

Incomplete monetary
unions.

An interesting parallel

Incomplete monetary unions

The definition includes two types, quite different but with similar problems:

1. Monetary Unions without fiscal union
2. Exchange rate arrangements whereby the authorities fix their exchange rates.

Type 2: There are several examples in history of agreements of this type: Bretton Woods, **EMS**, pegging one currency to another (e.g. Argentine peso to the dollar between 1991 and 2001)

Exchange rate agreements are usually fragile and enter into crisis sooner or later

The promise of the authorities to maintain a fixed exchange rate is at one point reneged.

Type 1: perhaps the only example is the EMU

Where does the fragility of incomplete monetary unions come from?

Two problems:

- Credibility
- Liquidity

Credibility

- When authorities announce a fixed exchange rate, they make a promise for the future.
- The doubt is, as with any promise, whether it can be maintained
- Circumstances could change and make the promise incompatible with the well-being of the country.
- In such circumstances, the authorities will have an incentive to renege on the promise.
- Private individuals suspect it and attack the currency
- A speculative crisis arises

Liquidity

- A country's official foreign exchange reserves are limited.
- The defence of the fixed exchange rate, i.e. the promise to convert domestic currency into foreign currency at the fixed exchange rate, may not be guaranteed
- Investors know this and worry when reserves dwindle

Credibility and Liquidity interact

- Limited stock of foreign exchange reserves reduces credibility →
- Reduced credibility induces investors to sell the national currency →
- The central bank is then forced to sell the foreign currency (to keep the exchange rate at the announced level) further reducing reserves →
- Credibility is reduced even more

Interest rate parity

- Domestic interest rate must match foreign interest rate + devaluation expectations
- The uncovered parity of interest rates makes the equilibrium of capital movements very vulnerable and can strongly influence monetary policy
- Monetary policy, in order to avoid capital outflows in the face of high devaluation expectations, is forced to increase the interest rate to very high levels.

Interest rate parity

- Let us start from a simple example
- Assume you have € 2000 to invest in bonds. Choose between: bonds denominated in USD or the same type of bonds but denominated in EUR.
- Assumptions: €2000, $i_{\text{€}} = i_{\text{\$}} = 0.05$, $\text{\$/€}$ Exchange rate = 1.2
- Is there a difference in the expected gain between investing in dollars or in euros?

- Invest in EUR: $2000 * 1.05 = 2100$ €
- Invest in USD: $2000 * 1.2 = 2400$ \$
- $2400 * 1.05 = 2520$ \$, which amounts to $2520 / 1.2 = 2100$ €

→ No difference.

- Which implicit assumption did we make?

- Let $E(t+1)=1 \rightarrow$ EUR depreciates
- USD investment will give a total return of 2520 EUR
 $\rightarrow$ extra gain $(2520-2100)/2100=0.2$ or 20%

How much would the interest rate on EUR denominated bond increase for the investor to get the same gain?

Approximately the interest rate increase that is necessary to obtain the same gain if the investment were in EUR-denominated bonds is 20%

$$2000 * (1 + 0.05 + 0.21) = 2520$$

Rule

On each EUR invested in EUR denominated bonds:
 $(1 + r)$

Gain in EUR on each EUR invested in USD denominated bonds:
 $E_t(1 + r^*) / E_{t+1}$

No arbitrage condition

The two yields must be equal, i.e. no arbitrage implies no possible gain in buying and selling the same asset in different markets

$$\frac{E_{t+1}^e}{E_t}(1+r) = (1+r^*)$$

$$\left(\frac{E_{t+1}^e}{E_t} - 1 + 1\right)(1+r) = (1+r^*)$$

$$\left(\frac{E_{t+1}^e - E_t}{E_t} + 1\right)(1+r) = (1+r^*)$$

$$(\dot{E}_{t+1}^e + 1)(1+r) = (1+r^*)$$

$$(\dot{E}_{t+1}^e + E_{t+1}^e r + 1 + r) = (1+r^*)$$

$$\text{Let } \dot{E}_{t+1}^e r \approx 0$$

$$(\dot{E}_{t+1}^e + 1 + r) = (1+r^*)$$

$$\dot{E}_{t+1}^e = r^* - r$$

Note:

The interest rate parity holds for:

- equal bonds (assets)
- free capital movement

Note: the interest rate parity can make it very costly to avoid capital outflows

Uncovered vs covered interest rate parity

Uncovered interest rate parity (our example)

$$\frac{E_{t+1}^e}{E_t} (1 + r) = (1 + r^*)$$

Covered interest rate parity

$$\frac{F}{S} (1 + r) = (1 + r^*)$$

F = forward exchange rate

S = spot exchange rate

In this case, the no arbitrage condition is satisfied using a forward contract that hedges the investor against the foreign exchange rate risk

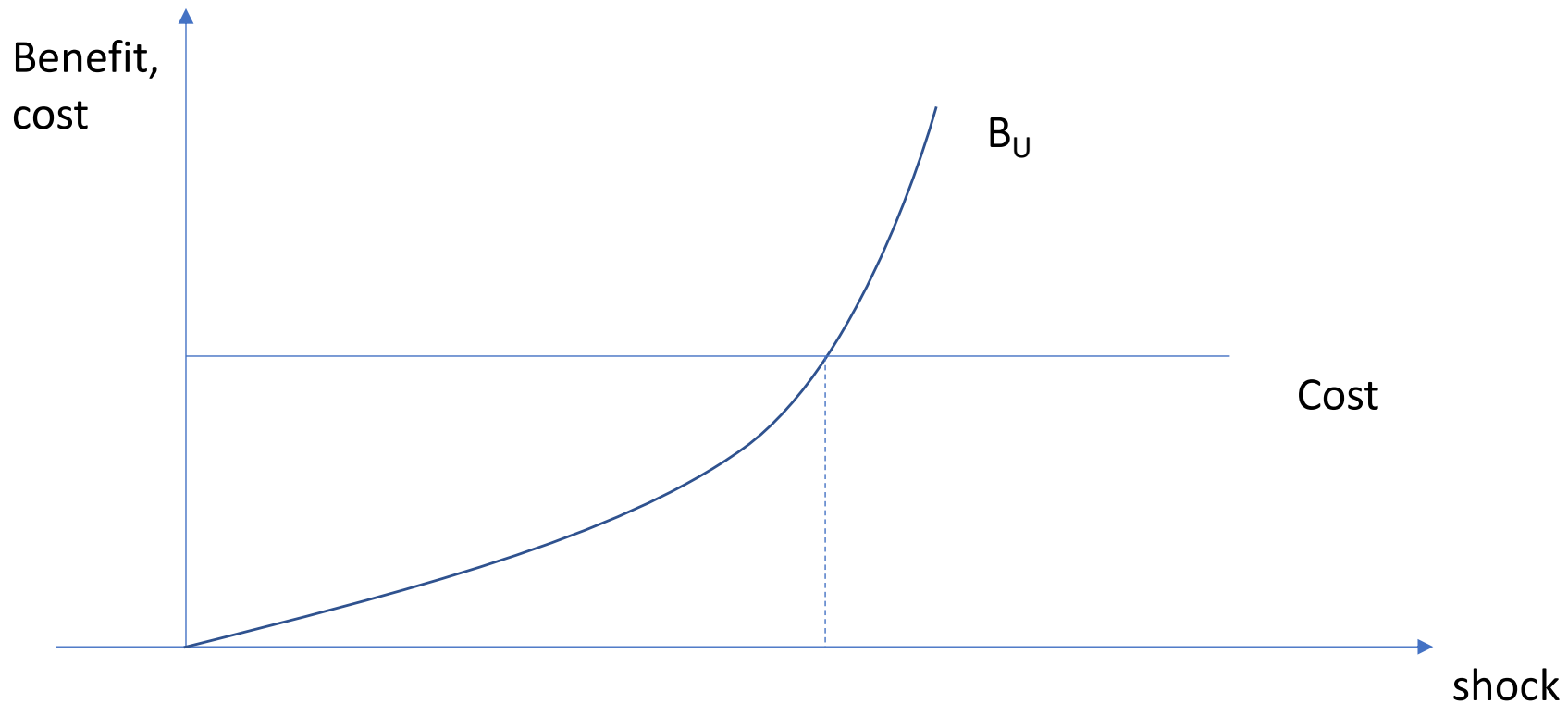
Example: Yield spreads between ten-year bonds Italy-
Germany (basis points)

	Marzo 1996 In valuta nazionale	Marzo 1996 In DM	Agosto1999 In euro	Settembre 2004 In euro
ITALIA	444	81	29	17

Back to the credibility of exchange rate agreements (incomplete monetary union)

Graphical analysis using a known model.

Costs and benefit of devaluation



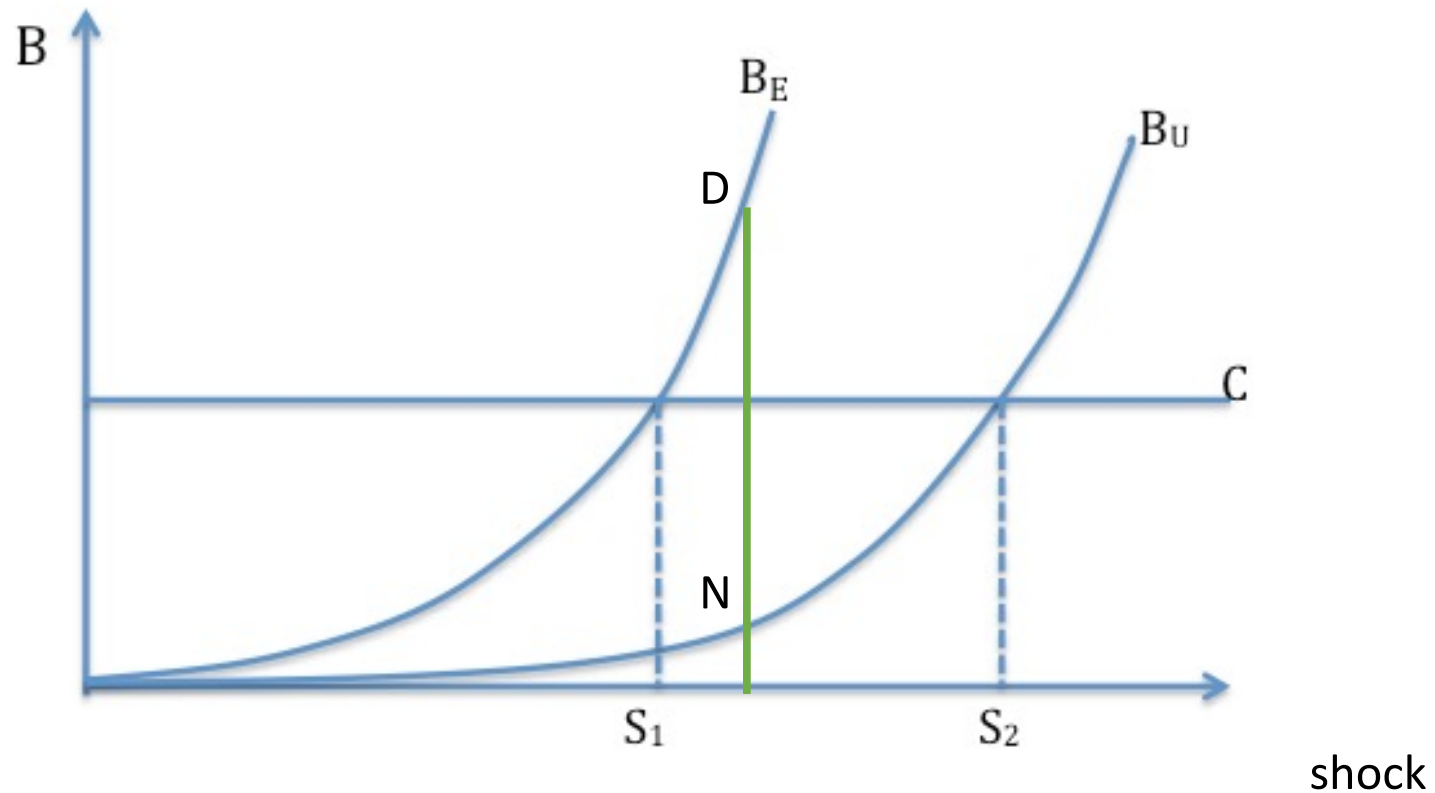
Benefit or temptation of devaluation rises with the magnitude of the (balance of payment) shock

The role of financial markets' expectations

- When investors expect a devaluation, they will sell the currency and currency-denominated financial assets.
- If capital movement are free, because of interest rate parity, the interest rate must increase.
- This raises the government costs of debt and reduces investments, hence domestic demand restrictive policy. Thus, devaluation becomes more attractive.
- For every shock, the benefits of devaluation will be higher than if devaluation was not anticipated

Cost and benefit of default when the role of financial markets is accounted for

Cost and benefits of devaluation



How to cope with this fragility?

- Eliminating the root of the problem of fixed exchange rates
 - moving towards monetary unions where there is no exchange rate (see EMS to EMU decision).
 - Allow exchange rates to move → flexible exchange rates
- However, polarization (completely fixed or flexible exchange rates) does not enjoy a generalized consensus.

Other alternatives?

- Controls on capital movements
 - In Europe until 1991
 - Some European countries temporarily after the collapse of the EMS
 - In China
- But financial and commercial integration requires freedom of capital
- Increase the cost of reneging on commitment
 - Interesting: Maastricht
- Constitutionally defined parity. E.g., currency boards (each issue of national currency corresponds to the same issue of currency to which it is pegged)

Conclusions

- Intrinsic fragility of Incomplete MU
- Two types of Incomplete MU:
 - Fixed exchange rate
 - Eurozone
- Doubts may arise about the credibility of the commitment...
 - fixed exchange rate or debt repayment
- ...due to insufficient liquidity
 - Foreign reserves or liquidity in national currency
- Common fragility:
 - Lack of credibility leads to self-fulfilling expectations which in turn lead the country to devaluation or default
 - Sustainability problem of Incomplete MU and the Eurozone
- The same type of modelling can be applied to both cases