
Exchange rates in the long run; part 2.

Going beyond the PPP

Recall from last lecture

- In the long run:
 - An increase in M (one-time jump) causes a proportionate increase in prices and hence, according to PPP, a proportional depreciation of nominal exchange rate
 - Real exchange rate does not change
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Recall from last lecture

- An increase in the rate of growth of money supply...
- ...causes a permanent increase in inflation...
- ..hence a quicker nominal depreciation and
- ..no change in real exchange rate
 - Recall, that when we were discussing the classical model, we didn't talk about money
 - Money does not matter for real variables in the long run

Recall from last lecture

- But we know, that PPP does not always hold (which is quite logical, as a matter of fact)
 - Why devote so much discussion to PPP when it's fraught with exceptions?
 - The idea of a link between a long run price level and long run exchange rate is a useful starting point
 - Now, we will add complications
 - This is still a long run model!
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The Real Exchange Rate Approach to Exchange Rates

- Because of the shortcomings of PPP, economists have tried to generalize the monetary approach. The general approach focuses on the real exchange rate (RER):
- Recall: the **real exchange rate** is the *rate of exchange for goods and services* across countries.
 - In other words, it is the relative value/price/cost of goods and services across countries.
 - For example, it is the zloty price of a foreign group of goods and services relative to the zloty price of a Polish group of goods and services (an increase in RER implies a depreciation of Home's real exchange rate:

$$\varepsilon = E_{\text{HOME/FOR}} \times [P^*/P]$$

The Real Exchange Rate Approach to Exchange Rates

$$E_{\text{HOME/FOR}} = \varepsilon * P/P^*$$

- A real depreciation of the value of Home's products (which here is equivalent **to an increase in ε**) means a fall in a zloty's purchasing power of foreign products relative to a zloty's purchasing power of H. products.
- The long-run values of RER will depend on demand and supply conditions (in a world where PPP does not hold)
- We have discussed this issue, when we studied the classical model!!
- By now, we know the determinants of ε ; we know the determinants of P and P^* - we have a full model of E

The Real Exchange Rate Approach to Exchange Rates

- According to the real exchange rate formula, NOMINAL exchange rates are equal to (and may be influenced by) the real exchange rate and the Home – Foreign price ratio:
- Money does not influence the RER in the long run (recall the classical model)
- Hence, changes in money influence only prices, leaving the RER unchanged and are directly „transferred” to nominal exchange rate changes

Recall the classical model

- An increase in G causes a real exchange rate appreciation
 - An increase in Y causes a **real** exchange rate depreciation
 - Once again: money does not enter the classical model – it does not change the real exchange rate
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The Real Exchange Rate Approach to Exchange Rates

An increase in G

- ❑ The classical model – a fall in S and an appreciation of real exchange rate
- ❑ Another interpretation: - **a change in relative demand** for Home's products (an increase in relative demand for Home's goods) products causes the value (price) of Home's goods relative to the value (price) of foreign goods to rise.
- ❑ A real appreciation of the value of H goods:
- ❑ BTW: The real appreciation of the value of H goods makes H exports more expensive and imports into the H less expensive (NX falls)
- ❑ Foreign prices are not affected; domestic prices are not affected
- ❑ Therefore a real appreciation causes also **a nominal appreciation**

The Real Exchange Rate Approach to Exchange Rates

- An increase in Y is equivalent to an increase in S
- An equivalent interpretation: a **change in relative supply** of H. products
 - An increase in relative supply of H. products (caused by an increase in H. productivity) causes the price/cost of H. goods relative to the price/cost of foreign goods to fall.
 - A real depreciation of the value of H. goods
 - The real depreciation of the value of H. goods makes H. exports less expensive and imports into the H. more expensive (thereby increasing relative quantity demanded to match increased relative quantity supplied).
 - In the same time, domestic prices fall
 - The effect on nominal exchange rates is ambiguous

The Real Exchange Rate Approach to Exchange Rates

- What are the effects **on the nominal exchange rate?**

$$E_{\text{HOME/FOR}} = \varepsilon \times P/P^*$$

- When factors influencing real variables change, the real exchange rate changes.
- With an increase in relative **demand** of domestic products, the price ratio does not change (make sure you know why) _and the real exchange rate adjusts to determine nominal exchange rates.
- With an increase in relative supply of domestic products, the situation is more complex.

The Real Exchange Rate Approach to Exchange Rates

- The real exchange rate is a more general approach to explain nominal exchange rates.
- Both monetary factors and real factors influence nominal exchange rates:
 - 1a. Increases in *monetary levels* lead to increase in prices, and changes in nominal but not real exchange rates (RER)
 - 1b. Increases in *monetary growth rates* lead to persistent inflation and persistent nominal depreciation, but RER stays constant
 - 2a. Increases in *relative demand* of domestic products lead to a real appreciation.
 - 2b. Increases in *relative supply* of domestic products lead to a real depreciation.

The Real Exchange Rate Approach to Exchange Rates

- **In the long run, when economic changes are influenced only by monetary factors, nominal exchange rates are determined by PPP.**
- In the long run, when economic changes are caused by factors that affect real output, exchange rates are not determined by PPP only, but are also influenced by the real exchange rate.

Effects of Money Market and Output Market Changes on the Long-Run Nominal Dollar/Euro Exchange Rate, $E_{\$/\epsilon}$

Change	Effect on the Long-Run Nominal Dollar/Euro Exchange Rate, $E_{\$/\epsilon}$
Money market	
1. Increase in U.S. money supply level	Proportional increase (nominal depreciation of \$)
2. Increase in European money supply level	Proportional decrease (nominal depreciation of euro)
3. Increase in U.S. money supply growth rate	Increase (nominal depreciation of \$)
4. Increase in European money supply growth rate	Decrease (nominal depreciation of euro)
Output market	
1. Increase in demand for U.S. output	Decrease (nominal appreciation of \$)
2. Increase in demand for European output	Increase (nominal appreciation of euro)
3. Output supply increase in the United States	Ambiguous
4. Output supply increase in Europe	Ambiguous

Summary

- The real exchange rate approach to exchange rates generalizes the monetary approach.
- It is a long run model!
 - It defines the real exchange rate as the value/price/cost of domestic products relative to foreign products.
 - It predicts that changes in relative demand and relative supply of products influence real exchange rates (like in the classical model)
 - Nominal exchange rates change according to real exchange rate and price ratio changes.