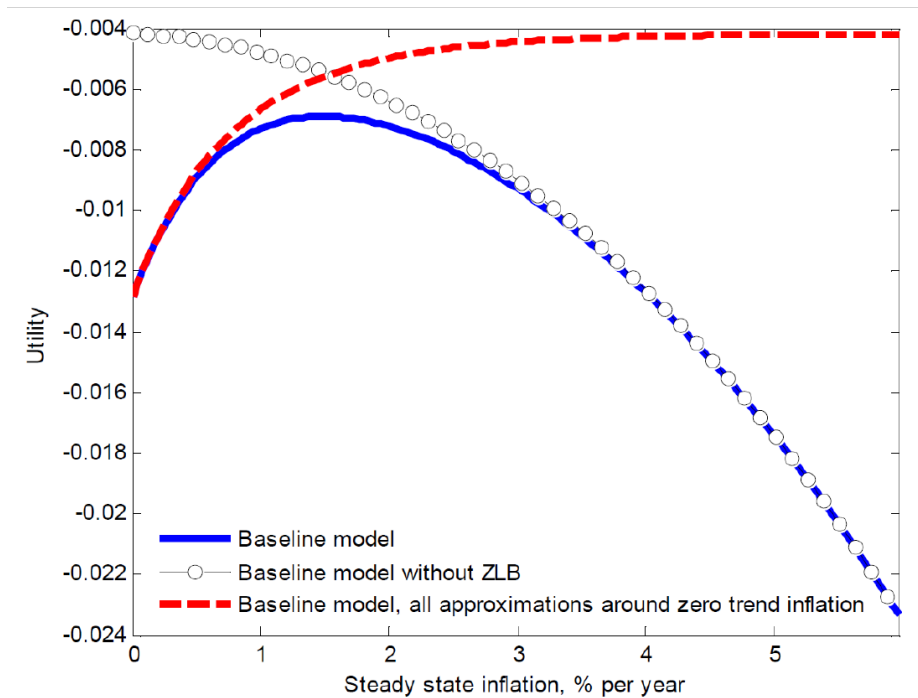


Exercise Session 5

Monetary Policy Framework: Optimal Rate of Inflation, Inflation Targeting

TASK 1: Optimal Rate of Inflation

- a) Briefly summarize the Pros and Cons for positive/negative/zero inflation.
- b) While the optimal inflation rate in the baseline New Keynesian model is zero, this optimal solution changes when monetary policy's constraint at the ZLB on nominal interest rates is taken into account. Discuss how the solution changes based on the graph provided below.



Source: Coibion, Gorodnichenko, and Wieland (2011).

TASK 2: Inflation Targeting – Svensson Model (1997)

Assume that the economy can be described by the following two equations:

The Phillips curve:

$$\pi_{t+1} = \pi_t + \alpha_1 x_t + \varepsilon_{t+1}$$

and the IS-curve:

$$x_{t+1} = \beta_1 x_t - \beta_2 (i_t - \pi_t) + \eta_{t+1}.$$

- a) After how many periods do the output gap and the inflation react to a change in the interest rate i_t ?

Assume further that the economy's central bank follows a strategy of *strict inflation targeting*, i.e. it seeks to minimize the following period loss function:

$$L(\pi_{t+2}) = E_t \left[\frac{1}{2} (\pi_{t+2} - \pi^*)^2 \right].$$

- b) What is the policymaker's control variable?
- c) What is/are the state variable(s) that the policymaker takes as given when deciding upon policy?
- d) Explain the difference between *strict* and *flexible* inflation targeting.
- e) Derive the central bank's optimal targeting rule under strict inflation targeting. Interpret your result economically.
- f) Derive the central bank's optimal instrument rule, which states i_t in terms of current inflation, the current output gap, and the model parameters under strict inflation targeting. Interpret your result economically.
- g) Explain the difference between a targeting and an instrument rule verbally.
- h) Now consider the case of *flexible* inflation targeting. Explain how the loss function would change. Further, explain how the loss function for *strict* inflation targeting is nested in the loss function for *flexible* inflation targeting.
- i) The central bank's optimal instrument rule under *flexible* inflation targeting is given by $i_t = \pi_t + \frac{1-c}{\alpha_1 \beta_2} (\pi_t - \pi^*) + \frac{1-c+\beta_1}{\beta_2} x_t$. Compare this rule with the one under *strict* inflation targeting and explain how the latter is nested in the former.

Now consider a positive demand shock $\eta_0 > 0$.

- j) Calculate the initial response of the interest rate under strict and flexible targeting. Compare them. Explain why the central bank reacts to a demand shock at all under strict inflation targeting.
- k) Under which strategy do you expect the demand to be more persistent?