Universidad de Barcelona

3rd course: Financial Management   *Professor: Altina Sebastián González*

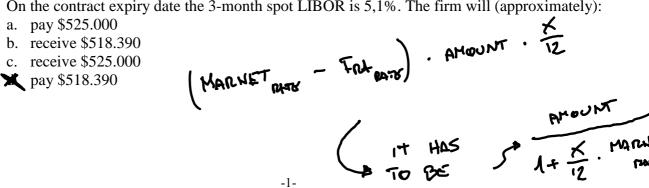*Exercises Topic 10: Interest Rate Risk Management*

Problems

1. Consider a 3×6 FRA on a notional principal amount of $1million. The FRA rate is 6% and the reference rate is based on a 90 day LIBOR.
   On the settlement date, the actual 90-day LIBOR is 8%
   a. Calculate the interest differential of the contract.
   b. How much should the FRA buyer pay or receive on the settlement date?

2. You plan to get a 9 month-term loan (100.000€) in 3 months from now. So you plan to buy a non-delivery FRA X/Y. The interest rate that is set in the FRA is 4%. Three-month later the interest rate is 5%.
   a. Which will be the interest rate of your loan?
   b. Will you get any payment from the seller of the FRA?
   c. If your previous answer is affirmative, calculate the amount.

3. J.P. Morgan sells a "3 against 12" FRA for $1m at an annualized rate of 4.75%. Three months after the sale, interest rates have the following term structure:

Maturity (months)	Interest rate
3	4%
6	4,5%
9	5%
12	5,5%

   a. How much cash does the bank pay to, or receive from, the FRA buyer?
   b. What is J.P. Morgan's effective lending rate for the 270-day lending period?

Multiple choices

4. A firm sells 5x8 FRA, with a NP (Notional Principal) of $300 MM and a contract rate of 5,8%. On the contract expiry date the 3-month spot LIBOR is 5,1%. The firm will (approximately):
   a. pay $525.000
   b. receive $518.390
   c. receive $525.000
   ✗ pay $518.390

$$\left(MARKET_{RATE} - FRA_{RATE} \right) \cdot AMOUNT \cdot \frac{x}{12}$$

$$\hookrightarrow \text{IT HAS TO BE DISCOUNTED} \quad \rightarrow \quad \frac{AMOUNT}{1 + \frac{x}{12} \cdot MARKET_{RATE}}$$

5. ABC Company issued a 10-year bond at a price of $1,000. A month after issuance, the market price of the bond had dropped to $980. Over the month, the yield to maturity on the bond:
   - [X] increased
   - b. decreased
   - c. stayed the same
   - d. increased but is lower than the coupon rate

6. If the discount rate increases, the value of a zero-coupon bond will:
   - a. increase
   - [X] decrease
   - c. remain unchanged
   - d. None of the previous answers is correct

7. Consider a fixed-rate bond with exactly five years remaining until maturity, a par value of $1,000 per unit, and a coupon rate of 3% with annual payments. At the end of the third year, the investor sold the bond at a price of $981,14. Calculate the current annual return of the investment, knowing that during the holding period the interest payments were reinvested at an interest rate of 3,5%.
   - a. 3%
   - b. 3,02%
   - c. 7,43%
   - [X] None of the previous answers is correct

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