University of Texas at Austin

Quiz 1

Foreign currencies.

Problem 1.1. (15 points) Maria lives in Austria and receives her salary in Euro. She decides to spend 1000 Euro and let the proceeds of the exchange accrue interest at the USD continuously compounded risk-free interest rate .

(i) (1 pt) Given that the initial exchange rate is 1.21 USD per Euro, how much (in USD) does Maria receive?

(ii) (2 pts) Given that the USD continuously compounded risk-free interest rate is equal to $r_{\$} = 0.02$, what is the balance in Maria's account three months after the initial transaction? Assume that there were no intermediate deposits or withdrawals.

(iii) (1 pt) Maria decides to withdraw the balance in her account at that time (still three months from the initial exchange) and exchange it back to Euros. Given that the exchange rate at that time equals 1.17 USD per Euro, how much (in Euro) does Maria receive?

(iv) (2 pts) Given that the Euro continuously compounded risk-free interest rate equals $r_e = 0.03$, what would have Maria's balance have been had she decided to simply deposit her initial investment in a Euro savings account?

(v) (9 pts) Has Maria discovered an arbitrage opportunity? Why (not)?

Solution:

(i) $1,000(1.21) = 1,210$

(ii) $1,210e^{0.02/4} = 1,216.06515$

(iii) $1,216.06515/1.17 = 1,039.371923$

(iv) $1,000e^{0.03/4} = 1,007.528195$

(v) Even though her realized profit is strictly positive, Maria did not discover an arbitrage opportunity since she could not have known in advance what the exchange rate would end up being.