Re-Exam *International Monetary Economics II*

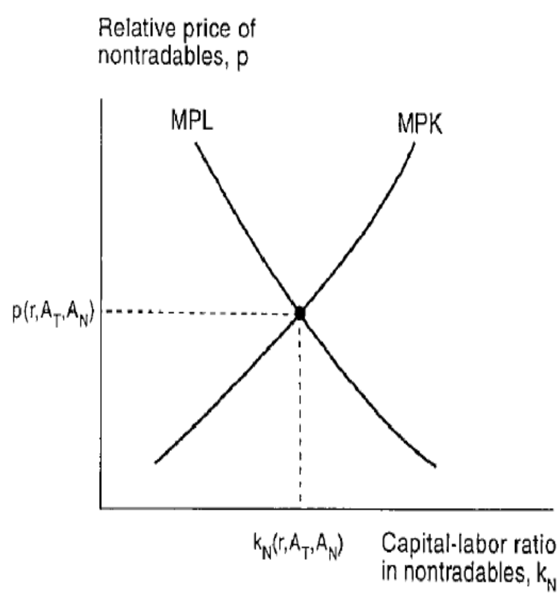
Mai 15, 2012

Outline of solution

Question 1

a) True (including initial foreign assets $B_1 = 0$)
To satisfy the intertemporal budget constraint, all debt has to be repaid at the end of the time horizon. As the current account expresses the change in foreign asset position this means that summing up all current accounts has to equal 0.
For an illustration consider the two period-case: The current account for each period can be expressed in terms of change in foreign assets *B*:
$CA_1 = B_2 = Y_1 - C_1$ (assuming $B_1 = 0$)
In order to satisfy the budget constraint and ensure $B_3 = 0$
$CA_1 = B_3 - B_2 = Y_1 + rB_2 - C_1$
Or:
$CA_2 = -CA_1$
The undiscounted current account balances sum up to zero.

b) False. An increase in the productivity of the tradables sector drives up *w* (the real wage in terms of tradables). The MPL schedule in the diagram to the right expresses the profit maximization condition w = p•MPL(k_{NT}) for the nontradables sector (where p is the relative price of nontradables in terms of tradables). A rise in *w* shifts the MPL schedule upwards one-for-one. In view of the finite slope of the MPK schedule, equilibrium *p* rises by less than w so that the purchasing power of wages in terms of nontradables (w/p) must rise.



c) True. In the short run, the real DM exchange rate must appreciate so that net exports can fall to offset the effect of the budget deficit on aggregate demand. In the long run, an increase in the risk premium forces the current account back to balance. Now net exports must increase to offset the fall in net foreign interest income - which can happen only at a depreciated real exchange rate (Branson, 1994: 22-25).

d) False. Inflation and devaluation do not occur in the fixed exchange rate case ($\pi = 0$), but it is possible that the regime is not credible ($\pi^e > 0$). Thus, the loss function and the budget constraint are reduced to $L = (x_t^2)$ and $Rb_t = x_t - \theta\pi_t^e$, respectively. Minimizing this loss function yields $L^f = (Rb_t + \theta\pi_t^e)^2$. Loss of credibility drives up the cost of debt in this model.

e) False, for at least two reasons. First of all, debt per GDP ratios is not necessarily an exhaustive indicator of the risk of default. Growth prospects of a country, the health of its banking sector as well as the structure of debt may play a role as well. Secondly, as several of the models discussed in class point out: A country inside a currency union has fewer policy options than a stand-alone country because it cannot depend on its own central bank as a lender of last resort. In conclusion, rating agencies has good reasons to be more sceptical about France than about Britain.

Question 2

a) Demarcation lines:

(1) $q_{t+1} - q_t = -\delta\psi(q_t - \bar{q})$

Demarcation line $q_{t+1} - q_t = 0$:

$$q_t = \bar{q}$$

(2) $e_{t+1} - e_t = \frac{e_t}{\eta} - \frac{(1-\phi\delta)}{\eta} q_t + \frac{p^*}{\eta} + \frac{\phi}{\eta}\bar{y} - \frac{m_t}{\eta} - \frac{\phi\delta}{\eta}\bar{q} - i^*$

Demarcation line $e_{t+1} - e_t = 0$:

$$e_t = (1-\phi\delta)q_t + \phi\delta \cdot \bar{q} - p^* - \phi \cdot \bar{y} + m_t + \eta \cdot i^*$$

Directional arrows:

(1) $\frac{\partial(q_{t+1} - q_t)}{\partial q_t} = -\delta\psi < 0$: pointing towards the $q_{t+1} - q_t = 0$-locus

(2) $\frac{\partial(e_{t+1} - e_t)}{\partial e_t} = \frac{1}{\eta} > 0$: pointing away from the $e_{t+1} - e_t = 0$-locus

<u>Stability:</u>
The determinant of the Jacobi matrix for this system is negative, which means that the equilibrium is a saddle point. The directional arrows point towards the equilibrium both above the upward sloping ($e_{t+1} - e_t = 0$)-locus to the left of $q_t = \bar{q}$ and below the upward sloping ($e_{t+1} - e_t = 0$)-locus to the right of $q_t = \bar{q}$, while pointing away from the equilibrium in the other two regions of the diagram (which was sufficient as an explanation of the saddle-point property in the exam). A saddle path leads towards the equilibrium from both sides of $q_t = \bar{q}$.

<u>Graph</u>: see Obsfeld/Rogoff, Figure 9.4, p. 613.

b) The demarcation line shifts according to the change of *m* $\frac{\Delta e_t}{\Delta m_t} = 1$.

Since in the short run $\Delta p = 0$, a change in the nominal exchange rate is also a change in the real exchange rate ($\Delta q = \Delta e$). Thus the exchange rate jumps both in nominal and real terms and will end up on the new saddle path. If we are faced with an increase in *m*, the immediate response would be a depreciation of the exchange rates, an expansion of output and a fall in the interest rate (which will give rise to appreciation expectations).

c) Overshooting depends on the condition $\phi\delta < 1$: Both the output response to a depreciation of the exchange rate and the response of money demand to a change the output must not be too large. This gives us a positive slope of both the demarcation line $e_{t+1} - e_t = 0$ and the saddle path. With $\phi\delta > 1$, the slope of both curves is negative. In this case, a monetary expansion would increase the interest rate, which would be associated with expectations of further depreciation in the future (undershooting).

Question 3

a) $d_i + g_i - \partial_0 (i - \pi_i) - \partial_1 (p_i - p_j) - \mu(y_i - y_j)$

d_i : autonomous private spending,

g_i : government spending,

$\partial_0 (i - \pi_i)$: effect t of real interest rate on y_i, where *i* is the interest rate of the monetary union set by the central bank

$\partial_1 (p_i - p_j)$: effect of competitiveness, as measured by the relative price levels of the two countries (real exchange rate), on effective demand

$\mu(y_i - y_j)$: relative income affects mutual net exports; higher income in one country means higher imports for that country and higher exports for the other country;

μ is a measure of the strength of trade-linkages between the countries.

b)

ba) Subtracting y_2 from y_1 yields:

$$\tilde{y} = y_1 - y_2 = \tilde{d} + \tilde{g} - 2\partial_1 \tilde{p} - 2\mu \cdot \tilde{y} + \partial_0 \tilde{\pi} - \partial_0 (i_1 - i_2) \quad (1)$$

Substituting

$$i_1 - i_2 = \rho \quad (2)$$

yields:

$$\tilde{y} = \frac{1}{1+2\mu}\left[\tilde{d} + \tilde{g} - 2\partial_1 \tilde{p} + \partial_0 \tilde{\pi} - \partial_0 \rho\right] \quad (3)$$

An increase in ρ leads to a relative increase in the interest rate of country 1 vis-à-vis country 2, this in turn gives rise to an output differential between the two countries: $\tilde{y}$ falls.

bb) On the union level this is without consequence. Aggregate union output is:

$$y = y_1 + y_2 = d + g - \partial_0 (i_1 + i_2) + 2\partial_0 \pi \quad (4)$$

The interest rate at the union level can be defined as an average of the interest rates prevailing in each country:

$$i = \frac{1}{2}(i_1 + i_2) \quad (5)$$

Irrespectively of the interest-rate differential created by the risk premium, the central bank has no incentive to adjust *i*, as no structural parameters in eq. (4) change.

bc) In the long-run $\tilde{\pi} = 0$ and $\tilde{y} = \tilde{\bar{y}}$. Thus, from equation (3)

$$\tilde{p} = \frac{1}{2\partial_1}\left[\tilde{d} + \tilde{g} - (1+2\mu)\tilde{\bar{y}} - \partial_0 \rho\right] \quad (6)$$

Evidently, the risk premium drives down $\tilde{p}$ in the long run.