Issues in International Finance

Exchange rate regimes II: Fixed fx systems

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Roadmap

- Working on...
  - Return to the fixed vs. flexible debate
  - The gold standard, Bretton Woods, ERM
  - Exchange rate crises / models

Fixed exchange rate systems

- Have been considering *unilateral* pegs
  - Argentina pegs to dollar
  - Denmark pegs to the euro
- In a unilateral peg, the center country (US, Euro) has policy discretion but the pegging country does not
- An alternative is the *fixed exchange rate system*
  - A set of countries ($i = 1, \ldots, N-1$) fix their currency to a center country (the N-th country)
  - The N-th country provides the *reserve currency*
  - Bretton Woods system: U.S. dollar is reserve
  - ERM system: German mark is reserve

Fixed exchange rate systems

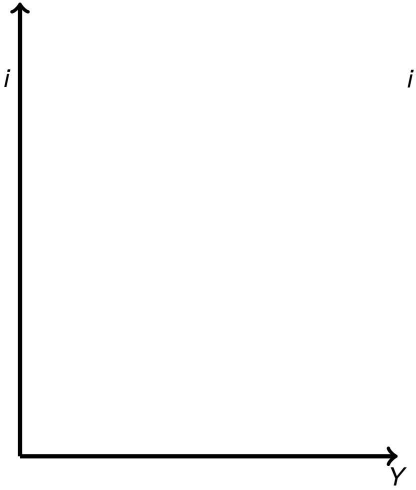
- The fixed fx system still has the N-th currency problem. The center country has policy autonomy and the other countries do not.
- In multilateral fx systems, there is some notion of *policy cooperation*
  - The center country considers conditions in other countries when setting its policy
  - The IMF was created to facilitate cooperation in Bretton Woods
- Consider two types of cooperation
  1. Interest rate adjustments
  2. Exchange rate adjustments

Interest rate adjustments

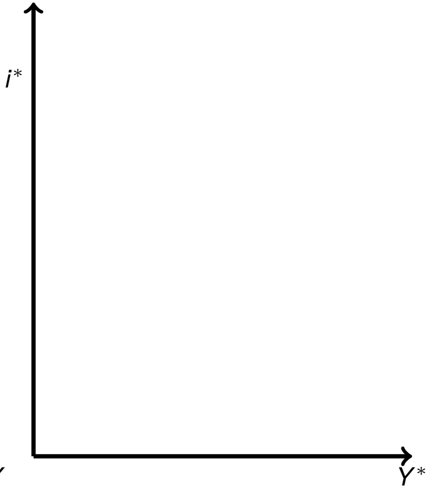
- Suppose home (fringe country) is in a recession and the foreign (center country) is not
- The non-cooperative solution is that the center country keeps interest rate where it wants it and the home country suffers a recession
- The cooperative solution is a decrease in the foreign interest rate
- How does this work?

The cooperative solution

home: non center



foreign: center



Interest rate adjustments

- Suppose home (non center country) is in a recession and the foreign (center country) is not
- The non-cooperative solution is that the center country keeps interest rate where it wants it and the home country suffers a recession
- The cooperative solution is a decrease in the foreign interest rate
  - Home is not in as deep a recession
  - Foreign has higher income that it ideal (risking inflation, bubbles...)
  - The burden of the shock in the home country is shared

Cooperation

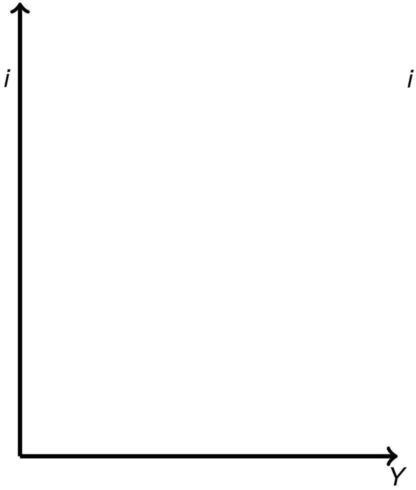
- The cooperative solution requires some pain in both countries
- The benefit of having a fixed rate has to outweigh this
- The theory is that sometimes you need help, sometimes others need help
  - Works like an insurance contract
  - You suffer today to help another country
  - Other countries “pay back” when your country needs it
  - The benefits are long term (smoother income, more trade), but the pain is short term
  - Politicians tend to be short-term thinkers
- Fixed fx systems fall apart when cooperation cannot be sustained

Exchange rate adjustments

- Consider two countries that are both non center
- Both countries peg to the dollar
- Suppose home is in a recession and the foreign is not
- The cooperative solution is to let home devalue its currency: $\uparrow E_{H/\$}$
- Assume change is unforseen until announced and permanent: $\uparrow E^e_{H/\$}$
- How does this work?

The cooperative solution

home: non center



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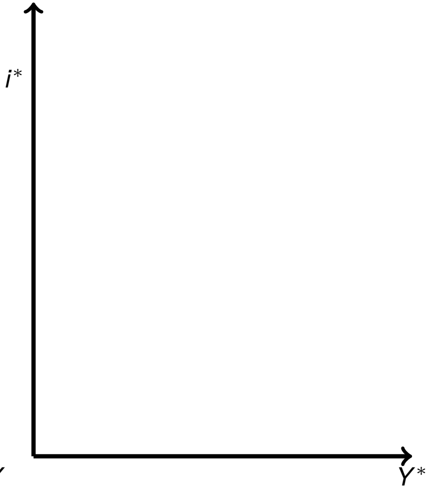

Exchange rate adjustments

- Consider two countries that are both non center
- Both countries peg to the dollar
- Suppose home is in a recession and the foreign is not
- The cooperative solution is to let home devalue its currency: $\uparrow E_{H/\$}$
- Assume change is unforseen until announced and permanent: $\uparrow E^{e}_{H/\$}$
  - Home is not in as deep a recession
  - Foreign is in a small recession
  - The burden of the shock in the home country is shared

Exchange rate adjustments

- A devaluation is cooperative if the other parties in the system agree to it
    - The other countries are agreeing to some recessionary pressure
    - This is potentially worse than unwanted stimulus
- When devaluations are not agreed upon, the devaluation is known as a *beggar-thy-neighbor* policy
    - Devaluation makes other countries worse off, without their permission
    - Can lead to retaliation, other countries devalue, too
    - If exchange rates keep changing, not really a fixed rate anymore…
    - This behavior is not possible with the Euro

Pegging to a commodity

- Fixed exchange rate systems suffer from asymmetric effects
- Commodity based pegs avoid this problem
- To see how, consider the gold standard
  - Gold and money are freely convertible
  - A country's currency is priced against gold
  - The money supply in a country is the value of gold + currency held outside of the central bank
  - No restrictions on gold imports/exports

The gold standard

- $\bar{P}^{uk}$ is British pounds per ounce of gold
- $\bar{P}^{fr}$ is French francs per ounce of gold
- The *par exchange rate* is

$$E^{par}_{F/£} = \frac{\bar{P}^{fr}}{\bar{P}^{uk}}$$

- Arbitrage keeps the actual exchange rate close to the par exchange rate
- As long as $\bar{P}$ doesn't change, exchange rate is mostly fixed
- How does this work?

Arbitrage in a gold standard

- Suppose the actual exchange rate was: $E_{F/£} < E^{par}_{F/£} = \frac{\bar{P}^{fr}}{\bar{P}^{uk}}$
- What is the arbitrage?
- The pound is too cheap compared to the franc:
  1. Change 1 oz gold for $\bar{P}^{fr}$ francs at Banque de France
  2. Change $\bar{P}^{fr}$ francs for $\frac{\bar{P}^{fr}}{E_{F/£}}$ pounds in the fx market
  3. Change $\frac{\bar{P}^{fr}}{E_{F/£}}$ pounds for $\frac{\bar{P}^{fr}}{E_{F/£}} \frac{1}{\bar{P}^{uk}}$ oz gold at Bank of England
- Start with 1 oz gold, end with $\frac{\bar{P}^{fr}}{E_{F/£}} \frac{1}{\bar{P}^{uk}} > 1$ oz gold
- This keeps E close to E^{par}

Arbitrage in a gold standard

- When $E_{F/£} < E_{F/£}^{par}$
  - Gold flows out of England and into France
  - This increases the money supply in France, decreases the money supply in England
- Note the trilemma: the money supply changes are not dictated by the central banks
- Neither country has control of the money supply — there is no central country in the gold standard. This eliminates the asymmetry that plagues other fixed fx systems.