L8. Second Generation of Currency Crises Models

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1st generation - Summary

- Crises caused by unsustainable policies;
- Based on fundamentals;
- Crises are unavoidable (unless policies are adjusted);
- But: crises are very hard to predict based on fundamentals;
- EMS crisis hit countries with large FX reserves;
- EMS crisis could be only partly linked to fundamentals (German unification), had a feature of self-fulfilling expectation.

Obstfeld Model (1994, 96)

- Historical context: Response to EMS crises (92-93);
- Policy assumptions: Central banks wants to stabilise inflation + achieve high output (dynamic inconsistency); fixed ER used to overcome inflationary bias (import price stability; like EMS for some EU countries); but defence against attacks costly - does not pay off;
- Type of crises: Self-fulfilling expectations (sunspot equilibria);.
- Policy implications: Avoid intermediate regimes.

Dynamic Inconsistency

Phillips Curve

$$y_t = y^* + (\pi_t - \pi_t^E) - z_t$$

Loss Function

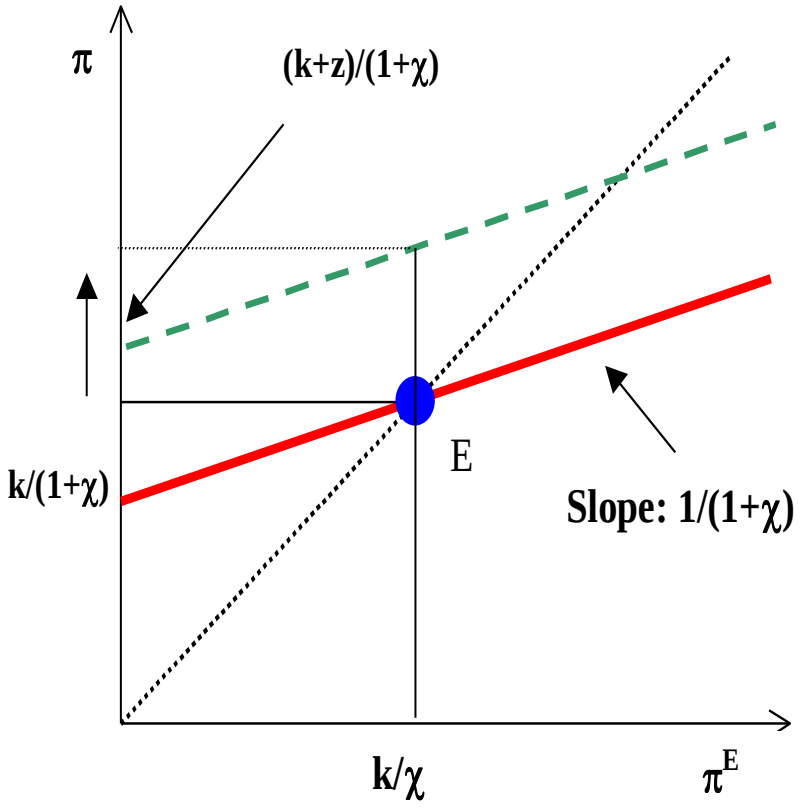
$$\Lambda_t = \chi \pi_t^{\,2} + [y_t - y^{**}]^2$$

Output Target

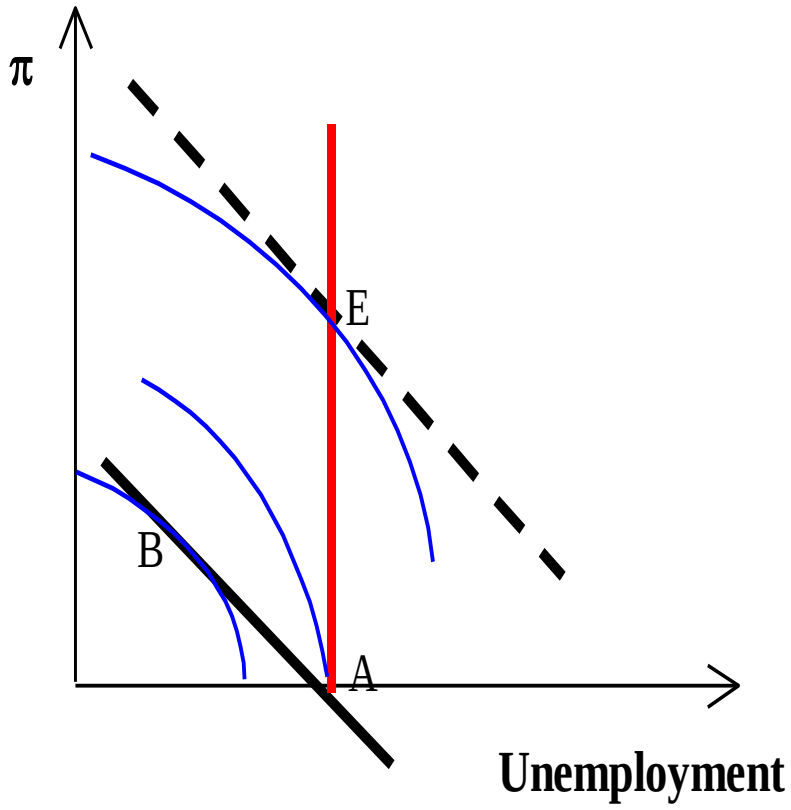
$$k \equiv y^{**} - y^* > 0$$

Reaction Function

$$\pi_t = \frac{\pi_t^E + k + z_t}{1 + \chi}$$



Graphical Illustration



- With zero inflation expectations,
  B is better than A;
- But B is not a long-run equilibrium: inflation accelerates and expectations shift upwards;
- Eventual outcome is E - worse than A;
- Optimal policy leads to sub-optimal outcome.

Fixed ER - loss function

Loss Function

$$\tilde{\Lambda}_t = \Lambda_t + C; \quad C = \bar{c} \quad \text{if devaluation}$$
$$= \underline{c} \quad \text{if revaluation}$$
$$= 0 \quad \text{otherwise}$$

Assumptions

$$\pi^* = 0; \quad \text{PPP(relative version)} \ldots \pi = 0 \text{ if ER fixed}$$

Loss Function (2)

$$\tilde{\Lambda}_t = \Lambda_t + C(\pi_t); \quad C(\pi_t) = \bar{c} \Leftrightarrow \pi_t > 0$$
$$= \underline{c} \Leftrightarrow \pi_t < 0$$
$$= 0 \Leftrightarrow \pi_t = 0$$

Fixed ER - policy choice

If ER fixed:

$$\Lambda_t^{fix} = \left[k + \pi_t^E + z_t\right]^2$$

If ER floated

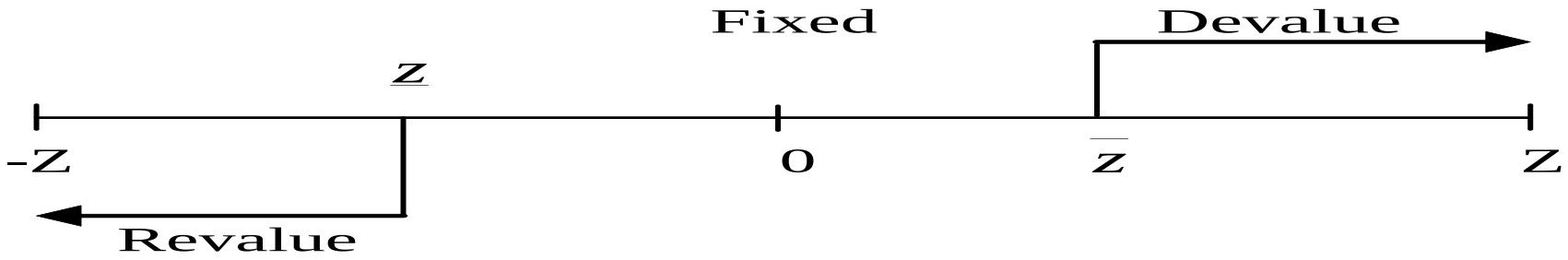
$$\tilde{\Lambda}_t^{float} = \Lambda_t^{float} + C(\pi_t); \qquad \Lambda_t^{float} = \frac{\chi}{1+\chi}\left[k + \pi_t^E + z_t\right]^2$$

Rational decision:

$$\Lambda_t^{fix} - \Lambda_t^{float} > \bar{c} \;\Leftrightarrow\; \frac{1}{1+\chi}\left[k + \pi_t^E + z_t\right]^2 > \bar{c} \quad \text{devaluation}$$

$$\Lambda_t^{fix} - \Lambda_t^{float} > \underline{c} \;\Leftrightarrow\; \frac{1}{1+\chi}\left[k + \pi_t^E + z_t\right]^2 > \underline{c} \quad \text{revaluation}$$

Fixed ER - critical shocks



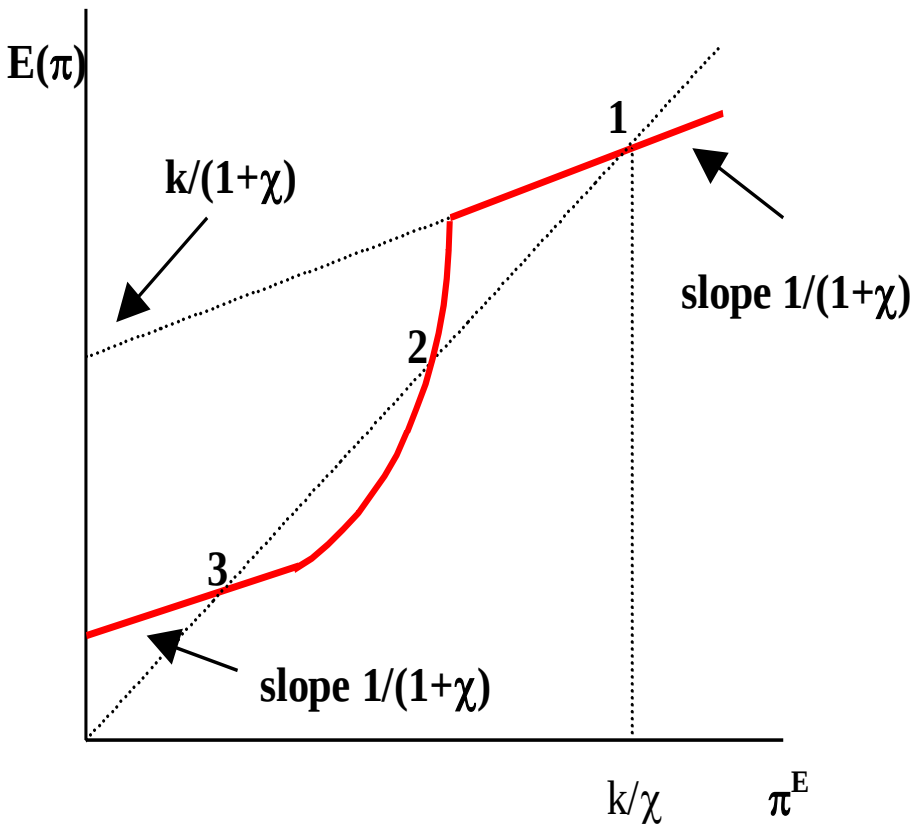
$$\underline{z}_t = -\sqrt{\underline{c}(1+\chi)} - k - \pi_t^E \qquad \bar{z}_t = \sqrt{\bar{c}(1+\chi)} - k - \pi_t^E$$

Rational expectations:

$$E(\pi_t) = E\{\pi_t / z_t < \underline{z}_t\} P\{z_t < \underline{z}_t\} + E\{\pi_t / z_t > \bar{z}_t\} P\{z_t > \bar{z}_t\}$$

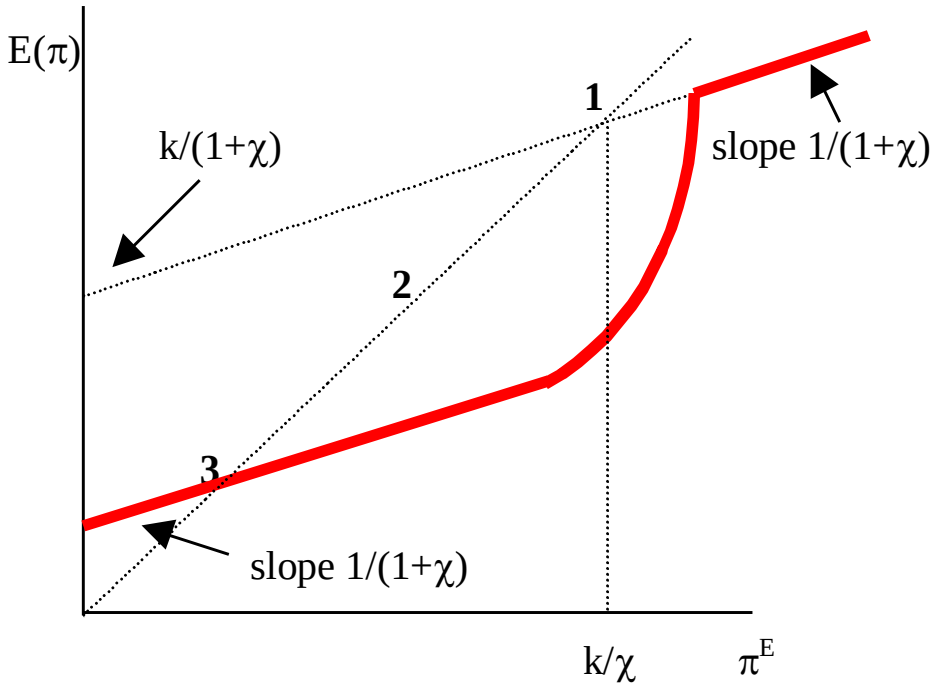
$$\pi_t^E = E(\pi_t)$$

Implications



- **Multiple equilibria** ⇒ changes in expectations may undermine fixed ER, because its defence is costly in terms of output;
- Basic problem: lack of CB credibility;
- Solution: Increase the credibility or avoid fixing (bi-polar view).

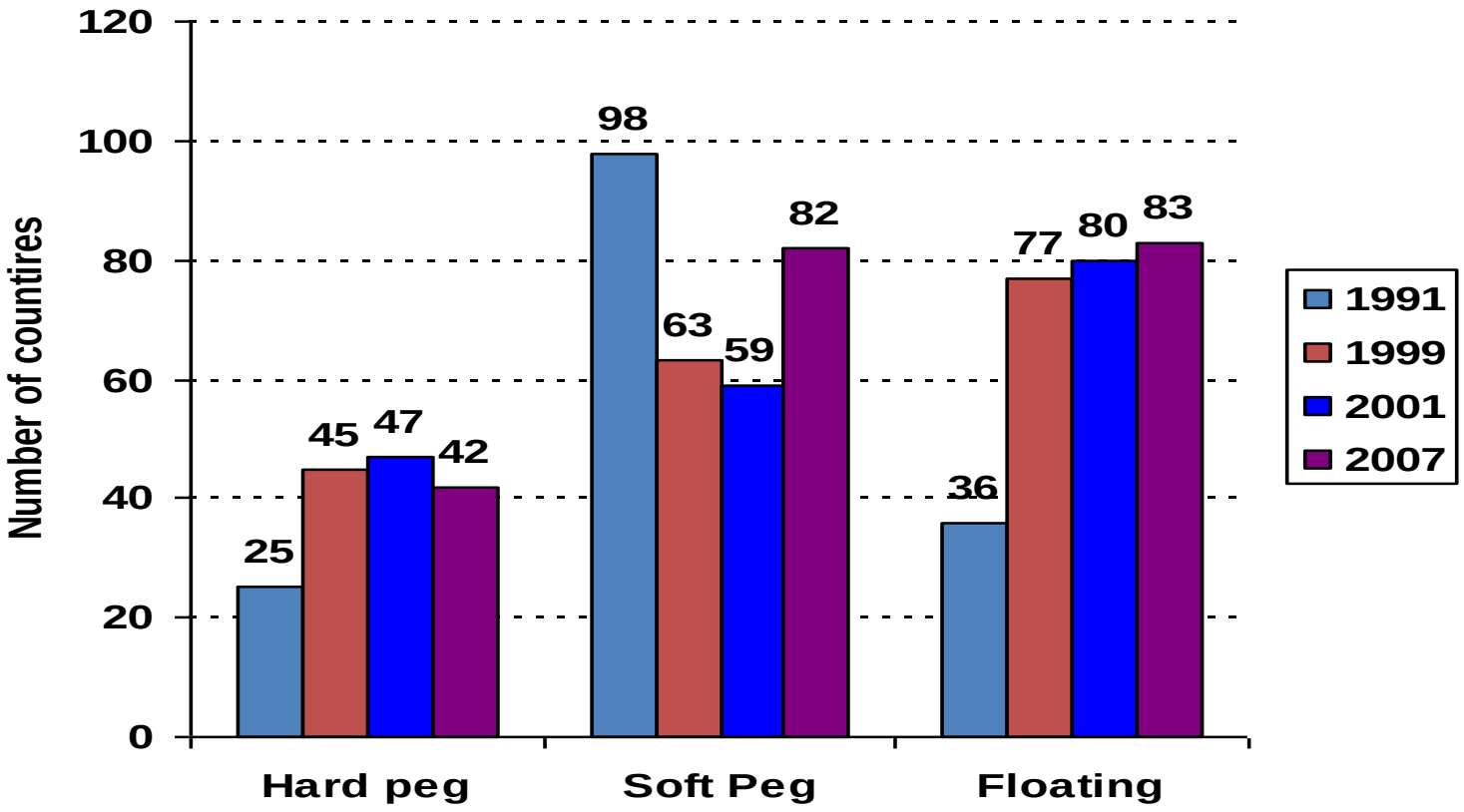
Hard pegs



$$\sqrt{\bar{c}(1+\chi)} - \frac{1+\chi}{\chi} k > Z$$

- **Solution I**: reduce *k* and/or increase χ (increase CB independence and credibility);
- **Solution II**: increase *c* (very strong commitment to fixing);
- **Har pegs**: currency boards, unilateral dollarisation, monetary unions.

Bipolar View



Note: A methodological change increased the number of soft pegs between 2001 and 2007 (reclassification of CFA Franc Zone, 14 countries)

Summary

- 2nd generation models respond to EMS crises (92-93);
- Fixed exchange rate regime to import low inflation;
- Crises caused by self-fulfilling expectations;
- Central bank gives up its defense to avoid recession;
- Policy implication: bi-polar view of ER regimes (but soft pegs still quite common).