

According to the Bloomberg, the direct spot price (\$/€) for the Euro today is \$1.53, and \$10,000 U.S. Treasury Bills with a one-year maturity are selling for \$9,830.

- a) What is the annual yield for this T-Bill?

(3 points) $R=1.7%$, since $(10000/9830)=1.0173$ and $n=1$.

- b) Since the direct spot price for the British Pound is \$1.99, what is the Euro price of it?

(2 points) 1.30 Euros per Pound, since $€/\$ = (\$/\$) / (\$/€) = 1.99 / 1.53$.

- c) An equivalent German government bond has a 3.75% annual yield. What does interest rate parity imply should be the one-year forward rate for the Euro?

(3 points) *There is a 2.0% forward discount on Euros, since that is the interest rate gap, and so the forward rate must be \$1.50 since $E^f/E = 1+R-R^*$.*

- d) Suppose the above U.S. annual interest rate was 2.50%, and the one-year forward premium for the Euro was +0.50% (it isn't really, of course). If you were a money manager with a diversified portfolio in both Europe and the U.S., how could you lock in the highest return on government bonds with a spot-forward swap? Explain. Assuming many investment funds took advantage of this opportunity, how would this affect the spot and forward prices for the Euro?

(3 points) *The return on the German bond would actually be $3.75\% + 0.50\% = 4.75\%$, which beats 2.50%. You should buy Euro on the spot market and then sell it forward to lock in the 4.75% yield. If lots of money moved this way, the spot rate would rise and the forward rate would fall until parity was reached.*

- e) Suppose that you just signed a contract to export goods to France in a year, and the contracted price is denominated in Euro. If you decide to wait until you receive these Euros to convert them into Dollars, are you speculating or hedging? If you purchase a forward contract to sell Euros, are you speculating or hedging?

(2 points) *Speculating in the first case, because the value of the Euros might fall. Hedging in the second case, because you are locking in the rates.*

- f) Suppose that next month, the Fed's open market committee will decide to lower the federal funds rate, and this will reduce U.S. short-term interest rates, while the European Central Bank has made clear it will not follow suit. Use an ERM diagram to predict how this would affect the direct spot price for the Euro next month. Then suppose the market expects this to happen, and use a second diagram to predict how this change to the expected exchange rate should affect the direct spot price for the Euro *now*.

(4 points) *On the ERM diagram, the domestic return will fall, so E will rise. If everybody expects this to happen next month, the increase in E^e now shifts the foreign return up so spot E rises now. You should show this on two diagrams.*

- g) Suppose you think that the market has overpriced the forward rate for Euro, and you want to try to make money on this knowledge by arranging a forward contract to sell Euro for the current forward premium. However, to avoid the chance that you might be expensively wrong, you decide to buy an option. What type of option would you buy, a call or a put for Euro? Which would cost you more, a strike price of \$1.40 or \$1.60? Suppose you buy a European option with a strike price of \$1.60, and on the strike date the spot rate is \$1.55. Are you in or out of the money? Would you exercise the option? Ignoring the price of the option, did you make money or lose money?

(3 points) *If you think the one-year forward rate is overpriced, you can sell forward in the hope that in a year you could buy low on the spot and then resell high on the forward contract. But if you are wrong, and the spot price for Euro is high, you will have to buy high and sell low. Ouch! If you buy a call option, then you will be protected from having to buy too high on the spot market to meet your forward contract obligation. For a call, a lower strike price is much more expensive than a higher strike price. At a spot of \$1.55 with a strike of \$1.60, you are out of the money and will not exercise your option. You would make money only if the forward price is higher than the strike price by enough to cover the price of the option. (Since the forward rate is \$1.50, then no, you wind up losing a nickel per Euro plus the price of the option, but such is the risk of speculation.)*