Capital Inflows and Fiscal Policy in the Central and East European Countries

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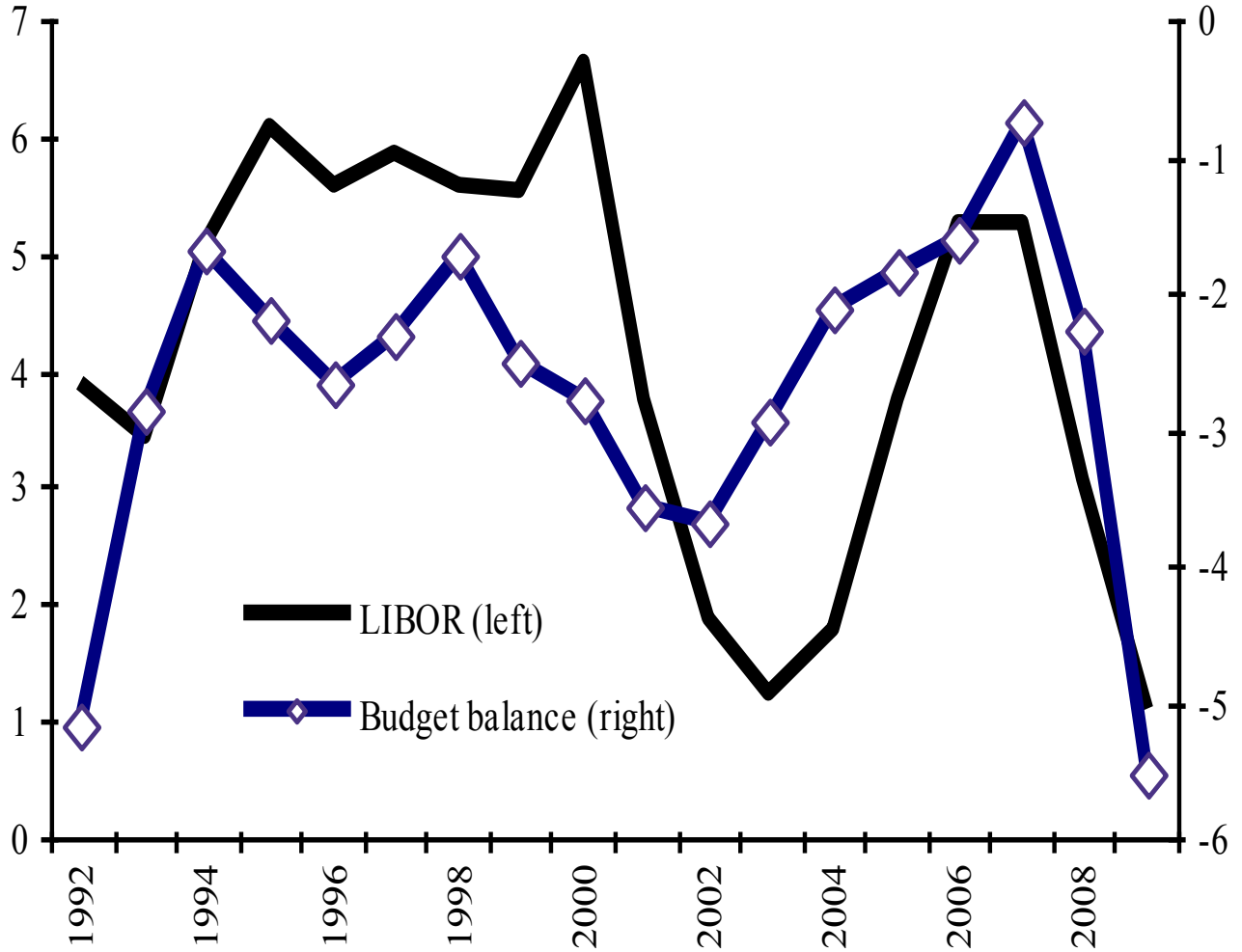
Structure:

- General issues
- Theoretical framework
- Statistical estimates of the capital inflows-budget balance relationship
- Conclusions

1-General issues

- Higher capital mobility as a factor behind worsening of the budget balance does not contradict the logic of income intertemporal optimization

CEE countries: budget balance (% of GDP) and LIBOR (%), 1992–2009



2-Theoretical framework

- Foreign bond-financed budget deficit in the Mundell–Fleming model
- Budget balance endogeneity in the Taylor–Romer model
- Intertemporal optimization

The Mundell–Fleming model:

$$Y = C(Y - T, r) + I(r) + G + CA(q, Y, Y^*),$$

$$C_Y, CA_q, CA_{Y^*} > 0, \qquad C_r, I_r, CA_Y < 0$$

$$\frac{M}{P} = L(Y, r), \qquad L_Y > 0, \quad L_r < 0$$

$$CA(q, Y, Y^*) + k(r - r^*) = 0, \qquad 0 \le k < \infty$$

where Y is income, C is private consumption, I is private consumption, G is government expenditure, CA is current account, T is lump-sum tax, q is the real exchange rate, Y^* is income abroad, r is the real exchange rate, M is the money supply, P is the price level, k is the capital mobility

- **a fixed exchange rate**

$$\frac{dY}{dG - dr^*} = \frac{k + C_r + I_r}{\Delta_5},$$

$$\frac{dr}{dG - dr^*} = \frac{CA_Y - k(1 - C_Y + CA_Y)}{\Delta_5},$$

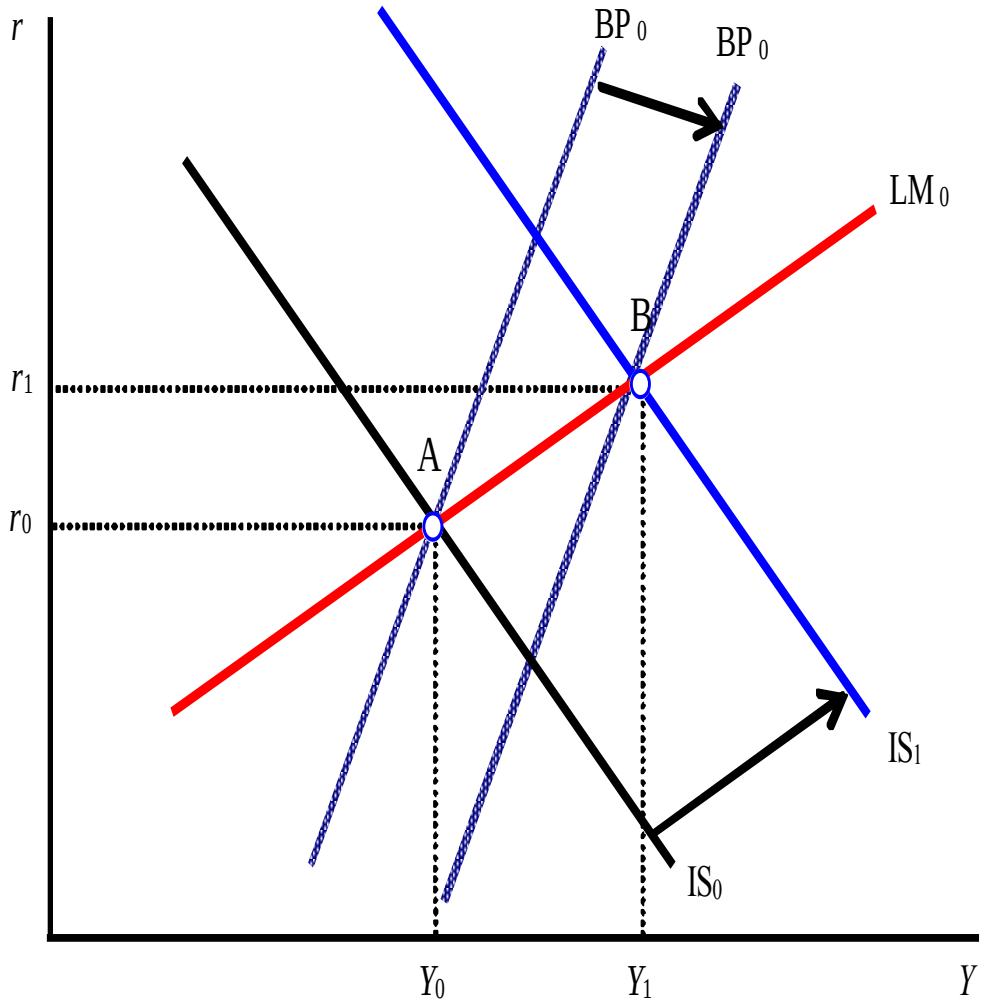
where $\Delta_5 = CA_Y(C_r + I_r) + k(1 - C_Y + CA_Y).$

- **a floating exchange rate**

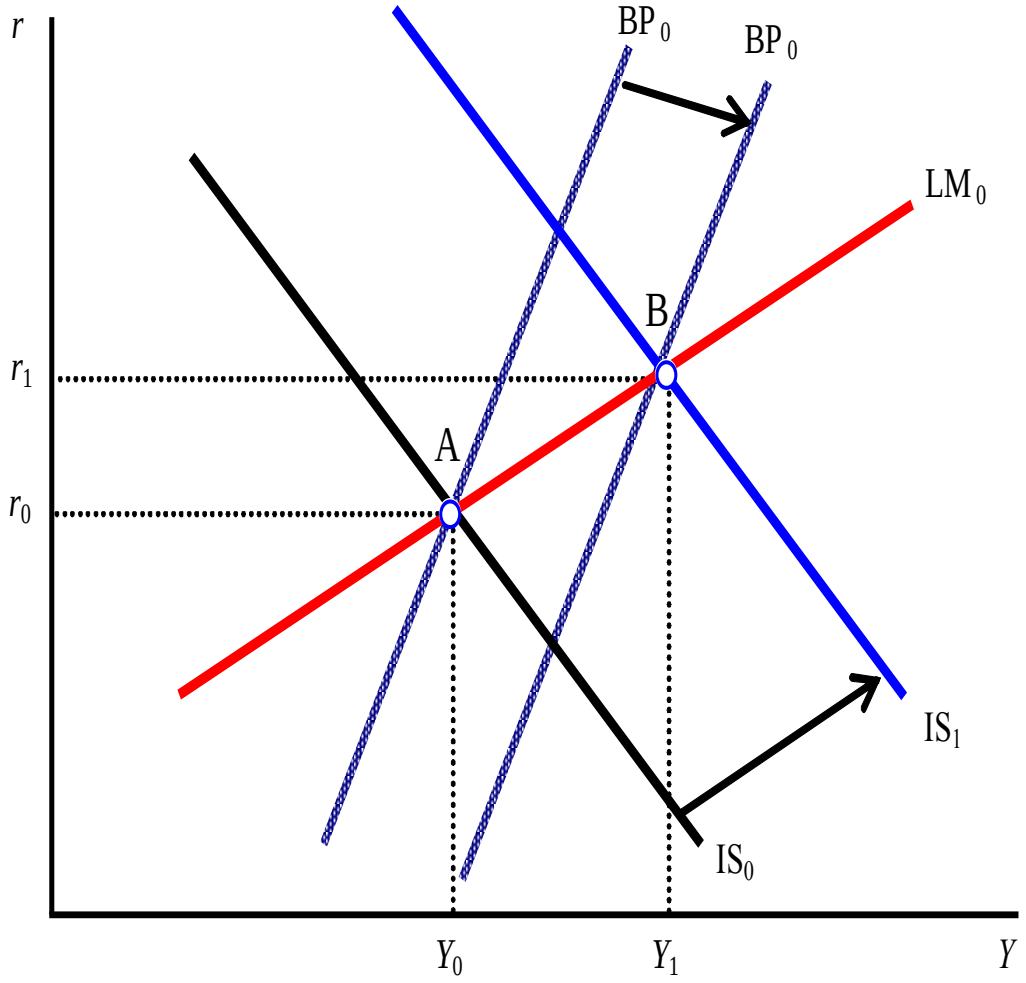
$$\frac{dY}{dG - dr^*} = \frac{L_r(1-k)}{\Delta_7}, \qquad \frac{dr}{dG - dr^*} = \frac{L_Y(1-k)}{\Delta_7},$$

where $\Delta_7 = L_r(1 - C_Y) + L_Y(k + C_r + I_r).$

Foreign bond-financed budget deficit under a low capital mobility (a fixed exchange rate)

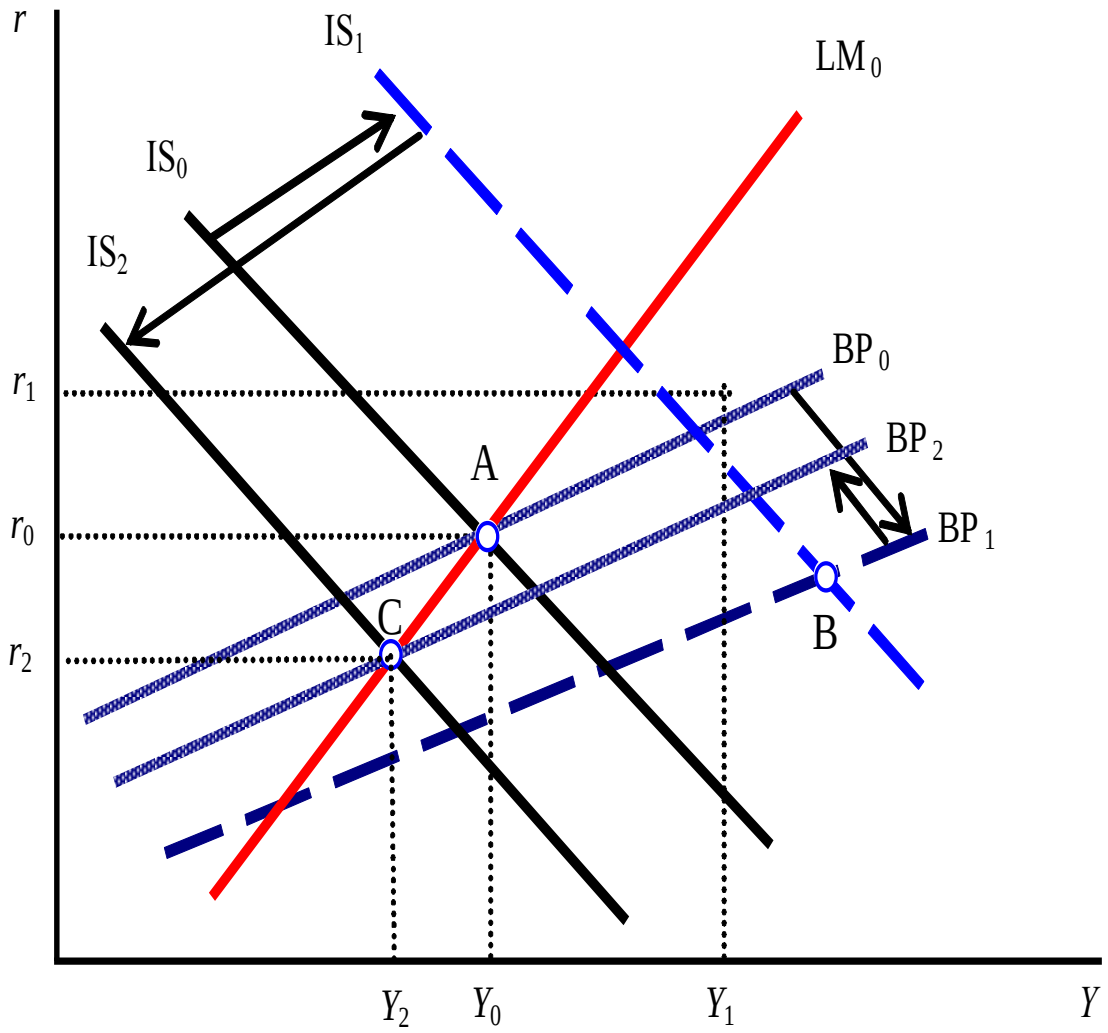


Foreign bond-financed budget deficit under a low capital mobility (a floating exchange rate)



$k<1$

Foreign bond-financed budget deficit under a high capital mobility (a floating exchange rate)



$k > 1$

The Taylor–Romer model

$$y = \alpha_0 - \alpha_1(i - p^e) + \alpha_2 g,$$

$$i = \bar{r} + p^e + \gamma_1(\pi - p) + \gamma_2(y - \bar{y}),$$

$$\pi = p^e + \beta_1(y - \bar{y}),$$

where $y - \bar{y}$ is the output gap, *i* is a nominal interest rate, *g* is the budget deficit, p^e is the expected inflation, $\bar{r}$ is a natural interest rate, *p* is the central bank inflationary target.

Assuming $y = \bar{y}$ and $p = \bar{p}$, it is obtained that

$$g^* = \frac{\bar{y} - \alpha_0 + \alpha_1 \bar{r} - \alpha_1 \gamma_1 (\bar{p} - p^e)}{\alpha_2},$$

$$i^* = \bar{r} + p^e - \gamma_1 (\bar{p} - p^e).$$

Intertemporal optimization (Frenkel *et al*. 1996, p. 255–259)

$$V(G_0, G_1, T_0, T_1) = \max_{\{c_0, c_1\}} U(C_0, G_0) + \delta U(C_1, G_1)$$

subject to

$$C_0 + \alpha_1^p C_1 = \left(\bar{Y}_0 - T_0\right) + \alpha_1^p \left(\bar{Y}_1 - T_1\right) + \left(1 + r_{t-1}^p\right) B_{t-1}^p = W_0,$$

where T_0, G_0, C_0 and T_1, G_1, C_1 are tax revenues, government expenditure and private consumption in periods 0 and 1, $\bar{Y}_0$ and $\bar{Y}_1$ are current and future income levels, B_t^p is the private sector debt, W_0 is the aggregate consumption.

3-Statistical estimates of basic relationships

- The Granger Test
- 2SLS
  - 1994-2009 sample

The Granger Test

The Null Hypothesis	Lags	
	1	2
The Luxembourg Group		
BDL_t does not cause $LIBOR_t$	0,255 (0,619)	1,290 (0,308)
$LIBOR_t$ does not cause BDL_t	3,787 (0,069**)	3,942 (0,045**)
The Helsinki Group		
BDH_t does not cause $LIBOR_t$	0,368 (0,552)	1,508 (0,257)
$LIBOR_t$ does not cause BDH_t	1,614 (0,222)	3,583 (0,057***)

2SLS estimates for the budget deficit

- **The Luxembourg Group**

$$BDL_t = \underset{(-10{,}156^{*})}{-6{,}396} + \underset{(2{,}598^{**})}{0{,}423 LIBOR_t} + \underset{(1{,}590)}{0{,}250 LIBOR_{t-1}},$$

$$R^2 = 0{,}52 \qquad DW = 1{,}56 \qquad ADF = -3{,}60^{*}$$

- **The Helsinki Group**

$$BDH_t = \underset{(-2{,}596^{*})}{-1{,}240} + \underset{(3{,}481^{*})}{0{,}413 BDH_{t-1}} + \underset{(3{,}793^{*})}{0{,}461 LIBOR_t} - \underset{(-3{,}645^{*})}{0{,}523 LIBOR_{t-1}},$$

$$R^2 = 0{,}56 \qquad DW = 1{,}89 \qquad ADF = -6{,}08^{*}$$

Baltic states

$$BDB_t = \underset{(1,521)}{0,485BDB_{t-1}} + \underset{(2,074^{***})}{0,441LIBOR_t} - \underset{(-2,388^{**})}{0,556LIBOR_{t-1}} - \underset{(-3,645^{*})}{1,832CRISIS},$$

$$R^2 = 0,49 \qquad DW = 1,82 \qquad ADF = -3,25^{**}$$

де BDL_t, BDH_t, BDB_t are the budget balances of the Luxembourg Group, Helsinki Group and Baltic countries, respectively (% of GDP);

CRISIS is the dummy for economic crisis (1999 — 1, other years — 0).

2SLS estimates for the budget expenditures and revenues

- **The Luxembourg Group**

$$GL_t = \underset{(2,420^{**})}{13,022} + \underset{(6,463^{*})}{0,734GL_{t-1}} - \underset{(-2,232^{**})}{0,282LIBOR_t} + \underset{(1,844^{***})}{0,191\Delta Y_t^G},$$

$$R^2 = 0,72 \qquad DW = 2,01 \qquad ADF = -3,825^{*}$$

$$REVL_t = \underset{(4,692^{*})}{12,315} + \underset{(11,195^{*})}{0,702REVL_{t-1}} + \underset{(2,274^{**})}{0,271LIBOR_{t-1}} - \underset{(-4,148^{*})}{0,689Y_t^G}$$

$$R^2 = 0,88 \qquad DW = 1,40 \qquad ADF = -2,768^{***}$$

The Helsinki Group

$$GH_t = \underset{(4,543^{*})}{10,759} + \underset{(10,984^{*})}{0,669 GH_{t-1}} + \underset{(2,873^{**})}{0,452 LIBOR_t},$$

$$R^2 = 0,79 \qquad DW = 2,14 \qquad ADF = -3,877^{*}$$

$$REVH_t = \underset{(4,034^{*})}{11,956} + \underset{(8,575^{*})}{0,653 REVH_{t-1}} + \underset{(1,085)}{0,155 LIBOR_t},$$

$$R^2 = 0,79 \qquad DW = 2,04 \qquad ADF = -4,186^{*}$$

Baltic states

$$GB_t = \underset{(1,490)}{10,887} + \underset{(3,002^{**})}{0,653 GB_{t-1}} + \underset{(1,837^{***})}{0,601 LIBOR_t} - \underset{(-1,300)}{0,537 \Delta Y_t^G},$$

$$R^2 = 0,64 \quad DW = 1,98 \quad ADF = -3,941^{*}$$

$$REVB_t = \underset{(3,686^{*})}{24,213} + \underset{(1,907^{***})}{0,474 REVB_{t-1}} - \underset{(-2,006^{***})}{0,300 REVB_{t-2}} + \underset{(2,482^{**})}{0,490 LIBOR_t},$$

$$R^2 = 0,57 \quad DW = 1,72 \quad ADF = -3,641^{**}$$

where GL_t, $REVL_t$, GH_t, $REVH_t$, GB_t, $REVB_t$ – respectively government expenditures and budget revenues for the Luxembourg Group, Helsinki Group and Baltic countries (% of GDP);

ΔY_t^G is the GDP growth rate in Germany (%).

Consequences of an increase in LIBOR

	Budget balance	**Government expenditures**	**Budget revenues**
Luxembourg Group	↑	↓	↑
Helsinki Group	↓	↑	–
Baltic states	↓	↑	↑

Conclusions

- A temporary increase in the budget deficit is not ruled out in the wake of capital inflows on the basis of intertemporal optimization
- An increase in the budget deficit caused by capital inflows is evident for the Luxembourg Group countries, while just the opposite does hold for the Helsinki Group and Baltic countries
- Asymmetry in the LIBOR effects are realized primarily through the government expenditure