

Problem Set #4: Exchange Rates and Interest Rate Parity

1. Problems from the textbook

Solve problems 4, 6, and 7 in chapter 13 p. 332 (7th edition). In the 6th edition these are problems 3, 5, and 6, pp. 351-352.

2. Exchange rates and trade

Consider an American who imports Japanese TVs. Suppose that the importer buys each TV for ¥120,000, and sells them in the US for \$1500 each. The exchange rate is 120 ¥/\$.

- (a) What is the profit (in dollars) for each TV sold?
- (b) Assuming the yen price in Japan and the dollar price in the US are fixed, what happens to the profits when the dollar appreciates? Explain and give a numerical example.
- (c) Assuming the yen price in Japan and the dollar price in the US increase by exactly the same rate, what happens to the profits if the exchange rate is unchanged? Explain and give a numerical example.
- (d) Assuming that *all* yen prices in Japan and *all* dollar prices in the US increase by exactly the same rate, what happens to the importer's nominal profits if the exchange rate is unchanged? What happens to his *real* profits¹? Explain and give a numerical example.
- (e) Assuming that *all* yen prices in Japan and *all* dollar prices in the US increase by exactly the same rate, what happens to the *real* profits when the dollar appreciates?

¹ By real profits we mean nominal profits divided by a general price index (CPI, for example).

3. Interest rate parity and exchange rate dynamics

Assume that the dollar interest rate and the euro interest rates are the same, i.e. $R_{\$} = R_{\text{€}}$.

Using the uncovered interest parity condition this implies that the exchange rate is expected to remain constant, that is $E_{\$/\text{€}}^e = E_{\$/\text{€}}$.

- (a) Suppose that $R_{\text{€}}$ increases unexpectedly, but is expected to return to its original level in one year. Analyze the time path of the exchange rate ($E_{\$/\text{€}}$) assuming there is no change in the dollar interest rate, $R_{\$}$, and expectations, $E_{\$/\text{€}}^e$.
- (b) Suppose that unexpectedly people change their beliefs. Everybody suddenly thinks that a year from now the exchange rate will be higher ($E_{\$/\text{€}}^e$ increases) and will stay at that level forever. Analyze the time path of the exchange rate ($E_{\$/\text{€}}$) assuming there is no change in the interest rates.