

Models of Exchange Rate Determination

Lecture 1
IME LIUC 2012

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Exchange Rates Movements Show Some Regularities

- Daily and monthly exchange rates are highly unpredictable
- Exchange rates of countries with high inflation depreciate in the long run by about the inflation rate differential
- The high variability of exchange rate in the short run is not systematically related to change in money supply
- Correlation between monthly changes in the exchange rate and the current account position is low

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Do We Have “a” Theory to Explain Exchange Rate Behaviors?

- No, we have several theories that try to explain empirical regularities:
 - The PPP model,
 - Mundell Fleming model,
 - Monetary Model,
 -
- They all have limitations

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**The Dornbush's model:
the "overshooting" model**

- Why is the model so famous?
- What is the model about?
- What is the evidence for and against the model?

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Why is the model so famous?

- Quoting from Rogoff
 - The model is "elegant": it is the beauty and clarity of Dornbush's analysis that has made it so flexible and useful.
 - The model is "path breaking": it changed our way of thinking about the exchange rate.

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- Quoting from Krugman

"Rudi was, first of all, the economist who brought international monetary economics into the modern world. The workhorse of pre-Dornbusch open-economy macro, the Mundell-Fleming model, was a fine thing.. But it didn't capture the **volatility of a floating-exchange-rate world**, the way currencies can soar or plunge not because big things have already happened, but because **things are expected** to happen.. Rudi's famous "overshooting" paper changed it all..."

(NYT, July 26 2002)

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What is the model about?

- Two relationships lie at the heart of the model:
 - The UIP: $i_{t+1} = i^* + E_t(e_{t+1} - e_t)$
 - The money demand:

$$m_t - p_t = -ni_{t+1} + ly_t$$
- The model also assumes that:
 - P fix in the short-run and flexible in the long-run
 - output y is exogenous
 - money is neutral in the long run, so that a permanent rise in m leads a proportionate rise in e and p , in the long run.

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How does the overshooting work?

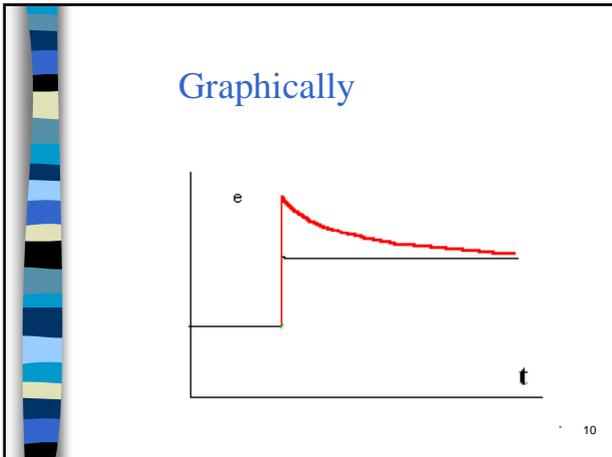
- Hp: Unanticipated permanent increase in the money supply m .**
- Long run:** The increase in m will imply a proportional increase in P and given that the PPP holds also in e

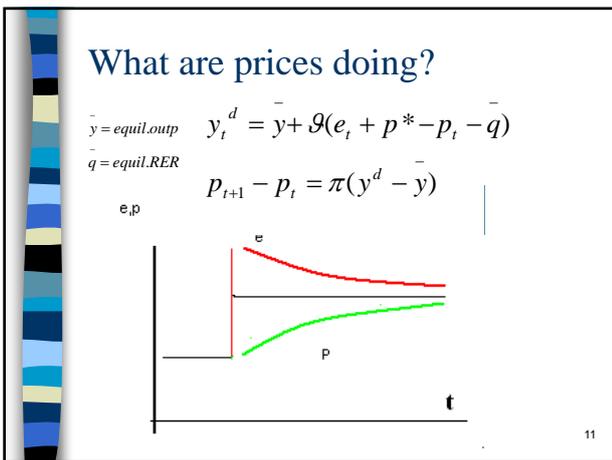
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in the short run:

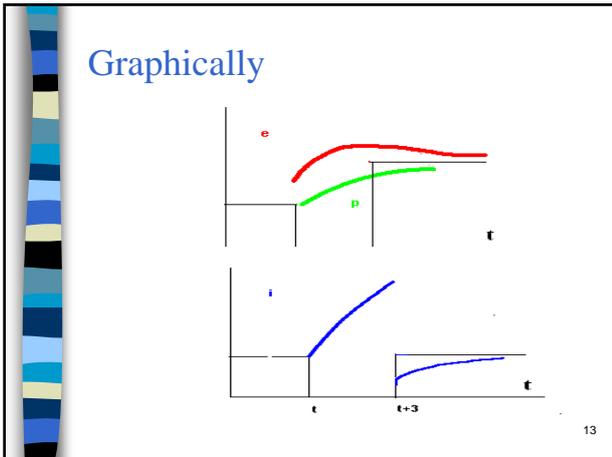
- If m rises but the price level is temporarily fixed, then the supply of real balances must rise as well.
- To equilibrate the system, the demand for real balances must rise. Since output is assumed fixed in the short run, i on domestic currency bonds falls.
- According to the UIP, it is possible for i to fall if and only if, over the future life of the bond contract, the home currency is expected to **appreciate**.
- But how is this possible if we know that the long run impact of the money supply shock must be a proportionate **depreciation** in the exchange rate?
- Dornbusch's brilliant answer is that the initial depreciation of the exchange rate must, on impact, be larger than the long-run depreciation. The exchange rate must **overshoot**.
- The volatility of m implies the volatility of e**

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- **Hp: Announcement in t of a permanent increase in the money supply m at t+3**
 - The potential for arbitrage profits rules out the possibility of any discrete jump of e; no jumps in the instant in which the policy is implemented
 - e will jump at the announcement
 - The depreciation generate an excess demand for goods, therefore p increases
 - An increase in p implies a reduction in m/p and an increase in i
 - i higher than i* implies further expected depreciation ,,e and p will continue to increase until t+3 when m increases
 - At this point i is below i* therefore expected appreciation, the e must be above its long run level
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Evidence for and against the model

- Looking at data: the model captures major turning points in monetary policy quite well, however, it does not seem to capture all the other big exchange rate swings that regularly take place.

