Task 2.5

Friday, September 20, 2024 1:02 PM

Problem 5

Since the USA has a interest rate of 0,25%. while france have 0% it means that the dollar will depreciate in value. Thus the future spot rate should be higher not lower than the current rate.

The forward rate should be,

$F = 1,0404 \cdot e^{0,025 \cdot 0,25} = 1,04105$

This created arbitrage

Arbitrage strategy

1. Borrow CHF at 0% rate
2. Convert CHF to USD
3. Invest USD in US bonds 0,25% per annum for 3 months
4. Enter forward contract to buy CHF at 1,03 in 3 months

Example:

1. Borrow 1,000,000 CHF
2. Convert CHF to USD : 1 040 400 USD
3. USD maturity : $1,040,400 \cdot e^{0,025 \cdot 0,25} = 1,041,050$
4. Buy forward at 1,010,000 CHF for 1030, 000 USD

AT 3 months, use USD to forfill forward contract then return 1,000,000.

Net profit : $1041,050 - 1,030,000 = \$11,050$

For the other case wher the forward rate is 1,0500. The future spot rate is higher than theoretical

Arbitrage strategy

2. Borrow USD
2. Convert USD to CHF
3. Invest / hold
4. Forward contract to sell 1,0500 USD/CHF in 3 months

Example

1. Borrow 1,040,400 USD at 0,25%
2. Convert to 1,000,000 CHF
3. Hold
4. Forward contract @ 1,0500
5. Sell,

USD Maturity :

$1,000,000 \cdot 1,5 = 1,500,000$ USD

Repay loan

$1,040400 \cdot e^{0,025 \cdot 0,25} = 1,041,050$

Net profit $= 1,500,000 - 1,041,050 = 8950$ USD