Macroeconomics A; EI060

Short problems

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1 Optimal prices

Question: A Home firm sets a price $P(z,h)$ for domestic sales and $P^*(z,h)$ (in Foreign currency) for export sales.

The demand it faces is:

$$Y(z,h) = n\left[\frac{P(z,h)}{P(h)}\right]^{-\theta}\left[\frac{P(h)}{P}\right]^{-\lambda}C + (1-n)\left[\frac{P^*(z,h)}{P^*(h)}\right]^{-\theta}\left[\frac{P^*(h)}{P^*}\right]^{-\lambda}C^*$$

Each unit of output is produced using A units of labor paid W.

Show that the optimal prices are:

$$P(z,h) = \mathcal{E}P^*(z,h) = \frac{\theta}{\theta-1}\frac{W}{A}$$

2 GG line

Question: The linear approximation shows that in the long run relative consumption is linked to the current account as:

$$\bar{\mathsf{c}} - \bar{\mathsf{c}}^* = \frac{1+\lambda}{2\lambda}\frac{1-\beta}{\beta}\frac{\bar{\mathsf{b}}}{1-n}$$

The Euler condition is:

$$\bar{\mathsf{c}} - \bar{\mathsf{c}}^* = \mathsf{c} - \mathsf{c}^*$$

In the short run, output and the current accounts are:

$$\mathsf{y} - \mathsf{y}^* = \lambda\mathsf{e}$$

The current account is (recalling that the initial b is zero):

$$\frac{\bar{\mathsf{b}}}{1-n} + (\mathsf{c} - \mathsf{c}^*) = -\mathsf{e} + \mathsf{y} - \mathsf{y}^*$$

Show that we get the GG line:

$$\mathsf{e} = \left[1 + \frac{\beta}{1-\beta}\frac{2\lambda}{1+\lambda}\right]\frac{1}{\lambda-1}(\mathsf{c} - \mathsf{c}^*)$$

3 Relative welfare with complete pass-through

Question: The linearized welfare expressions are:

$$\begin{aligned} \mathsf{u}_t &= \mathsf{c} - \frac{\theta-1}{\theta}\mathsf{y} + \frac{\beta}{1-\beta}\left[\bar{\mathsf{c}} - \frac{\theta-1}{\theta}\bar{\mathsf{y}}\right] \\ \mathsf{u}_t^* &= \mathsf{c}^* - \frac{\theta-1}{\theta}\mathsf{y}^* + \frac{\beta}{1-\beta}\left[\bar{\mathsf{c}}^* - \frac{\theta-1}{\theta}\bar{\mathsf{y}}^*\right] \end{aligned}$$

The long run and short run current account expressions are:

$$\begin{aligned} \frac{1}{1-n}\bar{\mathsf{b}} + (\bar{\mathsf{c}} - \bar{\mathsf{c}}^*) &= \frac{1}{\beta}\frac{1}{1-n}\bar{\mathsf{b}} + [\bar{\mathsf{p}}(h) - \bar{\mathsf{p}}^*(f) - \bar{\mathsf{e}}] + (\bar{\mathsf{y}} - \bar{\mathsf{y}}^*) \\ \frac{\bar{\mathsf{b}}}{1-n} + (\mathsf{c} - \mathsf{c}^*) &= -\mathsf{e} + \mathsf{y} - \mathsf{y}^* \end{aligned}$$

and the long run and short run outputs are:

$$\begin{aligned} \bar{\mathsf{y}} - \bar{\mathsf{y}}^* &= -\lambda[\bar{\mathsf{p}}(h) - \bar{\mathsf{p}}^*(f) - \bar{\mathsf{e}}] \\ \mathsf{y} - \mathsf{y}^* &= \lambda\mathsf{e} \end{aligned}$$

Show that the relative welfare is:

$$\mathsf{u}_t - \mathsf{u}_t^* = \frac{\lambda-\theta}{\lambda\theta}\left[(\mathsf{y} - \mathsf{y}^*) + \frac{1-\beta}{\beta}(\bar{\mathsf{y}} - \bar{\mathsf{y}}^*)\right]$$