

Lecture 10

Money and Banking, Econ 345

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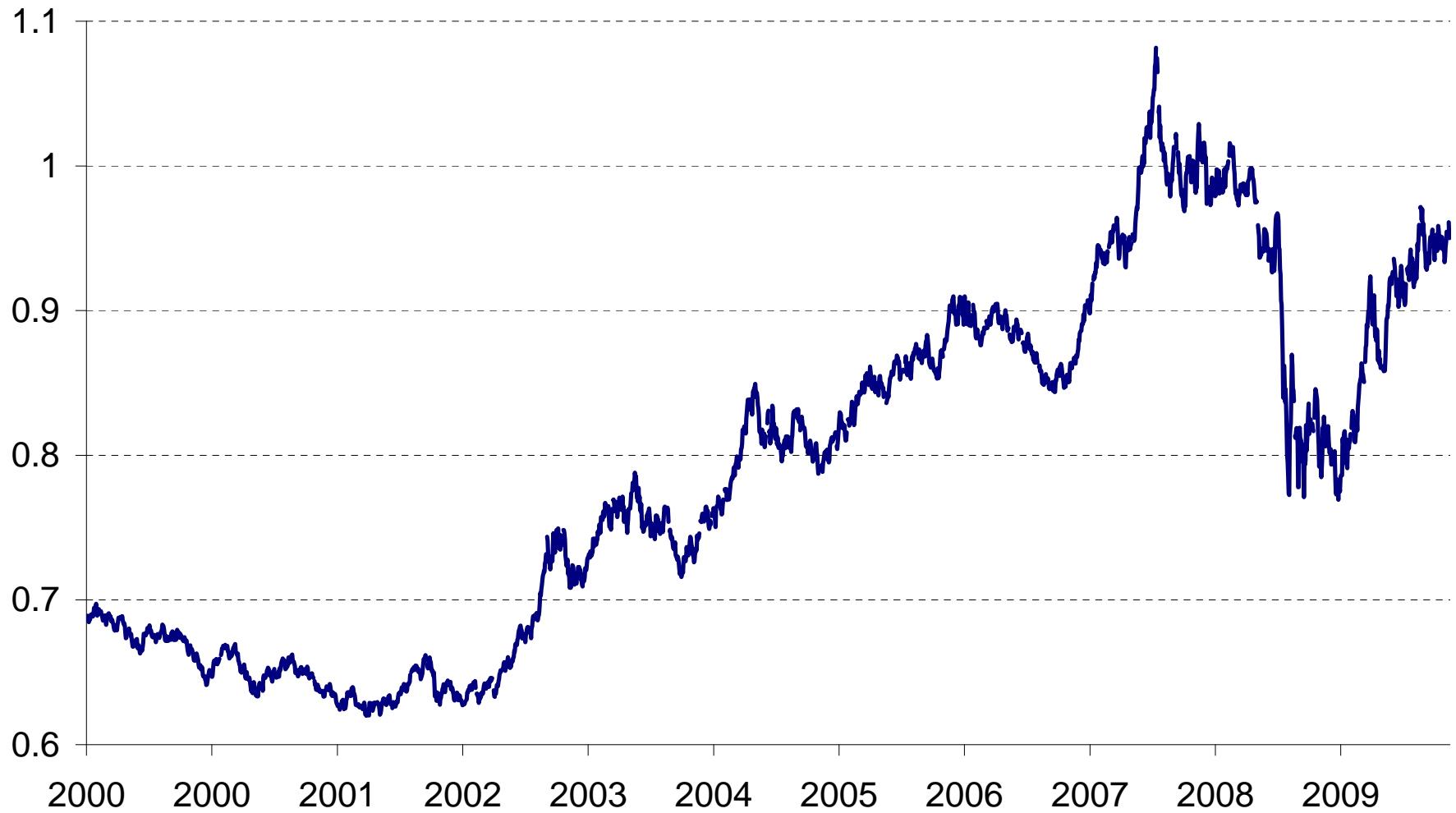
Summary so far

- So far looked at systems with *foreign currency control*
- Exchange rate is determined by the relative supply/demand of two currencies
- With flexible exchange rate and currency controls, the value of each currency is unaffected by the other country's money supply/demand

Volatility of exchange rates

- Money market conditions cannot explain volatile exchange rates
- Data: nominal noon exchange rates
- Source: Bank of Canada,
<http://www.bankofcanada.ca/en/rates/exchform.html>

Canadian dollar exchange rate, US dollars



Canadian dollar exchange rate, UK pound



Canadian dollar exchange rate, EURO



Canadian dollar exchange rate, Japanese Yen



Indeterminacy of the Exchange Rate

- **No foreign currency controls**

- people are free to hold and use the money of any country
- Can only write money market clearing condition *for both countries* together:

$$\frac{M_t^{CA}}{p_t^{CA}} + \frac{M_t^{US}}{p_t^{US}} = N_t^{CA}(y^{CA} - c_1^{CA}) + N_t^{US}(y^{US} - c_1^{US})$$

- 1 equation for 2 price levels: p_t^{CA} and p_t^{US}
 - cannot pin down the exchange rate $p_t^{US}/p_t^{CA} = e_t$
 - *indeterminacy of the exchange rate*
- Money supply in CA no longer determines the exchange rate, because this money can be used in either CA or US:

$$\frac{1}{p_t^{US}} \left(e_t M_t^{CA} + M_t^{US} \right) = N_t^{CA}(y^{CA} - c_1^{CA}) + N_t^{US}(y^{US} - c_1^{US})$$

- Imagine if CA\$ and US\$ were freely exchanged - what would be the exchange rate?
 - anything - there is nothing to pin down the exchange rate

Fixing the Exchange Rate

- How can the exchange rate be stabilized in the absence of foreign currency controls?
- Have governments in two countries commit to exchange two currencies at a fixed rate
 - example 1: \$5 and 10\$ bills within Canada
 - example 2: one-to-one exchange of East and West German marks during reunification
- Requires unlimited commitment from both countries
 - example: suppose all holders of CA\$ want to sell it for US\$ - no effect on exchange rate if US gov't can supply all the currency demanded
- Not easy to implement:
 - speculative attacks when commitment is limited
 - strong incentive to inflate

Speculative attacks

- Foreign country may not want to cooperate to prevent non-citizens from holding a lot of its currency
 - example: introducing foreign currency controls would lead to inflation in that country
- Can home country defend its currency unilaterally?
- Yes, by buying home currency for goods obtained from taxing citizens
 - this "artificial" demand would maintain the value of lower demanded currency
 - these goods are typically reserves of gold, stable assets or currencies
- Reserves are limited - large demand swings may cause abandonment of the fixed exchange rate

Speculative attacks

- Such demand swings can be organized by investors - "speculative attacks"
 - example: Black Wednesday: events of 16 September 1992 when the Conservative government was forced to withdraw the Pound Sterling from the European Exchange Rate Mechanism (ERM) after they were unable to keep sterling above its agreed lower limit. The most high profile of the currency market investors, George Soros, made over US\$1 billion profit by short selling sterling. In 1997 the UK Treasury estimated the cost of Black Wednesday at £3.4 billion. strong incentive to inflate

Strong incentive to inflate

- Under no foreign currency controls, value of one currency is determined by world money supply/demand
 - currencies are perfect substitutes
- Increase in money supply in CA, reduces the value of *both* CA\$ and US\$
- Hence - incentive to generate seignorage revenue by printing home money and taxing holders of both currencies
 - could lead to large worldwide inflation
- Such inflationary incentives can be reduced by:
 - introducing foreign currency controls
 - coordinating monetary policies across countries
 - example: euro convergence criteria (also known as the Maastricht criteria)

Maastricht criteria

Criteria for European Union member states to enter the third stage of European Economic and Monetary Union (EMU) and adopt the euro as their currency

1. **Inflation rates:** $<$ average of three lowest inflation countries + 1.5%

2. **Government finance:**

Deficit $<$ 3% of GDP

Debt $<$ 60% of GDP

3. Join **exchange-rate** mechanism (ERM II) for two consecutive years

ERM II: currency fluctuations have to be contained within a margin of 15%

4. The nominal long-term **interest rate** $<$ average of three lowest inflation countries + 2 %