Problems for Lecture Notes:

Dynamic models of real-financial interactions

Sketch of solutions

4. (a) Considering the risk premium on shares, the no-arbitrage condition becomes

\[ \frac{\pi(t)}{q(t)} - \frac{\dot{q}(t)}{q(t)} = r(t) + \phi \]

and the stationary curve for \( q \) becomes:

\[ \dot{q} = 0 \Rightarrow q = \frac{\pi}{r + \phi} = \frac{\alpha_0 + k_2 y}{r + \phi} \]

\[ \Rightarrow \frac{\partial q}{\partial \phi} \bigg|_{\phi=0} < 0 \quad \text{(when \( \phi \) increases the \( \pi = \) locus shifts down)} \]

(b) unexpected permanent reduction from \( \phi_0 \) to \( \phi < \phi_0 \)

\[ \frac{dq}{dt} q = a_1 r - (a_0 + a_2 y) \frac{t_2}{t^2} > 0 \quad \Rightarrow \quad a_1 > \frac{t_2}{t^2} \]

The \( \dot{q} = 0 \) curve crosses the \( y = \) locus "from above" (as in the picture below)

since \( \lim_{y \to \infty} \frac{dq}{dy} \bigg|_{\phi=0} = 0 \)

and has an upper asymptote at \( \frac{a_1 k_2}{a_2} \) for \( y \to \infty \)

The "saddlepoint" properties of the model are preserved but the saddlepath is now upward-sloping.

(b) Fiscal (announced at \( t_0 \)) fiscal restriction (see Blanchard, p.118)
(3) \[ \text{if } \beta > \alpha \Rightarrow \frac{de}{dp} \big|_{e=0} > 0 \text{ but } \alpha < \beta \text{ (positively sloped but less steep than } \beta > 0) \]

(b) Monetary expansion \( \Rightarrow \text{ "no overshooting"} \)

(4)

(a) \( \dot{y} = 0 \Rightarrow y = \bar{y} \Rightarrow \bar{y} = -\alpha \left( \frac{r}{h} - y - \frac{1}{h} (m - \bar{p}) \right) + \beta (e + \bar{r} - \bar{p}) \)

\( \Rightarrow y = \frac{h}{\alpha + h} (e + \bar{r} - \bar{p}) + \frac{\alpha}{\alpha + h} (m - \bar{p}) \Rightarrow \frac{de}{dy} \big|_{e=0} > 0 \)

\( \dot{e} = 0 \Rightarrow r = \bar{r} \Rightarrow m - \bar{p} = y - h r \Rightarrow y = m - \bar{p} + h r \Rightarrow \bar{y} \)

(output independent of \( e \))

In the new steady-state equilibrium, output and the exchange rate are higher. (\( e \) must depreciate to generate the additional aggregate demand for goods needed to match higher output in the steady state).

From (a), the domestic interest rate is increasing because money demand is increasing (due to the increase in output); the interest rate differential in favor of foreign assets (\( \bar{r} > \bar{r} \)) is gradually eliminated.

Along the adjustment path, exchange rate appreciation is necessary to restore the no-arbitrage (uncovered interest rate parity) condition with \( \bar{r} \neq \bar{r} \).