Fragility of Incomplete Monetary Unions

Incomplete monetary unions

- Fixed exchange-rate regimes that fall short of a full monetary union – but they substantially constrain the ability of the national government to implement independent monetary policy

  In theory, a fixed exchange-rate regime delivers many of the benefits of a full monetary union
- However, fixed exchange-rate regimes are often abandoned sooner or later, often after currency crises and/or speculative attacks
  - Bretton-Woods collapse in 1973
  - ERM crisis in 1993
  - East-Asian currency crises in 1997-98
  - Argentina's currency board (1991-2002)

Reasons for Fragility of fixed exchange-rate regime

1. Lack of credibility
2. Asymmetric division of power between the center (anchor) country and the periphery

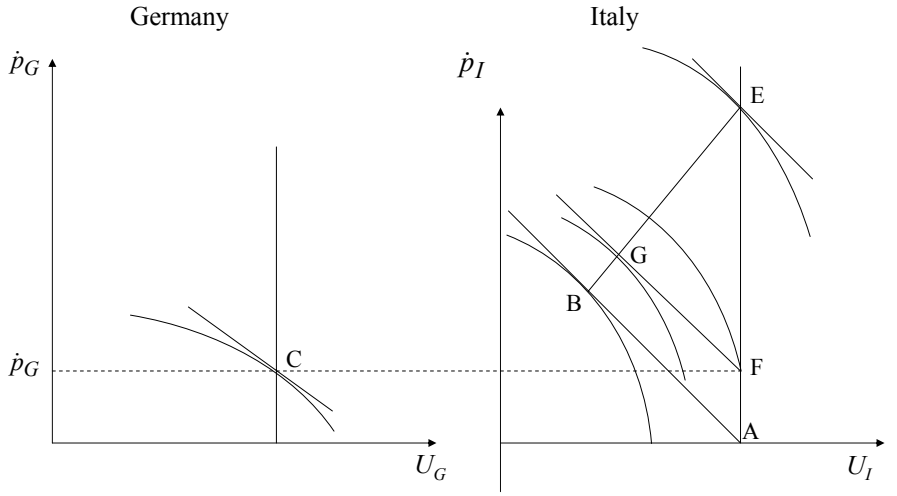
Credibility of fixed exchange-rate regimes

- Fixed exchange-rate regime: promise to keep the exchange rate fixed today and in the future
- Circumstances may arise in which the fixed exchange-rate arrangement ceases to be seen as consistent with the economic welfare of the country
- In that case the monetary authority will have an incentive to renege on its promise
- Economic agents will suspect this and will attack the currency
- A speculative crisis arises

Reputation and credibility in the Barro-Gordon model

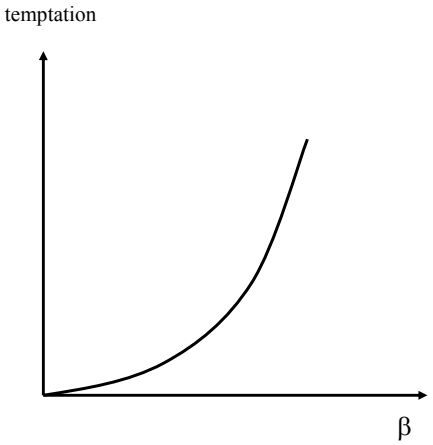
- Italy can 'borrow reputation' by pegging its currency to German currency
- Italian authorities have an incentive to cheat so as to reduce unemployment
- Exchange-rate peg will not be credible
- The steeper is the indifference curve (i.e. the greater the weight attached to stabilizing employment or output), the greater is the temptation to generate surprise inflation
- The weight the central bank attaches to stabilizing output is denoted by β.

Fixing exchange rate is not credible



Fixing the exchange rate of the lira with the mark is not credible, because Italian authorities have an incentive to create surprise inflation (devaluation)

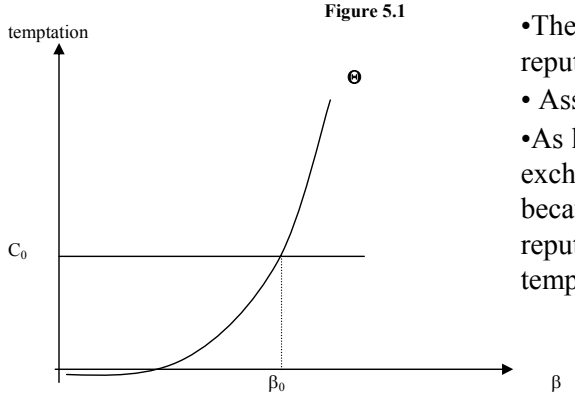
Temptation to devalue and β



•Temptation: the benefit from devaluing, given that agents expect that the central bank will never renege on its promise.
•When $\beta>0$ the central bank is tempted to devalue,
•Temptation increases with β
•Regime in which the central bank fixes the exchange rate and then gives a non-zero weight to a domestic objective will not be credible.
•Rational agents will test the central bank and attack its stock of international reserves.
•Fixing the exchange rate is not credible unless $\beta=0$.

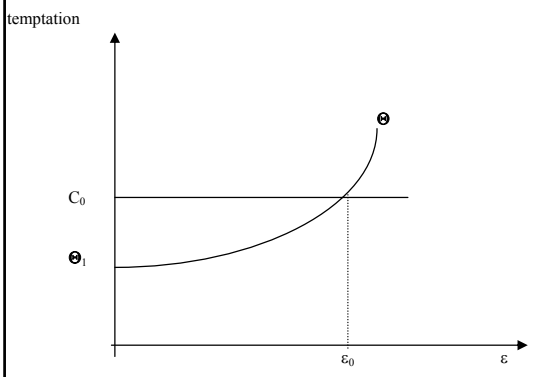
Credibility and cost of devaluation

Figure 5.1



•Fixed exchange-rate regime will be credible if devaluation is costly.
•The cost is loss of reputation.
• Assume the cost is fixed C_0
•As long as $\beta< \beta_0$ the fixed exchange rate is credible, because the cost of loosing reputation exceeds the temptation to devalue.

Temptation and shocks



- ε is a shock.
- When ε>0, Phillips curve shifts upwards, creating unemployment.
- The temptation to devalue increases with the size of the shock, for any value of β
- As the shock becomes larger, the cost in terms of lost employment (or output) rises, increasing temptation
- When the shock is zero (ε=0) temptation is Θ_1.
- If this is smaller than C_0, the fixed exchange is credible.
- When ε> ε_0, temptation exceeds cost of devaluation; fixed exchange rate looses credibility

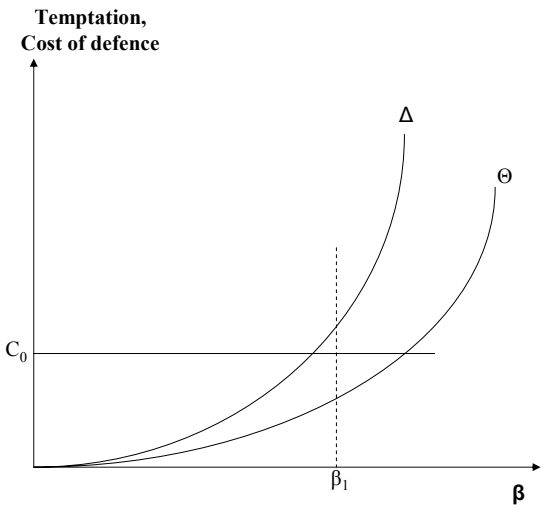
'First generation' models

- Krugman (1979)
- As time goes by, the probability that some shock exceeds ε_0 is positive.
- A sufficiently large shock will result in the fixed exchange rate being abandoned.
- Only if the central bank can make it clear that it does not pursue any domestic objectives (β=0) can this problem be avoided.
- Thus a crisis is inevitable if the central bank pursues domestic objectives that conflict with the exchange rate commitment.

‘Second generation’ models

- Obstfeld (1986)
- A country that attaches a low weight to domestic objectives and thus has a credible fixed exchange rate can still get into trouble.
- Assume that for some reason speculators expect the currency to be devalued.
- If the authorities want to maintain the fixed exchange rate, they have to defend it.
- Such a defense is costly.
- The costs of defending the peg (excessively high interest rates) add to the temptation to devalue
- The temptation to devalue changes depending on expectations.

- We derive a second temptation curve (Δ)
- Temptation to devalue when the authorities face expectations that a devaluation will occur.
- Δ increases with β, i.e. the more the authorities care about domestic objectives the greater is the cost of defense and thus temptation
- Temptation curve Δ is located above Θ.
  - Θ is the temptation to generate surprise inflation to cut unemployment.
  - Δ includes also the temptation to avoid the cost of defending the peg.
  - It is assumed that the welfare gain from devaluing when under attack is greater than otherwise.



Assume $\beta=\beta_1$

There are two possible expectations:

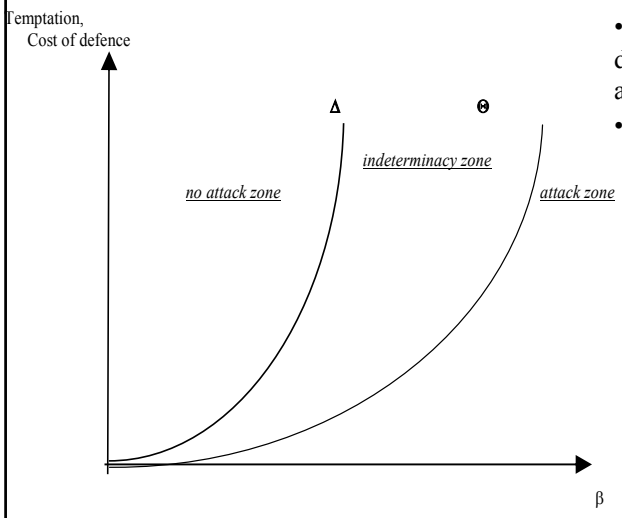
A) Speculators do not expect a devaluation

- The temptation of the central bank to devalue, **Θ,** is lower than the cost of a devaluation
- The central bank has no incentive to devalue.

B) Speculators expect a devaluation

- The relevant temptation curve is **Δ.**
- The temptation to devalue is larger than the cost of a devaluation.
- The central bank has an incentive to devalue.

- There are therefore two possible equilibria that depend solely on the state of expectations.
  - When agents do not expect a devaluation, the authorities have no incentive to devalue so that the exchange rate remains fixed.
  - When speculators expect a devaluation, the ensuing speculative attack creates an incentive for the authorities to devalue, and there will be a devaluation.
  - In both cases, expectations are rational → expectations of devaluation are self-fulfilling.



•Whether or not crises occur depends on combinations of β and C.

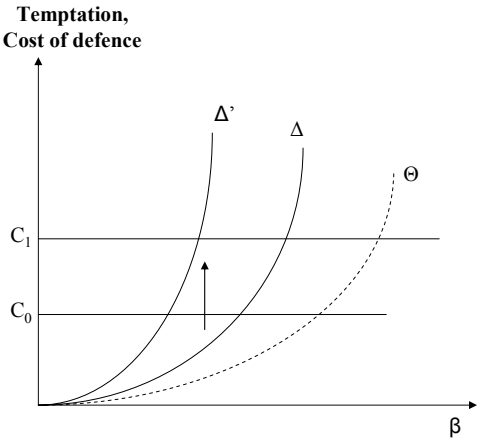
•Three situations can occur:

– when β is low and C is high, we are in the no-attack zone.

– when β is high and C is low, we are in the attack zone.

– there is intermediate zone (indeterminacy zone) between the two temptation curves.

Policy issues: Capital mobility



•When capital mobility increases:

•the temptation curve Δ shifts upwards (from Δ to Δ')

•This is because, when capital is highly mobile, devaluation expectations quickly translate into a large capital outflow, necessitating high interest rates.

•High interest rates in turn slow down growth and raise government expenditure.

•No-attack zone shrinks, indeterminacy zone increases.

•Contagion: a crisis in one country in the region can spread to other countries (self-fulfilling prophecy).

•Fixed exchange-rate regimes become more fragile

How to avoid speculative attacks?

- Keep the economy within the no attack zone:
  1)Increase cost of devaluation ($C_0 \rightarrow C_1$),
  E.g.: Maastricht fixed exchange rate condition as entry requirement for EMU; currency boards
  2) Reduce weight given to domestic objective (appoint conservative central banker).
- Re-impose capital controls,
- Form a monetary union, or
- Abandon the fixed exchange-rate regime
  →Hollowing out and movement towards the extremes: monetary unification or floating exchange rates.

The n-1 problem in pegged exchange rate systems

- In a system of *n* countries, there are only *n* - 1 independent exchange rates.
- *n* - 1 monetary authorities have to adjust their monetary policy instrument so as to maintain a fixed exchange rate.
- One monetary authority is free to set its monetary policy independently.
- Who will be the central bank that uses this degree of freedom?
- Potential for conflict

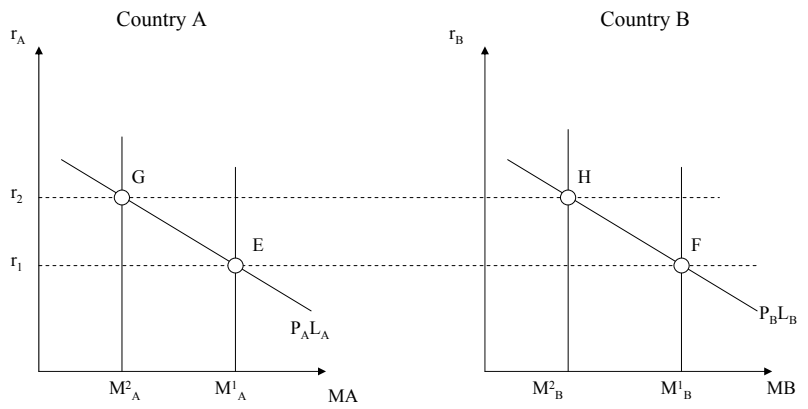
Two-country model of the money market

- **country A**
  - money demand: $M_{AD} = P_A L_A(Y_A , r_A)$
  - money supply: $M_{SA} = R_A + D_A$
    - P_A price level of country A, Y_A output, r_A, interest rate , R_A international reserves, D_A credit to the domestic, sector
- **country B**
  - money demand: $M_{BD} = P_B L_B(Y_B , r_B)$
  - money supply: $M_{SB} = R_B + D_B$

- We assume perfect mobility of capital
- The (open) interest parity condition holds:

  $r_A = r_B + \mu$
  - μ is the expected rate of depreciation of the currency of country A.
- In a fully credible fixed exchange rate system: $\mu = 0$ and $r_A = r_B$.

The n-1 problem in a two-country monetary model



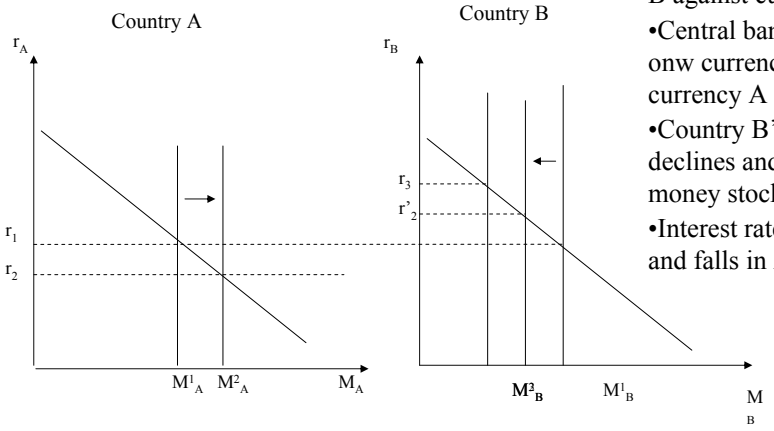
•Money demand: downward-sloping curves
•Money supply: M^1_A and M^1_B
•Money market equilibrium where demand and supply intersect (points *E* and *F*).
•The interest parity condition holds
•Fundamental indeterminacy: Any combination of interest rate and money stock is possible, if both countries implement it.

Solutions to indeterminacy

1. The asymmetric (hegemonic) solution
   - one country takes a leadership role by anchoring the money stock for the entire system.
   - Example: Country A is leader and chooses point G; then country B has to take point H
2. The symmetric (co-operative) solution
   - Countries decide jointly about the level of their money stocks and interest rates

- The mechanics of interventions in the foreign-exchange market are different in the symmetric and asymmetric system.

Intervention in a symmetric system



- Currency B is expected to devalue
- Speculators sell currency B against currency A
- Central bank B buys its onw currency and sells currency A
- Country B's money stock declines and country A's money stock increases
- Interest rate rises in B and falls in A

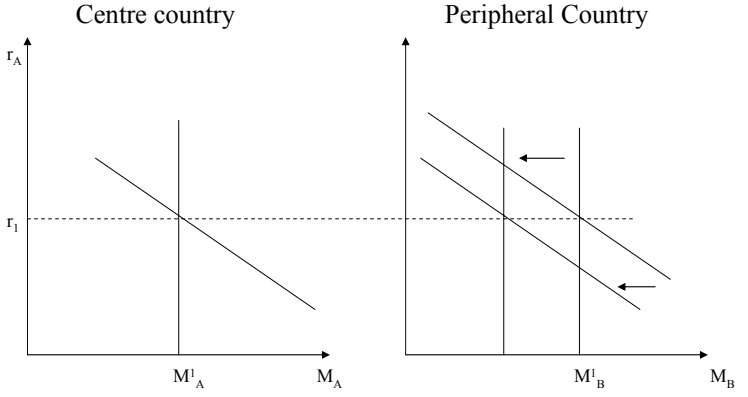
Asymmetric intervention

- Country B does all the adjustment
  - Money stock declines to M^3_B
  - Interest rate increases to r_3
- Country A uses sterilization to keep money stock and interest rate unchanged
  - Sterilization offsets the effect of foreign-exchange operations in the domestic market
- The Bretton-Woods system and the EMS were asymmetric
  - When speculative crisis arose, the leading country (the US and Germany, respectively) was generally unwilling to allow its money stock to increase and its interest rate to decline.

Symmetric and asymmetric systems compared

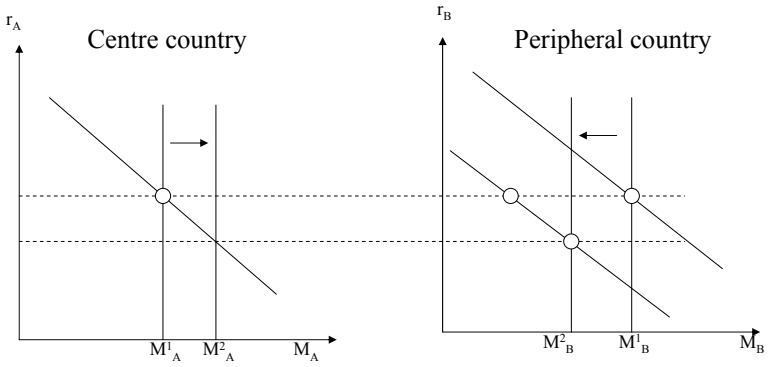
- Advantages of the asymmetric system
  - Imposes discipline on the peripheral country.
- Disadvantages of the asymmetric system
  - Business cycles in the peripheral country are likely to be made more intense by the pro-cyclical movements of the money stock of the periphery.

Disadvantage of asymmetric system: recession in periphery



Money demand in periphery declines; since centre country keeps interest rate fixed, money supply in periphery must decline (b/c of interest rate parity) → monetary policy is pro-cyclical, aggravating the recession; overall money stock in the system falls → business cycle becomes more volatile in the periphery country

Recession in peripheral country in the symmetric case



In this system, central banks cooperate; peripheral country reduces its money stock while centre country increases it; business cycles are less volatile; total money stock in system is unchanged

How to measure the credibility of a fixed exchange rate regime?

- In efficient markets the forward exchange rate reflects the expectations about the future spot rate.
- Thus, the one-year forward rate gives information about the expectations market participants have concerning the spot exchange rate in one year.

Conclusion

- Incomplete monetary unions lack credibility and may become targets of speculative attacks.
- Increasing capital mobility increases the fragility of fixed exchange-rate regimes.
- This has put many countries in the uncomfortable dilemma that they have to choose between either more exchange rate flexibility or a monetary union.
- Fixing exchange rates in Europe can be effective as a transitory device towards full monetary union, but is unlikely to work as a long-term arrangement