Lecture 6: Models of Exchange Rate Crises

Exchange rate crises: ERM (UK and Italy) 1992, Mexico (1994), East Asia (1997-8)

Introduction

- Under fixed exchange rate system, currencies are prone to speculative attack. This means, unpredictably, the financial markets suddenly take the view that the current fixed exchange rate is unsustainable and begin to sell all their holdings of the currency.
- Once speculative attacks occur, the central bank either devalues, lets the currency float or defends the currency by raising interest rates or using the holdings of reserves to buy its own currency.

Models of exchange rate crises

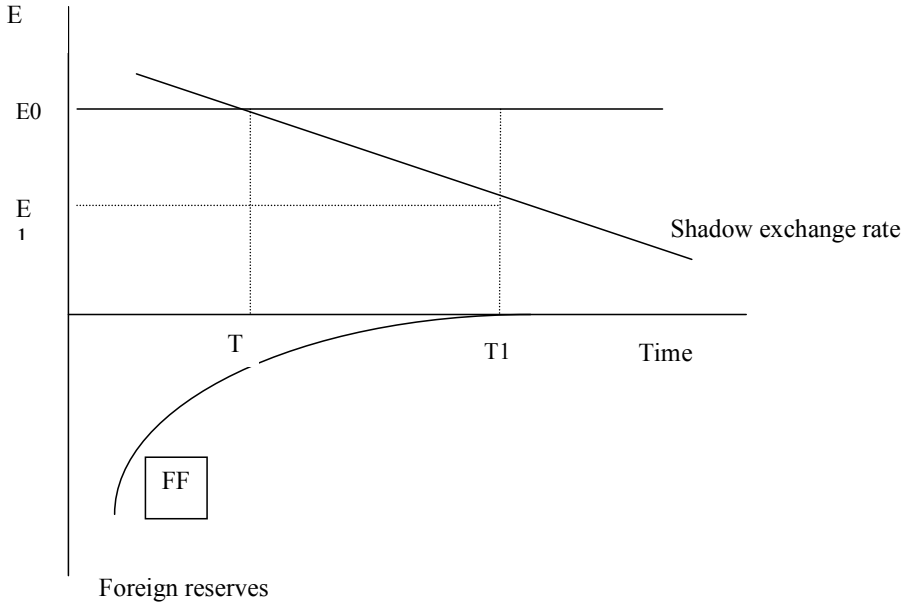
1) Fundamentals-based
   Example: Paul Krugman (1979), 'A model of balance-of-payments crises'. Journal of Money, Credit, and Banking 11, pp. 311-25.

- Assuming that the exchange rate is fixed at E0. The government forced the central bank to print money to finance its own deficit. An ever-increasing amount of M^s will put pressure on the currency to fall in value. The central bank has to use its holdings of reserves to buy its own currency on the international financial markets. Reserves are falling over time. Once it gets to zero, the fixed exchange rate has to be abandoned.
- Reserves are assumed to decline over time and predicted to run out at T1. Downward sloping exchange rate is the 'shadow floating exchange rate', the exchange rate that would prevail if the currency were to float. It is falling in value over time because of expansionary policy by the government and the central bank.
- Exchange rate crisis occurs when the country's reserves is exhausted – but when?
  - T1?
    If we wait till we get to T1, E0 will drop to E1. But financial markets are well-informed and would anticipate a fall in E, so *before* we actually get to T1, they would have sold the domestic currency already and reserves would have been exhausted.
  - Before T?
    If exchange rate is abandoned before T, E will appreciate. Because shadow floating exchange rate is higher than fixed exchange rate (E0), noone wants to sell domestic currency, therefore, there would be no speculative attacks.
  - At T?
    In fact, at T, if reserves becomes 0 and E is abandoned, E will be at E0 for a while, there would be no gains or losses holding the domestic currency. At T, speculative attacks will happen and drives reserves to 0. E is now expected to fall if the government and the central bank still keep its expansionary policy.
- Crisis is caused by the fundamental flaws, whereby the government is pursuing a policy inconsistent with the maintenance of a fixed exchange rate.

2) Self-fulfilled
Example: Maurice Obstfeld (1986), 'Rational and self-fulfilling balance-of-payments crises'. American Economic Review 76 (1), pp. 72-81

- There is a strong self-fulfilling element to the crisis, while the fundamentals are not as important. Initially, domestic money supply is at M1, price level P1 and income level Y1. Y1 is the long-run equilibrium output. Our current interest rate is R1, and exchange rate is E1. And assuming initially that E^e_{t+1} = E1. The economy is in equilibrium at '1'.
- Under floating exchange rate, now if M^s increases to M2, price level will increase to P2 and E^e_{t+1} = E2, we have another equilibrium '2'.
- Assuming that we are at '1' and the government operates a fixed exchange rate of E1. Then, if for whatever reasons, the financial markets believe that the currency will be devalued to E2. E^e_{t+1} is now = E2. Given price P1, the government needs to contract the M^s from M1 to M3 to defend the currency, interest rates will increase to R3.
- For political reasons, the government has a maximum interest rate it can tolerate. The government will defend the exchange rate by raising the interest rate up to that maximum, but if it would have to raise interest rates above this maximum to defend the currency, the government would devalue.
- If this maximum interest rate is R*1 > R3, speculative attack would be repulsed and the fixed exchange rate maintained. If the maximum interest rate is R*2 < R3, the speculative attack would force the government to devalue and raise M^s and we end up at equilibrium '2'.
- There would be no devaluation if speculators did not expect one. Expectation of devaluation is self-fulfilled.

Fundamentals-based



Self-fulfilled