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| |  | | --- | | **Deliverable Length:** 2-3 pages  Congratulations, you just won the Irish Lottery! You bought a ticket while you were on vacation in Ireland, and your winnings amount to € 1 million (euros) after all taxes were taken out.   1. If the current exchange rate is US$1 equals € .70, how much did you win in US dollars? 2. Suppose that the interest rate in Irish banks is 2% for a one year CD. In the USA, the rate is 4% for a one year CD. If you left your winnings in Ireland, how many euros would you have in a year? If you had taken your winnings back to the USA, how many dollars would you have? 3. Suppose when you cashed in your CD in Ireland a year from now, the exchange rate had changed from US$1 to € .70 to US$1 to € .65. How much would your Irish bank account be worth in US dollars at that point? Would you have been better off leaving your winnings in Ireland or bringing them home to the USA? 4. Explain how banks and individuals can use “covered interest arbitrage” to protect themselves when they make international financial investments. 5. Using the theory of purchasing power parity, explain how inflation impacts exchange rates. Based on the theory of purchasing power parity, what can we infer about the difference in inflation between Ireland and the USA during the year your lottery winnings were invested?   **Be sure to show all calculations.** | |
| |  |  | | --- | --- | |  | Instructor Comments:  See the help sheet in the Q&A Cafe for Unit 5 IP2.  You can expect the similarity score to be higher than your other papers.  However,  make sure that the answers you post for questions 4 & 5 are paraphrased and cited both in the text of your paper and in the bibliography. | |

Unit 5 IP2  Help Sheet,

1)     Let’s do an example.   Suppose that you need to convert £200,000 into dollars and the exchange rate is $1 = £ .50     e = .50   £ / $

Then divide both sides by .50 and we get:

 £.50 /.50    = $1/.50

Doing the division , we get,   £1 = $2.00   or e’ = 2 $/£

To convert £200,000 into dollars, multiply

£ 200,000 \* 2 $/£   = $400,000

Alternatively, to convert the £200,000 sum into its equivalent in dollars, you could divide by    .50   £ / $

£200,000 / (.50  £ / $)     = (200,000 /.50)     £/ ( £ / $)   =   $ 400,000

2.  Suppose that CDs paid  two interest rates, one in the UK , for 6% and one in the US for 3%. Would you be better off leaving the money in the UK and converting at the end of one year?

To calculate how much principle and interest you would have at the end of one year, you would add the principle plus 6% times 200,000

 Principle + interest = £ 200,000 + .06 \* £200,000 = £200,000 + £12,000 = £ 212,000

Converting to $, (assuming the same exchange rate as above)

£ 212,000 \* 2 $/£ = $424,000

What if you converted at the beginning of the year and bought a $400,000 CD that matured in one year and paid 3%

Principle + interest = $400,000 + .03 \* $400,000 = $400,000 + $12,000 = $412,000

Clearly you would have been better off had you bought an interest bearing instrument in the UK for 6% , then at the end of the year, converted it to dollars.

3. Suppose the exchange rate improves to £ 1 = $2.10 , and the CD still pays 6% in the UK.

How much would you have in dollars after one year?

Principle + interest = £ 200,000 + .06 \* £200,000 = £200,000 + £12,000 = £ 212,000

£ 212,000 \* 2.1 $/£ = $445,200

**Covered Interest arbitrage** is the practice of investing funds in foreign financial assets like CDs when interest rates are higher abroad. There are two steps,

1) exchange dollars for the foreign currency on the spot market and purchase the CD .

2) purchase a forward contract to sell an amount of the foreign currency equal to expected principle plus interest; at the same time the CD matures.

If the difference in interest earnings between a US asset and a foreign asset is greater than the cost of buying the forward contract, then the investor is better off.

**Purchasing Power Parity**

**The law of one price** says that the same good should have the same (real) price in the any country in the world; if there are no transportation costs and no trade restrictions. This is saying that the purchasing power of the world’s currencies should be equal. It is the notion of Purchasing Power Parity.

If there is any difference in exchange rates, it would reflect a difference in inflation rates (increases in the price level ) between two countries. Ie, after adjusting for inflation, according to this theory, the investor in this example would be no better off investing   in the EU or the US because after the end of the year, they would be able to buy the same amount of goods whether their money was in pounds or dollars.

That is, the 3% interest rate differential is actually an inflation premium in the EU and the inflation adjusted interest rates would be the same in both countries.

Exchange rates also adjust to take into account differences in inflation rates. Suppose that the Euro depreciated from 1.44€/$ to 1.60€/$. Based on the law of one price, we could calculate the inflation rate in the EU by calculating the % change in the exchange rate. The law of one price indicates that any good in the EU should be the same price as the same good in the US after adjusting for the exchange rate. So if we take the % change in exchange rates it should give us the difference in the changes in price levels between the US and the EU>

Inflation rate = 100 \*   (1.60 – 1.44)/1.44     =   11%

Meaning that the EU had inflation that was 11% higher than the US’ inflation.