

6 Problem Set 4.iii

Letras del Tesoro

Problem 1

You bought 500 Letras del Tesoro at the last auction. The price you paid was 97,125%. The maturity date of the Letras was 162 days. You are asked to:

- Determine the amount of money you paid for the Letras
- Determine the official interest rate of the Letras you bought
- You bought the Letras through an intermediary which charges a four per thousand commission on the Price.

Compute the effective return (using 365 days in the year) of the Letras you bought if you hold them to maturity

Problem 2

In an auction for 12 month Letras del Tesoro the marginal price was 92.125%. These Letras are due in 362 days. You are asked to:

- Determine the marginal (official interest) rate in the auction
- You buy the Letras through an intermediary which charges a four per thousand commission on the price.

Compute the effective return (using 365 days in the year) you would obtain if you purchase Letras at the marginal price and hold them to maturity

Problem 3

At an auction for Letras del Tesoro, the marginal price was 96,913, and the average price was 96,980. Expiry is in 364 days. Determine

- The effective APR (365 days) for an investor that buys a Letra at the marginal price, pays a 0,35% commission (on the price) to his broker/bank for processing the purchase, and holds it until expiration
- The effective APR for another investor, who buys the Letra in the secondary market (125 days after the auction), pays a price of 98,950 and a 0,35% commission (on the price) for the purchase, and holds the Letra until expiry.

Problem 4

An investor buys a Letra del Tesoro with the following properties: Nominal value = 1.000€, price 980.23€, expiry 265 days.

- Determine the annual return from holding the Letra until expiry
- Suppose the investor wants to sell the Letra after 60 days. Determine the price he would need to sell to have the same annual return as in the previous calculation (during the full holding period).
- Instead, suppose that after 60 days market interest rates have changed, and the price is now 1.98%. Determine the corresponding cash price of the previous Letra.
- With this new price, determine the return of the investor who bought the Letra initially (at 980.23€) and sold it at this new price

Problem 5

An investor has purchased 10 Letras del Tesoro, and they are due in 173 days with an interest rate of 2.62%. Knowing that the financial intermediary will charge a commission of 28€ for the whole transaction at the time of purchase, compute the effective return (con 365 days in the year) obtained by the investor who holds until maturity.

Past Exam Questions

Problem 6 (Ex 2013)

You purchase 1000 Letras del Tesoro in the secondary market and they have two months until maturity. The quoted price is 95% (950€), and the trading fee you have to pay to your broker is 0.5% of the total cash value of your investment.

1. Determine the official return on the Letras del Tesoro
2. Your effective annual return if you invest and hold them to maturity

Problem 7 (Ex 2010)

a) You buy a Letra del Tesoro through a broker at a price of 97.99% of its nominal value. At the time of the purchase you have to pay them a fee of three per thousand on the price. These Letras mature in 380 days and their nominal value is 1000€. Determine the official return on the Letra

b) Ninety days after you bought the Letra you consider selling it. The price at that time is 98.450% of nominal value. Determine the effective return of your total investment if you sell the Letra after ninety days with no additional sale fees.

Problem 8 (Ex 2011)

Your company needs cash to pay its employees and decides to sell a Letra del Tesoro which it bought in the past. This Letra had a maturity of 364 days, but today there are only 150 days to maturity. The interest rate in the secondary market is 3.750%. At the time the company bought the Letra, the interest rate was 3.500%.

1. Determine the cash price for the Letra at the time of purchase
2. Determine the cash price for the Letra at the time of sale
3. Determine the company's realized effective return if it paid a 0.5% commission at the time of purchase (on the nominal value) and a sale fee of 20bps (on the price).

Problem 9 (Ex 2013)

In the last Letras del Tesoro auction, there were 120 million euros sold with a maturity of 88 days and an average weighted price of 997.75€ and a marginal price of 997.69€. Using the following table, determine who received Letras del Tesoro in the auction and at what official return

- Bidder A: 25 million at 998.12
- Bidder B: 12 million at 997.71
- Bidder C: 15 million at 996.12
- Bidder D: 10 million at 997.82

Problem 10 (Ex 2017)

Your company has excess cash so it buys Letras del Tesoro due in 121 days. The official interest rate for the Letras at the time of purchase is 2.43%. Determine the effective APR of the company's investment if it holds the Letras to maturity and (i) pays an initial broker's fee of 0.50€, and (ii) pays a fee of 60bps on the nominal value per Letra at maturity.