

# L7. First Generation of Currency Crises Models

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# Motivation

- So far in the course: discussion of benefits of international capital flows;
- In practice: liberalisation process challenging;
- Numerous currency crises;
- Their character changing with the liberalisation deepening (+ financial innovation);
- Next 2 lectures: 2 generations of currency crises models.

# Historical Context

- Gold standard: liberalised capital flows;
- Great Depression  $\Rightarrow$  Bretton Woods: fixed exchange rates + restrictions on capital flows;
- 1970s: collapse of B-Ws (1st generation models);
- Followed by gradual change and liberalisation;
- 1980s: debt crisis in Latin America;
- 1992-93 EMS crisis (2nd generation);
- 1997-98: Asian, Russian, Latin American crises (3rd generation).

# 1st Generation Models

- Caused by inconsistent policies;
- Crisis not only possible, but inevitable;
- Based on fundamentals;
- Takes place even if agents fully rational;
- E.g. Krugman, 1979: CB wants to fix ER, but must also monetize government deficits.

# The Model

$$m_t - p_t = \phi y_t - \eta i_{t+1} \quad \dots \text{ Money demand}$$

$$p_t = e_t + p_t^* \quad \dots \text{ PPP}$$

$$i_{t+1} = i_{t+1}^* + E_t e_{t+1} - e_t \quad \dots \text{ UIP}$$

$$m_t - (e_t + p_t^*) = \phi y_t - \eta (i_{t+1}^* + E_t e_{t+1} - e_t)$$

$$\text{normalize } y_t = p_t^* = i_{t+1}^* = 0$$

$$m_t - e_t = -\eta (E_t e_{t+1} - e_t)$$

$$m_t - e_t = -\eta \dot{e}_t \quad \dots \text{ ass. perfect foresight, continuous time}$$

$$\dot{e}_t = 0 \Rightarrow \bar{m} = \bar{e} \quad \dots \text{ fixed ER regime}$$

# Central Bank's Behaviour

Assets	Liabilities
↓ FX reserves ( $e \cdot B_{F,t}$ )	Monetary Base ( $M0_t$ )
↑ Government bonds ( $B_{H,t}$ )	

**Assumption:** CB must increase holdings of government bonds (monetize deficits) at a rate  $\mu$

$$\frac{\dot{B}_{H,t}}{B_{H,t}} = \mu \quad \dots \text{Monetization of deficits}$$

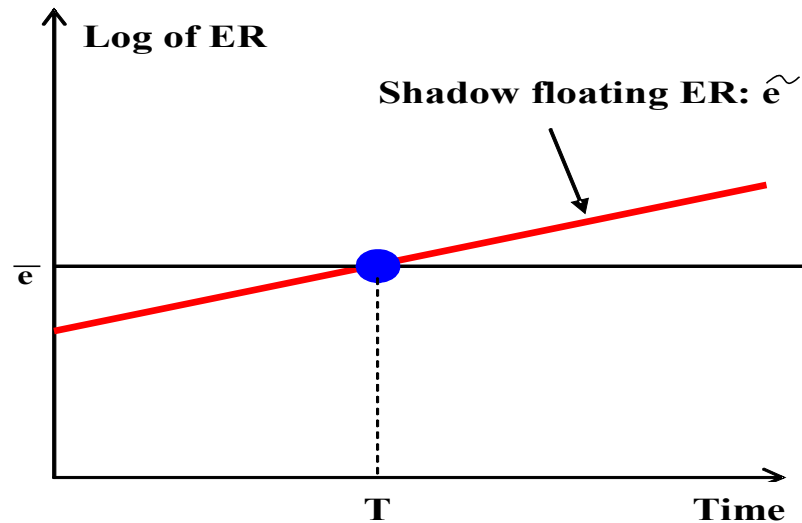
$$\dot{B}_{H,t} = -\bar{e} \dot{B}_{F,t} \quad \dots \text{Fixed ER regime } (\bar{m})$$

# Speculative Attack (i)

$$B_{F,t} \rightarrow 0; \quad m_t = b_{H,t}; \quad \dot{m}_t = \mu$$

$$m_t - e_t = -\eta \dot{m}_t = -\eta \mu$$

$$\tilde{e}_t = b_{H,t} + \eta \mu \quad \dots \text{Shadow ER}$$



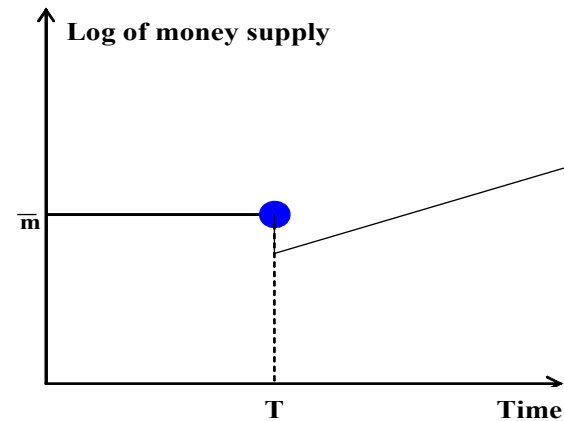
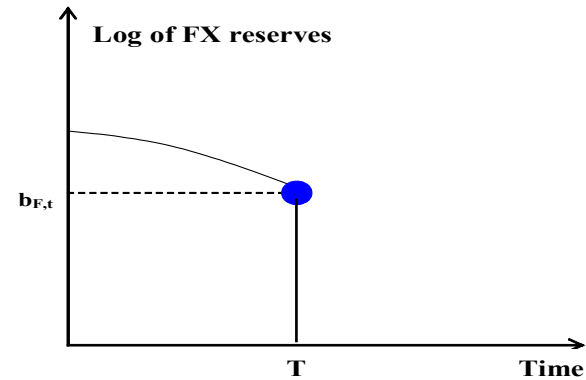
# Speculative Attack (ii)

$$b_{H,t} = b_{H,0} + \mu t$$

$$\tilde{e}_T = \bar{e}$$

$$\bar{e} = b_{H,0} + \mu T + \eta \mu$$

$$T = \frac{\bar{e} - b_{H,0} - \eta \mu}{\mu}$$





# Possible Weaknesses

- Fully rational people vs. mechanical gov't behaviour;
- CB could sterilize purchases of government bonds in the domestic money market (issuing its own bonds);
- Typically, inconsistent policy mix led to high overall money creation, CA deficit, FX reserves loss...;
- Not in line with crises during 1990s given the level of foreign reserves held by central banks.

# Possible Weaknesses

**Table 1: FX Reserves (in % of monetary base and total CB's liabilities)**

Country	Year	RE/MB	RE/TL	Country	Year	RE/MB	RE/TL
Finland	1992	95	79	Czech Rep.	1997	108	84
France	1992	116	80	Philippines	1997	120	55
Italy	1992	46	45	Indonesia	1997	162	82
Ireland	1992	147	94	South Korea	1997	110	46
Norway	1992	214	65	Malaysia	1997	100	76
Portugal	1992	137	96	Thailand	1997	215	119
Spain	1992	87	86	Greece	1997	127	44
Sweden	1992	112	54	Brazil	1998	92	35
UK	1992	109	63	Russia	1998	61	41
Mexico	1994	159	88	Slovak Rep.	1998	123	83

*Source: International Monetary Fund, own computations*

*Note: The data relate to the beginning of each year; RE = FX reserves; MB = monetary base (currency + bank reserves, as defined in the IMF's International Financial Statistics); TL = monetary base, foreign liabilities, liabilities to commercial banks and the government.*

# Summary

- 1st generation models respond to Bretton-Woods (and similar crises);
- Crises caused by unsustainable policies;
- Based on fundamentals;
- Crises are inevitable (unless policies are adjusted);
- But this is not in line with several of more recent crises;
- Next time: 2nd generation