

Answers to Quiz 1
International Finance Management
C45.0030.001

09/23/03

Total points: 20, Time: 20 min

Q I. (4 points) (answer only one of the two questions):

1. The mobility of international capital flows is causing emerging market nations to choose between a free-floating currency exchange regime and a currency board (or dollarization). Describe shortly how each of the regimes would work.

In a free floating exchange rate system, the exchange rate of a country's currency is determined by the demand & supply of the currency. However, in a currency board, the exchange rate is fixed at par value to another currency (anchor currency) and the government has the obligation to maintain this fixed rate. How does the government manage to maintain the fixed rate? In essence, the government credibly commits itself to maintaining forex reserves exactly equal to the amount of national currency.

2. Define Interlocking Directorates. Why are they favored outside of the US?

Interlocking directorates is the practice of hiring CEOs or related companies on the board of directors of your company. This practice is not favored in the shareholder wealth maximization model (or Anglo-American model) since this may stifle competition because decisions may be based on friendship, influence, or promise of reciprocity. In the corporate wealth maximization, interlocking directorates are looked upon beneficially, since they allow that "all shareholders" be represented.

Q II. (4 points) (answer only one of the two questions):

1. Classify the following two transactions in the BOP of the foreign country & of the US:

a) American opens a bank account in Mumbai, India?

(2 points)

The correct answer is: Debit to the US BOP, Credit to the Indian BOP, both in the financial account, sub-account “Currency deposits and bank deposits”.

However, since I gave a wrong answer to this in the sample quiz, I will give you full credit, if you have answered in the way I have answered in the sample quiz. I apologize for misleading you, this won't happen again 😊.

b) The U.S. subsidiary of Credit Suisse pays dividends to its parent in Switzerland?

(2 points)

Debit to US BOP, Credit to Swiss BOP, both in the current account, in the sub-account current income payments.

2. What would be the effect of an undervalued currency on the current account?

Undervalued currency makes exports of the country cheaper from the foreigners' point of view and imports more expensive from the point of view of the domestic businesses. Thus an undervalued currency will contribute to achieving a surplus on the current account of the BOP, in particular in the balance of trade sub-account of the current account.

Q III. (4 points) (answer only one of the two questions):

- 1. Define international Fisher effect. How is it related to the theory of purchasing power parity?**

(1 point for explanation/definition, 1 point for giving a formula for the expected change in spot exchange rates, 2 points for explaining how does it link to the PPP theory)

The Fisher open states that the spot exchange rate should change in an equal amount but in opposite direction to the difference in interest rates between two countries.

One way to summarize this is: $\frac{S_1^{FC/\$} - S_2^{FC/\$}}{S_2^{FC/\$}} = i^{\$} - i^{FC}$ using direct quotation, or

$\frac{S_2^{\$/FC} - S_1^{\$/FC}}{S_1^{\$/FC}} = i^{\$} - i^{FC}$ if using indirect quotations.

It relates to the relative PPP in the following sense. Real interest rates shall be same across countries, and we know from the Fisher effect that Real Interest Rate = Nominal Interest Rate – Inflation. Since this is true for any two countries, this implies that

$$i^{US} - \text{Inflation}^{US} = r^{US} = r^{FC} = i^{FC} - \text{Inflation}^{FC}$$

or rearranging

$$i^{US} - i^{FC} = \text{Inflation}^{US} - \text{Inflation}^{FC}$$

In words, the inflation differential is equal to the interest rate differential. Now, we know from PPP that any change in the inflation differential is equal to a change in the spot exchange rate with an opposite sign. So, we can conclude that the change in the spot exchange rate is equal to the opposite of the change in interest rates, i.e. Fisher open. (Note: to get full credit for the last part you only need to explain the relation without actually showing the formula).

- 2. BMW of Germany produces BMW cars and exports them to the United States. Last year the exchange rate was 0.90 \$/EUR and BMW charged EUR 40,000 per BMW imported in US. Currently the spot exchange rate is 1.10 \$/EUR and BMW is charging US\$ 40,000 for the same vehicle. Determine the price of BMW in US\$ last year & then determine what is degree of pass through by BMW? Note: no need for exact answer, just set up the way to obtain it, & show where to plug the provided info.**

The \$ price of BMW last year was $\text{EUR } 40,000 \times 0.90 \text{ \$/EUR} = \$ 36,000$.

Today the \$ price of a BMW shall be $\text{EUR } 40,000 \times 1.10 \text{ \$/EUR} = \$ 44,000$.

So if BMW Germany wants to pass through the full spot exchange rate change, it will charge \$ 44,000. However, they charge only \$ 40,000. Thus the pass-through is

$$\frac{P_{BMW,2}^{\$}}{P_{BMW,1}^{\$}} = \frac{\$40,000}{\$36,000} = 1.1111, \text{ or } 11.11\%.$$

At the same time the exchange rate change is given by (since this is direct quotation)

$$\% \text{ Change} = \frac{\text{Ending Rate} - \text{Beginning Rate}}{\text{Beginning Rate}} \times 100 = \frac{\$1.10 / \text{EUR} - \$0.90 / \text{EUR}}{\$0.90 / \text{EUR}} \times 100 = 22.2\%$$

So, the degree of the pass-through is $11.11\% / 22.2\% = 0.5$ or 50%

(Note: full credit will be given for setting up the correct calculation, even though no numerical answer is shown).

Q IV. (4 points) (answer only one of the two questions):

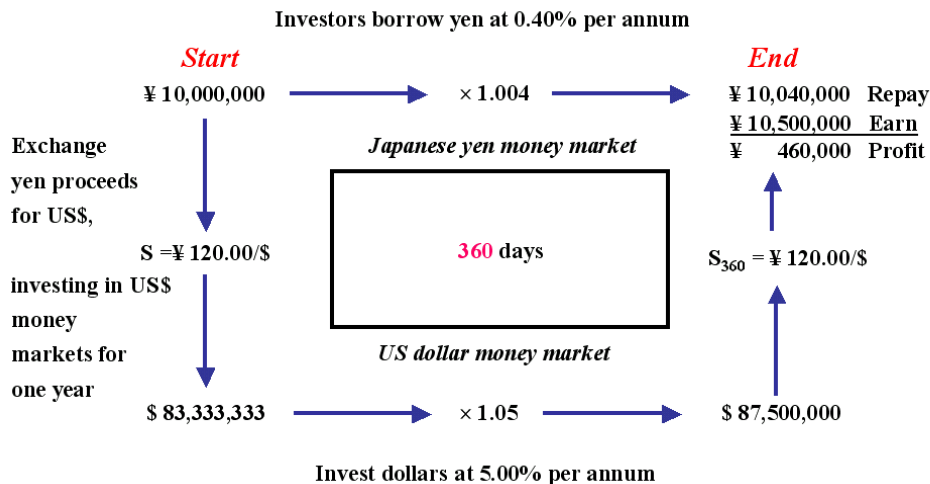
1. What is “yen carry trade” example of – covered interest arbitrage or uncovered interest arbitrage? Define both concepts & give a sketch of yen carry trade.

1. (1 point) Yen carry trade is an example of uncovered interest arbitrage.

2. (1 point) Covered interest arbitrage is

4. (2 point) Definition of uncovered interest arbitrage (UIA is to borrow in countries and currencies w/ relatively low interest rates & convert proceeds into currencies that offer much higher interest rates) & an example of a yen carry trade. The example is up to you, it should be consistent, here is just a sketch:

Yen Carry Trade



33

The example shall have two components to get full credit: 1. Borrow in low interest currency, 2. Invest the proceeds in high interest currency.

2. A U.S. investor has 100,000\$ and has to make choice between a risk-free one-year U.S. security with an annual return of 4%, and a comparable British security with a return of 5%. If the spot rate is \$1.43/Pound, the forward rate is \$1.45/Pound, and

there are no transaction costs, is there any arbitrage opportunity? If yes, describe it. If no, why?

There is an arbitrage opportunity through covered interest arbitrage (CIA).

Step 1. Exchange the \$1,000,000 for Pounds to obtain 699,300.7 Pounds.

Step 2. Put the Pounds 699,300.7 into one-year deposit @ 5% per annum to obtain at the end of the year a total of $699,300.7 \times (1.05) = 734,265.7$ Pounds.

Step 3. Simultaneously sell forward Pounds 734,265.7 @ the ongoing forward rate to obtain Pounds $734,265.7 \times \$1.45/\text{Pound} = \$1,064,685.3$.

Step 4. Why is this an arbitrage opportunity? Because if you were to deposit the dollars in a US\$-denominated deposit, you would have received $\$1,000,000 \times (1.04) = \$1,040,000$, which is w/ \$24,685.3 less than the amount you would receive if you used the strategy in steps 1 through 3.

Q V. (4 points)

Money and foreign exchange markets in Frankfurt and New York are very efficient. The following information is available:

	Frankfurt	New York
Spot exchange rate	\$1.10/Euro	\$1.10/Euro
One-year treasure bill rate	5.00%	3.00%
Expected inflation rate	Unknown	2.00%

Answer only one of the two questions:

1. What do financial markets expect inflation to be in Europe next year? Note: you do not need to give exact numerical answer but you need to set up the way to obtain it & show where to plug the provided info.

By Fisher open, real interest rates across countries shall be the same. But what are the real interest rates? Know that

$$(1 + \text{nominal interest rate}) = (1 + \text{expected inflation}) \times (1 + \text{real interest rate})$$

or a shortcut, nominal interest rate = real interest rate + inflation.

Use the first one (more precise ☺). This equality holds for NY & Frankfurt alike.

$$\text{Europe: } 1 + 5\% = (1 + \text{unknown}) \times (1 + \text{real interest rate}),$$

$$\text{US: } 1 + 3\% = (1 + 2\%) \times (1 + \text{real interest rate})$$

$$\text{So, find out real interest rate from the US, } \boxed{\text{Real interest rate} = \frac{1 + 0.03}{1 + 0.02} - 1 = 0.0098}, \text{ or}$$

0.98%. The real interest rates in the two are the same. So apply the real interest rate from US to Europe:

$$1 + 5\% = (1 + \text{unknown}) \times (1 + 0.98\%),$$

from where the expected inflation (i.e. the unknown) is determined as:

$$\text{Expected inflation in Europe} = \frac{1 + 0.05}{1 + 0.0098} - 1 = 0.0398, \text{ or } 3.98\%$$

2. Estimate today's one-year forward exchange rate between the dollar and the euro. Is Euro trading at a one-year forward premium or discount? Note: no need to give an exact numerical number, full credit will be given if you set up the calculation (formulas) & show where shall we plug the provided info.

If you use direct quotations,

$$F_{360}^{\$/\text{EURO}} = S^{\$/\text{EURO}} \times \frac{[1 + i^{\$}]}{[1 + i^{\text{EURO}}]} = \$1.1 / \text{Euro} \times \frac{[1 + 0.03]}{[1 + 0.05]} = \$1.079 / \text{Euro}.$$

To determine the premium or discount of Euro, use the formula from class

$$f^{\text{EURO}} = \frac{\text{Forward} - \text{Spot}}{\text{Spot}} \times \frac{360}{\text{days}} \times 100 = \frac{1.079 - 1.10}{1.10} \times 100 = -1.909, \text{ or } 1.91\% \text{ discount.}$$

If you use indirect quotations, notice that the current spot rate is Euro 0.909/\$ = 1/\$1.10 Euro. Here is the way to set it up the calculation of the forward rate in indirect quotations:

$$F_{360}^{\text{EURO}/\$} = S^{\text{EURO}/\$} \times \frac{[1 + i^{\text{EURO}}]}{[1 + i^{\$}]} = \$0.909 / \text{Euro} \times \frac{[1 + 0.05]}{[1 + 0.03]} = \$0.9267 / \text{Euro}.$$

To determine the forward discount or premium use the formula

$$f^{\text{EURO}} = \frac{\text{Spot} - \text{Forward}}{\text{Forward}} \times \frac{360}{\text{days}} \times 100 = \frac{0.909 - 0.9267}{0.9267} \times 100 = -1.910, \text{ or } 1.91\% \text{ discount.}$$