Global Business Environment - FIN523
Fall 2019
http://moodle.epfl.ch/course/view.php?id=6271

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Problem Set #3

due Monday October 14, 2019

1. *(50 points)* **Equilibrium Exchange Rate** Suppose the 3-month domestic interest rate is $R = 0.03$, the 3-month foreign interest rate is $R^* = 0.04$ and the expected exchange rate in 3 months is $E^e = 1.2$. Please round off your results to two decimal digits; remember, all interest rates are annualized.

   (a) *(10 points)* What is the equilibrium spot exchange rate, namely the exchange rate that satisfies the interest parity condition?

   (b) *(10 points)* Does the market expect an appreciation or a depreciation in the next three months?

   (c) *(10 points)* Suppose the domestic interest rate is temporarily reduced to 0.02. What is the equilibrium spot exchange rate? In a diagram with the exchange rate on the vertical axis and the domestic interest rate on the horizontal axis illustrate the new equilibrium.

   (d) *(10 points)* Suppose the domestic interest rate is $R = 0.03$ but the foreign interest rate is temporarily raised to $R^* = 0.05$. What is the equilibrium spot exchange rate? In a diagram with the exchange rate on the vertical axis and the domestic interest rate on the horizontal axis illustrate the new equilibrium.

   (e) *(10 points)* Suppose the domestic interest rate is $R = 0.03$ and the foreign interest rare is $R^* = 0.04$. The interest rates remain unchanged but the expected exchange rate changes to $E^e = 1$. What is the equilibrium spot exchange rate? In a diagram with the exchange rate on the vertical axis and the domestic interest rate on the horizontal axis illustrate the new equilibrium.

2. *(30 points)* **Options** Suppose the 3-month CHF interest rate is $R = 0.04$, the 3-month EUR interest rate is $R^* = 0.115$. You are a company in Switzerland and your domestic currency is the CHF; in three months you need to pay an invoice of 1'000 EUR. With probability 0.4 you expect the exchange rate between the CHF and the EUR, $E^e_{CHF/EUR}$, to be equal to 1.1 in three months and with probability 0.6 you expect it to be equal to 1.016667.

   (a) *(10 points)* Calculate your 3-month expected exchange rate $E^e_{CHF/EUR}$.

   (b) *(10 points)* Given your expectations, calculate the spot exchange rate that satisfies the IPC.

(c) *(10 points)* The following call option is available today: a) price is 0.0312, namely this is the CHF cost per EUR, paid today; b) maturity: 3 month; c) strike price: $X = 1.04$. Suppose the spot exchange rate $E_{CHF/EUR}$ today is equal to the rate you calculated in 2 (b). You can buy the call option today, or buy euros today or you can wait and buy euros in three months. What do you prefer? Please explain your choice by providing your calculations.

3. *(20 points)* **Forward Rate** Suppose the spot exchange rate is $E_{USD/EUR} = 1.1489$, $R_{EUR}^{6months} = -0.00313$ and $R_{USD}^{6months} = 0.02623$.

   (a) *(10 points)* Calculate the 6-month forward exchange rate $F_{USD/EUR}^{6months}$ that satisfies the covered interest parity condition.

   (b) *(10 points)* Calculate the forward premium using your answer in (a). Does the market expect an appreciation or a depreciation of the USD relative to the EUR?