**FIN621 HW4 Assignment**

\*You need to show your work to get credit.

1. (50 points)Boeing just signed a contract to sell a Boeing 787 aircraft to British Airways. British Airways will be billed £26 million which is payable in one year. The current spot exchange rate is $1.40/£ and the one-year forward rate is $1.43/£. The annual interest rate is 6.0% in the U.S. and 5.0% in UK. The premium for a one-year put or call option with the exercise rate of $1.43/£ is 1%. Boeing is concerned with the volatile exchange rate between the dollar and the pound and would like to hedge exchange exposure. Four alternatives are available to Boeing to manage the exposure: 1) remain unhedged; 2) hedge in the forward market; 3) hedge in the money market; or 4) hedge in the options market.
2. What action does Boeing need to take for each hedging alternative?
3. *Forward hedge*

Take the short position in the one-year forward contract, sell £26,000,000@ $1.43/£

1. *Money market hedge*

Borrow £24,761,904.76(=£26,000,000/(1+5%)) today at the rate 5%, convert to $34,666,666.67 at the exchange rate $1.40/£, and invest the dollar at the rate of 6%

1. *option hedge*

Purchase the one-year put option for £26,000,000 with a strike rate of $1.43/£, premium of 1%, the cost of the option is £26,000,000\*$1.40/£\*1%=$364,000

1. Calculate the future dollar proceeds of the sale to British Airway under the four alternatives if the spot exchange rate becomes $1.45/£ in one year.
2. *Unhedged*

Dollar proceed=£26,000,000\*$1.45/£=$37,700,000

1. *Forward hedge*

Dollar proceed= £26,000,000\*$1.43/£=$37,180,000

1. *Money market hedge*

Dollar proceed= $34,666,666.67 \*(1+6%)=$36,746,666.67

1. *option hedge*

The value of the option premium in one year is $364,000\*(1+6%)=$385,840

If S1=$1.45/£, then let the option expire, sell £ at $1.45/£,

dollar proceed=£26,000,000\*$1.45/£-$385,840=$37,700,000-$385,840=$37,314,160

1. Calculate the future dollar proceeds of the sale to British Airway under the four alternatives if the spot exchange rate becomes $1.40/£ in one year.
2. *Unhedged*

Dollar proceed=£26,000,000\*$1.40/£=$36,400,000

1. *Forward hedge*

Dollar proceed= £26,000,000\*$1.43/£=$37,180,000

1. *Money market hedge*

Dollar proceed= $34,666,666.67 \*(1+6%)=$36,746,666.67

1. *option hedge*

The value of the option premium in one year is $364,000\*(1+6%)=$385,840

If S1=$1.45/£, then exercise the option, sell £ at $1.43/£, dollar proceed=£26,000,000\*$1.43/£-$385,840=$37,180,000-$385,840=$36,794,160

1. At what future spot exchange do you think Boeing will be indifferent between the option and money market hedge?

£26,000,000\*S1-$385,840=$36,746,666.67, S1=$1.428/£, however, it is smaller than the exercise price of $1.43/£, thus money market hedging will always be inferior to option as the dollar proceeds are always less. No future spot that will make Boeing to be indifferent between option hedging and money market hedging .

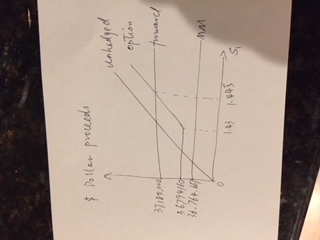
1. At what future spot exchange do you think Boeing will be indifferent between the option forward hedge?

£26,000,000\*S1-$385,840=$37,180,000, S1=$1.445/£

1. At what dollar interest rate do you think Boeing will be indifferent between the forward and money market hedge?

$34,666,666.67 \*(1+i)=$37,180,000, i=7.25%

1. Illustrate the future dollar proceeds of the sale to British Airway under the four alternatives.



1. (20 points) Calculate the **cumulative translation adjustment (CTA)** for this U.S. MNC translating the balance sheet and income statement of a French subsidiary, which keeps its books in euro, but that is translated into U.S. dollars using the current rate method, the reporting currency of the U.S. MNC. The subsidiary is at the end of its first year of operation. The historical exchange rate is $1.60/€1.00 and the most recent exchange rate is $1.50/€

