International Coordination of Policy Targets (résumé)

NISHI Takashi
Kyorin University

May 21, 2005

1 The Focus of the Issue

We are not able to stabilize all the variables simultaneously. To make a variable stable, some other variables must bear the role of a cushion. The choice of the cushion, however, affects the stability of the foreign variables which, in turn, have effect on the stability of the home variable. So the choices of both the stabilized variables and the cushions might be better off coordinating internationally.

2 The Alternative Proposals

- Growth of Money Supply (Friedman)
- Nominal Income Targeting (Frankel)
- Nominal Exchange Rates (McKinnon)
- Growth of Domestic Demand and Real Effective Exchange Rate (Williamson and Miller)
- Inflation Targeting (Truman)

McKibbin and Sachs (1988) (1991) used a simulation method to evaluate relative superiority of the alternetive policy rules.

3 Basic Model

Home

$$y = \alpha_1 s - \alpha_2 s^* + \alpha_3 y^* + \phi \tag{1}$$

$$m = \beta_1 y + \psi \tag{2}$$

Foreign

$$y^* = \alpha_1^* s^* - \alpha_2^* s + \alpha_3^* y + \phi^* \tag{3}$$

$$m^* = \beta_1^* y^* + \psi^* \tag{4}$$

Unknowns y, y^*, s, s^*, m, m^*

There exists the Third Country other than Home and Foreign. Both Home and Foreign are assumed to be small in contrast to the Third, while they are not small against to each other.

All parameters are positive. We also assume $\alpha_3 < 1$, $\alpha_3^* < 1$, $\alpha_1 \neq \alpha_2$, and $\alpha_1^* \neq \alpha_2^*$.

ϕ and ϕ^* are real shocks to Home and Foreign, respectively, with zero-mean and variances σ_ϕ and σ_ϕ^*. Correspondingly, ψ and ψ^* express monetary shocks to each country, with zero-mean and variances σ_ψ and σ_ψ^*. For the sake of simplicity, ϕ, ϕ^*, ψ, and ψ^* are all assumed to be independent one another.

4 Independent Floating with Money Supply Targeting

Policy Targets $(\bar{m}, \bar{m}^*)$

Unknowns y, y^*, s, s^*

Values of Loss Function

$$E[y^2]_{(\bar{m},\bar{m}^*)} = \frac{1}{\beta_1^2}\sigma_\psi \tag{5}$$

$$E[y^{*2}]_{(\bar{m},\bar{m}^*)} = \frac{1}{\beta_1^{*2}}\sigma_\psi^* \tag{6}$$

5 Single-handed Pegs

Policy Targets $(\bar{m}, \bar{s}^*)$

Unknowns y, y^*, s, m^*

Values of Loss Function

$$E[y^2]_{(\bar{m},\bar{s}^*)} = \frac{1}{\beta_1^2}\sigma_\psi \tag{7}$$

$$E[y^{*2}]_{(\bar{m},\bar{s}^*)} = \frac{\alpha_1^2}{(\alpha_1 - \alpha_2^*\alpha_3)^2}\sigma_\phi^* + \frac{\alpha_2^{*2}}{(\alpha_1 - \alpha_2^*\alpha_3)^2}\sigma_\phi + \frac{(\alpha_2^* - \alpha_1\alpha_3^*)^2}{\beta_1^2(\alpha_1 - \alpha_2^*\alpha_3)^2}\sigma_\psi \tag{8}$$

6 Common Pegs

Policy Targets $(\bar{s}, \bar{s}^*)$

Unknowns y, y^*, m, m^*

Values of Loss Function

$$E[y^2]_{(\bar{s},\bar{s}^*)} = \frac{1}{(1-\alpha_3\alpha_3^*)^2}\sigma_\phi + \frac{\alpha_3^2}{(1-\alpha_3\alpha_3^*)^2}\sigma_\phi^* \tag{9}$$

$$E[y^{*2}]_{(\bar{s},\bar{s}^*)} = \frac{1}{(1-\alpha_3\alpha_3^*)^2}\sigma_\phi^* + \frac{\alpha_3^{*2}}{(1-\alpha_3\alpha_3^*)^2}\sigma_\phi \tag{10}$$

7 Common Floating

Policy Targets $(\bar{m}, s^* = s)$

Unknowns y, y^*, s, m^*

Values of Loss Function

$$E[y^2]_{\bar{m}} = \frac{1}{\beta_1^2}\sigma_\psi \tag{11}$$

$$E[y^{*2}]_{\bar{m}} = \frac{\alpha_1^2}{(\alpha_1 + \alpha_1^*\alpha_3)^2}\sigma_\phi^* + \frac{\alpha_1^{*2}}{(\alpha_1 + \alpha_1^*\alpha_3)^2}\sigma_\phi + \frac{(\alpha_1^* + \alpha_1\alpha_3^*)^2}{\beta_1^2(\alpha_1 + \alpha_1^*\alpha_3)^2}\sigma_\psi \tag{12}$$

8 Evaluation of Loss Function

1. The superiority between floating and pegs depends on the relative size of both country's real and monetary shocks.

2. The larger is α_2^*, the more likely become independent floating superior to single-handed pegs. If the parameters are symmetric,

   $$\alpha_2^* > \alpha_1. \tag{13}$$

   become sufficient condition for independent floating to be superior to single-handed pegs.

3. If

   $$\alpha_1 - \alpha_2^* \alpha_3 > 0, \tag{14}$$

   and

   $$\alpha_2^* - \alpha_1 \alpha_3^* > 0, \tag{15}$$

   then common pegs are superior to single-handed pegs.

4. If

   $$\frac{\alpha_1}{\alpha_1^*} < \frac{1 - \alpha_3}{1 - \alpha_3^*}, \tag{16}$$

   then the pegging country is inferior to the pegged country, in common floating. If the parameters are symmetric, the pegging country is always inferior to the pegged country.

5. If

   $$\alpha_3 \alpha_3^* > \frac{1}{2}, \tag{17}$$

   then, for the pegging country, common floating is always superior to common pegs.

6. If

   $$\alpha_2^* - \alpha_1^* > 2\alpha_1 \alpha_3^*, \tag{18}$$

   then the pegging country in common floating is superior to single-handed pegs.