EC421: International Economics

International Macroeconomics

Problem Set 5

Daniel Wales

(ddgw2@cam.ac.uk)

October 24, 2018

1   New Open Economy Macroeconomics

In the workhorse two-country symmetric model of the New Open Economy Macroeconomics, with one period preset-prices analysed during Lecture 5, the expected utility of the representative agent in the Home country is:

$$\mathbb{E}_{t-1}[U(C_t, \ell_t)] = \mathbb{E}_{t-1}[\ln(C_t) - \kappa\ell_t] = \mathbb{E}_{t-1}\left[\ln\frac{\mu_t}{P_{H,t}^{1/2}P_{F,t}^{1/2}}\right] - \kappa\bar{\ell},$$

where μ_t is defined as the monetary stance ($\mu_t \uparrow$ is an expansion) under the control of the monetary authorities.

Assume Producer Currency Pricing (PCP). Let $\mathcal{E}_t$ denote the nominal exchange rate, with $\mathcal{E}_t = \frac{\mu_t}{\mu_t^*}$. The variables Z_t and Z_t^* denote productivity at home and abroad, mkp is the constant equilibrium markup charged by firms. Foreign variables are starred. Using the fact that in equilibrium $\kappa W_t = \kappa P_t C_t = \kappa\mu_t$, the optimality preset prices charged by domestic and foreign producers are:

$$P_{H,t} = mkp \cdot \mathbb{E}_{t-1}\left[\frac{\kappa\mu_t}{Z_t}\right],$$
$$P_{F,t}^* = mkp \cdot \mathbb{E}_{t-1}\left[\frac{\kappa\mu_t^*}{Z_t^*}\right]$$

so that import prices in the home country are $P_{F,t} = \mathcal{E}_t P_{F,t}^*$.

Analogous expressions characterise the foreign country, that is:

$$\mathbb{E}_{t-1}[U(C_t^*, \ell_t^*)] = \mathbb{E}_{t-1}\left[\ln \frac{\mu_t^*}{P_{H,t}^{*,1/2} P_{F,t}^{*,1/2}}\right] - \kappa \bar{\ell},$$

$$\mathcal{E}_t P_{H,t}^* = mkp \cdot \mathbb{E}_{t-1}\left[\frac{\kappa \mu_t}{Z_t}\right],$$

$$P_{F,t}^* = mkp \cdot \mathbb{E}_{t-1}\left[\frac{\kappa \mu_t^*}{Z_t^*}\right].$$

Assume that the only source of uncertainty consists of *iid* shocks to productivity, Z_t and Z_t^*.

(a) Taking the monetary stance in the foreign country, μ_t^*, as given, write the policy problem of the home monetary authorities, assuming that these are welfare maximising and can commit.

(b) Derive the optimal policy

(c) Carefully explain the effect on both the Home and Foreign economies of an increase in Z_t with no-policy response, and under the optimal policy.

(d) Would the optimal policy under cooperation be different? Explain?

2 Re-Assessing Optimal Stabilisation

While the New Open Economy Macroeconomic models discussed in Lecture 5 suggests the gains from going from Nash optimal policy to a coordinated international policy may be small, we are also able to assess the gains from stabilisation altogether.

(a) Assume the same PCP setting as in Question 1, and posit the monetary policymakers in the Home country obey the policy function:

$$\mu_t = Z_t,$$

such that policymakers respond to productivity shocks one-to-one. Assume that Foreign monetary stance, μ_t^* is fixed. Calculate Welfare, $\mathcal{W}_t|_{\mu_t=Z_t}$, for the Home country in this case.

(b) Instead, now assume monetary policymakers in the Home country obey the policy function:

$$\mu_t = 1,$$

such that policy is invariant to productivity shocks. Calculate welfare of the Home country, $\mathcal{W}_t|_{\mu_t=1}$, and hence compute the welfare gains from full stabilisation.

(c) Show, graphically, how an increase in the variance of productivity shocks may lead to higher gains from stabilisation policy.

(d) In Lecture 5 we claim that optimal monetary policy under discretion may introduce an incentive for policymaker to deviate ex post. Using a graphical illustration, explain why.