Financial Instruments

Bus 35100

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Homework 1

Due at the beginning of class week 2.

1 Arbitrage and Forward Rates

Consider a one-year forward contract for converting between dollars and Euros. The current exchange rate is \$1.20 for each Euro. The one-year risk-free rate in dollars is 5% in continuously compounded units while the one-year risk-free rate in Euros is 4.5%.

(1) According to the principle of no-arbitrage, what should be the one-year forward rate?

(2) Suppose that the one-year forward contract is currently trading at \$1.15 per Euro. Is there an arbitrage opportunity? If so, explain in detail the trading you would like to do to exploit this arbitrage opportunity.

2 Forward Rates and Covered Interest Rate Parity

The Excel file DataHW1_2024.xls contains data on the \$/Euro exchange rate on the first business day of October of the years 2005 to 2009. In addition, it contains Forward Rate quotes, as well as US and EURO LIBOR rates.

Please, do the following:

(1) For each date, use the Forward Rate formula discussed in Teaching Note 2 to compute the Forward Exchange Rate. Please do so for all of the given maturities (1 month, 3 months, 6 months, 1 year). (Tip#1: Note that LIBOR rates use linear compounding, while the formula in the teaching notes use continuous compounding. You will need the transformation like the one on page 14 of Teaching Note 2 to use the forward pricing formula we developed. Tip#2: The log function in the notes on page 14 is the *natural logarithm*. To implement this in Excel you use the function *LN* NOT the function *LOG*).

(2) Do your forward exchange rates match (approximately) the quoted ones?

(3) If not, pick one particular date in which the parity is violated, and describe the arbitrage strategy you would undertake.