

— PROBLEM SET 3 —
MA41617: MONETARY POLICY AND BUSINESS CYCLES
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Antti Ripatti
antti[at]ripatti.net
<http://macro.ripatti.net/>

EXERCISE 1 EGGERTSON-KRUGMAN MODEL

The appendix of the Eggertson and Krugman (2012) article contains a model whose details can be found from the appendix of the article and from the supplement listed in the QJE website of the article (<http://qje.oxfordjournals.org/content/127/3/1469/suppl/DC1>). Code this model to dynare, but use the Calvo-pricing approach for price rigidities (no need to derive the details). (Hint! Since the appendix log-linearizes the model you can use this version directly.)

- a) Assume that $G = T^b = 0$ (ie no fiscal policy), what does the deleveraging shocks does? (Calculate impulse responses!)
- b) Assume balanced government budget in each period. Compare the two fiscal policies: (i) increase in G (government purchases); (ii) decrease in T^b (lump-sum social transfers to borrower). Which one is more effective? Provide intuition.

EXERCISE 2

Gali's book's exercise 5.4: As show in Steinsson (2003), in the presence of partial price indexation by firms, the second-order approximation to the household's welfare losses takes the form

$$\frac{1}{2} \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t [\alpha_x x_t^2 + (\pi_t - \gamma \pi_{t-1})^2],$$

where γ denotes the degree of price indexation to past inflation (similar role as ω in the problem set 2). The equation describing the evolution of inflation is now given by

$$\pi_t - \gamma \pi_{t-1} = \kappa x_t + \beta \mathbb{E}_t(\pi_{t+1} - \gamma \pi_t) + u_t,$$

where u_t represents an exogenous i.i.d. cost-push shock.

- a) Determine the optimal policy under discretion.
- b) Determine the optimal policy under commitment.
- c) Discuss how the degree of indexation γ affects the optimal responses to a transitory cost-push shock under the previous two scenarios.

Note, that the problem will be much easier to solve if you make the following change of variable: $\pi_t^* \equiv \pi_t - \gamma\pi_{t-1}$.