MACROECONOMICS II

Problems for Lecture Notes (4): Dynamic models of real-financial interactions

Sketch of solutions

(1) (a) Considering a risk premium on shares the no-arbitrage condition becomes

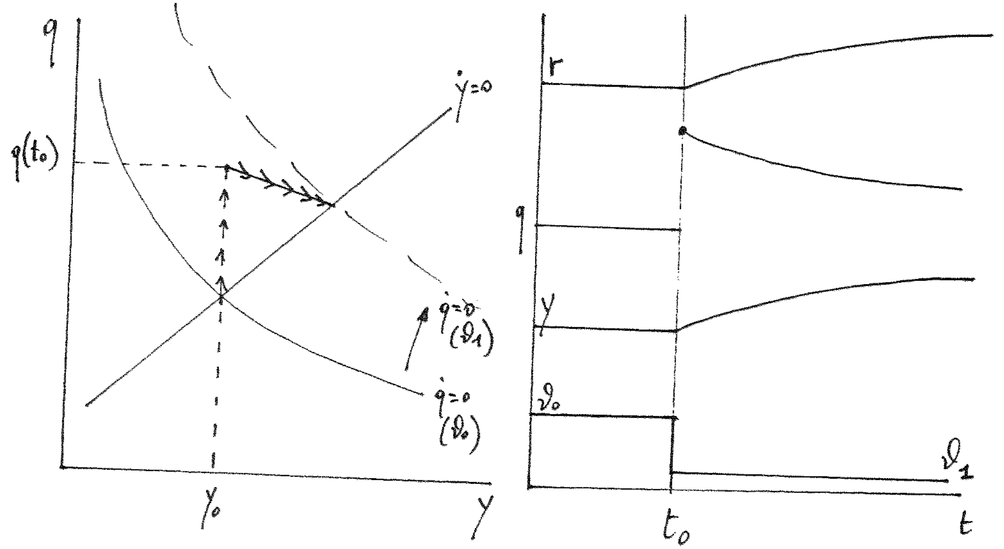
$$\frac{\pi(t)}{q(t)} + \frac{\dot{q}(t)}{q(t)} = r(t) + \vartheta$$

and the stationary curve for q becomes:

$$\dot{q} = 0 \Rightarrow q = \frac{\pi}{r+\vartheta} = \frac{a_0 + a_1 Y}{\left(\frac{h_0}{h_2} + \frac{h_1}{h_2}y - \frac{1}{h_2}\frac{M}{P}\right) + \vartheta}$$

$$\Rightarrow \left.\frac{\partial q}{\partial \vartheta}\right|_{\dot{q}=0} < 0$$ (when ϑ increases the $\dot{q}=0$ locus shifts down)

(b) unexpected permanent reduction from ϑ_0 to $\vartheta_1 < \vartheta_0$



(2) (a) $$\left.\frac{dq}{dy}\right|_{\dot{q}=0} = \frac{a_1 r - (a_0 + a_1 Y)\frac{h_1}{h_2}}{r^2} > 0 \iff a_1 > q\frac{h_1}{h_2}$$

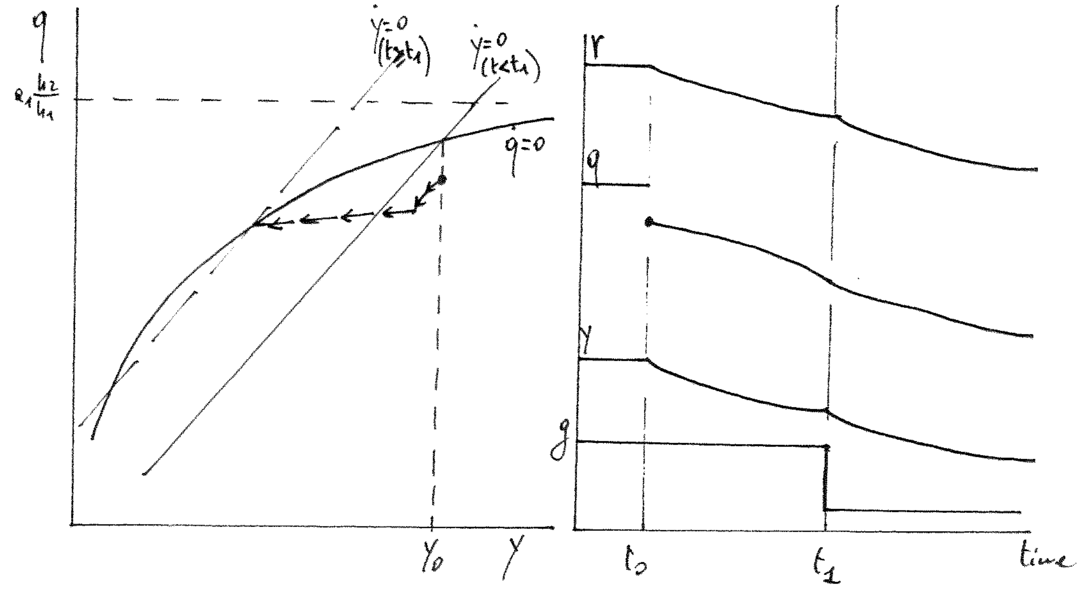
the $\dot{q}=0$ curve crosses the $\dot{y}=0$ locus "from above" (as in the picture below)

since $\lim_{y\to\infty} \left.\frac{dq}{dy}\right|_{\dot{q}=0} = 0$

and has an upper asymptote at $\frac{a_1 h_2}{h_1}$ for $y \to \infty$

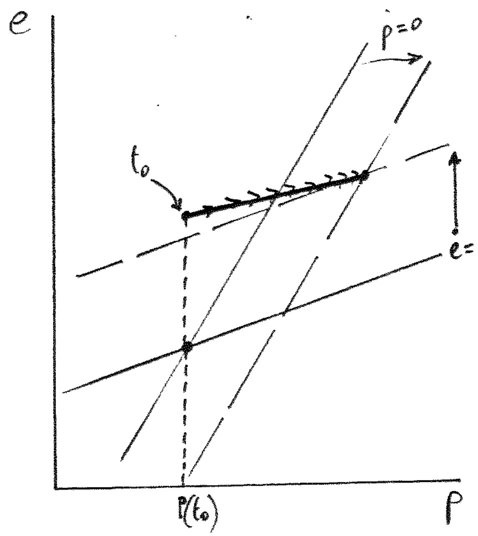
The "saddlepoint" properties of the model are preserved but the saddlepath is now upward-sloping.

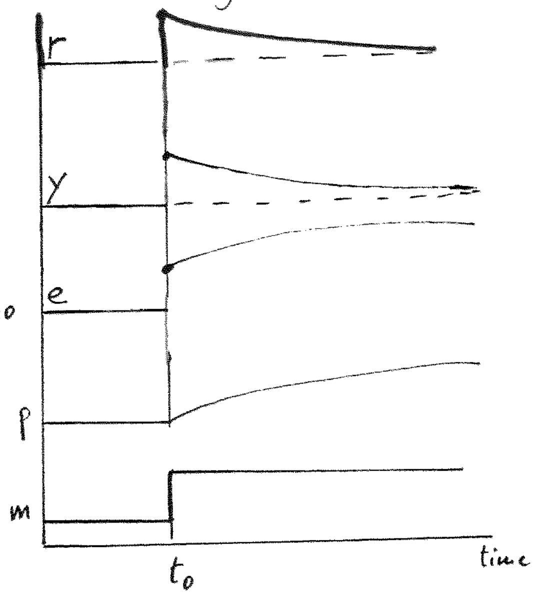
(b) Future (announced at t_0) fiscal restriction (see Blanchard (1981) p.138)



(3) (a) if $\beta > 1 \Rightarrow \left.\frac{de}{dp}\right|_{\dot{e}=0} > 0$ but < 1 (positively sloped but less steep than $\dot{p}=0$)

(b) monetary expansion $\Rightarrow$ "no overshooting"





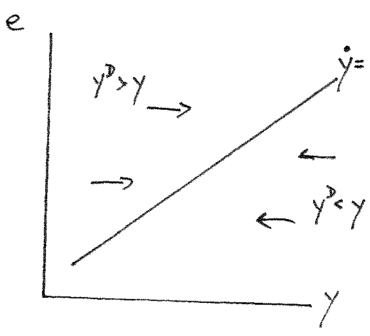
(4) Stationary equations for y and e

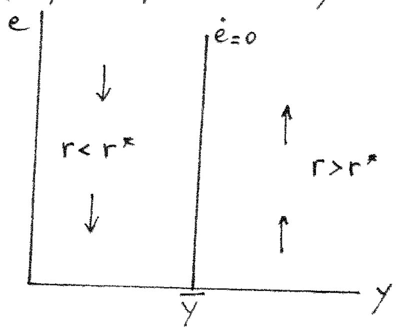
(a) $\dot{y}=0 \Rightarrow y = y^D \Rightarrow y = -\alpha\left(\frac{1}{h}y - \frac{1}{h}(m-\bar{p})\right) + \beta(e+p^* - \bar{p})$

$\Rightarrow y = \frac{\beta}{\alpha+h}(e+p^* - \bar{p}) + \frac{\alpha}{\alpha+h}(m-\bar{p}) \Rightarrow \left.\frac{de}{dy}\right|_{\dot{y}=0} > 0$

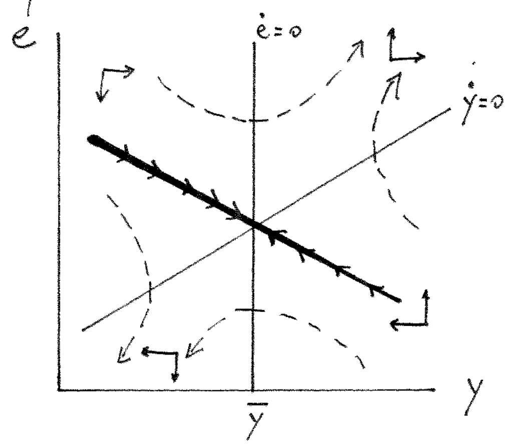
$\dot{e}=0 \Rightarrow r = r^* \Rightarrow m-\bar{p} = y - hr^* \Rightarrow y = m-\bar{p}+hr^* \equiv \bar{y}$

(output independent of e)

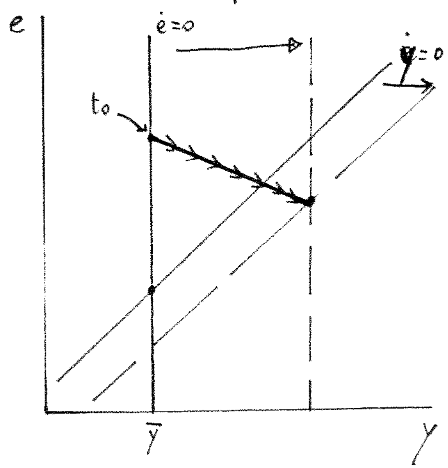


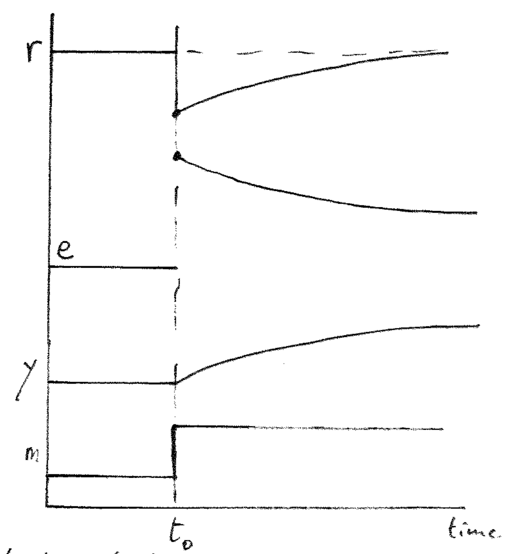


Complete dynamics



(b) monetary expansion





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 t_0 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 ($r<r^*$) is gradually eliminated.
Along the adjustment an exchange rate appreciation is necessary to restore the no arbitrage (uncovered interest rate parity) condition with $r<r^*$.