

Economics 280C Problem

Optimal Monetary Rules in the “New Directions” Model

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The model is the one from M. Obstfeld and K. Rogoff, “New Directions for Stochastic Open Economy Models,” *Journal of International Economics* 50 (February 2000), pp. 117-53.

(a) In this model, derive the flexible-price levels of labor supply in Home and Foreign (given in section 6.1.1).

(b) The paper shows [eqs. (24) and (25)] that for $\rho = 1$ (that is, for log consumption preferences), expected utility has the form

$$EU = E\tilde{U} + \Omega,$$

where \tilde{U} is the utility level attained under flexible wages (which does not depend on monetary policy) and

$$\Omega = -\frac{\nu}{2}\sigma_z^2 - \frac{\nu}{8}\sigma_e^2 - \frac{1}{2\nu}\sigma_\kappa^2 - \frac{(1-\gamma)\nu}{2}\sigma_{ze} - \frac{(2-\gamma)}{2}\left(\sigma_{\kappa z} + \frac{1}{2}\sigma_{\kappa e}\right) - \frac{\gamma}{2}\left(\sigma_{\kappa^* z} - \frac{1}{2}\sigma_{\kappa^* e}\right).$$

Suppose the monetary rules followed by the Home and Foreign central banks are:

$$\begin{aligned} m &= -\alpha(\kappa - \bar{\kappa}) + \beta(\kappa^* - \bar{\kappa}), \\ m^* &= \beta^*(\kappa - \bar{\kappa}) - a^*(\kappa^* - \bar{\kappa}), \end{aligned}$$

where $\bar{\kappa}$ is the common mean of κ and κ^* . Using these rules and eqs. (22) and (23) in the paper, rewrite the term Ω above in terms of the coefficients in the policy rules and the exogenous shock variances. (Remember that $\sigma_\kappa^2 = \sigma_{\kappa^*}^2$, by assumption, and to simplify your task further — although it is by no means essential — you may assume that $\sigma_{\kappa\kappa^*} = 0$ and that $\varepsilon = 1$.)

(c) Calculate the derivative $dEU/d\alpha$ and set it equal to zero. Solve for α . Similarly, solve for the EU -maximizing choice of β . What is the optimal Home monetary rule? Show that it takes the form

$$m = -\frac{1}{\nu}(\kappa - \bar{\kappa}).$$

(d) Appealing to results in the paper if you need to, write Foreign expected utility as a function of $E\tilde{U}$ (the two symmetric countries have the same expected flex-wage utility) and a matrix Ω^* of covariances. Find the optimal Foreign monetary rule. Show that the optimal Home and Foreign monetary rules replicate the flex-wage allocation ex post for the two countries.

(e) You have derived a Nash equilibrium in policy rules. Why? Is it possible for the two countries to do better if they cooperate in choosing monetary rules?