

Latest Version: 6

Question: 1

How many USD would you have to invest at 3.5% to be repaid USD125 million (principal plus interest) in 30 days?

INTEREST RATE CONVERSIONS

Converting between bond basis and money market basis (Act/360)

$$\text{rate}_{\text{bond basis}} = \text{rate}_{\text{money market basis}} \frac{365}{360}$$

$$\text{rate}_{\text{money market basis}} = \text{rate}_{\text{bond basis}} \frac{360}{365}$$

Converting between annually and semi-annually compounding frequencies

$$\text{rate}_{\text{annually-compounded}} = \left(1 + \frac{\text{rate}_{\text{semi-annually compounded}}}{2} \right)^2 - 1$$

$$\text{rate}_{\text{semi-annually compounded}} = \left(\sqrt{1 + \text{rate}_{\text{annually compounded}}} - 1 \right) 2$$

The formulae for converting between annually and semi-annually compounded rate apply only to rates quoted on a bond basis, not a money market basis.

MONEY MARKET

Certificates of deposit

$$\text{proceeds at maturity} = \text{face value} \left(1 + \frac{\text{coupon} \times \text{term}}{\text{annual basis}} \right)$$

$$\text{secondary market proceeds} = \frac{\text{proceeds at maturity}}{1 + \frac{\text{yield} \times \text{day count}}{\text{annual basis}}}$$

Discount-paying instruments quoted as a true yield

$$\text{secondary market proceeds} = \frac{\text{face value}}{1 + \frac{\text{yield} \times \text{day count}}{\text{annual basis}}}$$

Discount-paying instruments quoted as a rate of discount

$$\text{discount amount} = \text{face value} \frac{\text{rate of discount} \times \text{day count}}{\text{annual basis}}$$

$$\text{secondary market proceeds} = \text{face value} \left(1 - \frac{\text{rate of discount} \times \text{day count}}{\text{annual basis}} \right)$$

$$\text{true yield} = \frac{\text{rate of discount}}{1 - \frac{\text{rate of discount} \times \text{day count}}{\text{annual basis}}}$$

Forward price of sell/buy-back

$$\text{forward price} = \frac{(\text{repurchase price} - \text{accrued interest on collateral at termination})}{\text{nominal price of collateral}} \times 100$$

FORWARD-FORWARDS & FORWARD RATE AGREEMENTS

forward - forward rate =

$$\left[\frac{1 + \frac{\text{interest rate}_{\text{long period}} \times \text{day count}_{\text{long period}}}{\text{annual basis}}}{1 + \frac{\text{interest rate}_{\text{short period}} \times \text{day count}_{\text{short period}}}{\text{annual basis}}} - 1 \right] \frac{\text{annual basis}}{\text{day count}_{\text{forward-forward period}}}$$

$$\text{FRA settlement amount} = \text{notional principal amount} \times \frac{\left(\frac{(\text{FRA rate} - \text{settlement rate}) \times \text{day count}}{\text{annual basis}} \right)}{\left(1 + \frac{\text{settlement rate} \times \text{day count}}{\text{annual basis}} \right)}$$

price =

$$100 \left[\left(\frac{\text{coupon}}{\text{yield}} \left(1 - \frac{1}{(1 + \text{yield})^{\text{remaining coupons}}} \right) \right) + \frac{1}{(1 + \text{yield})^{\text{remaining coupons}}} \right]$$

Dirty price of bond with annual coupons

dirty price =

$$\frac{\text{first cashflow}}{(1 + \text{yield})^{\frac{\text{daysto next coupon}}{\text{annual basis}}}} + \frac{\text{second cashflow}}{(1 + \text{yield})^{1 + \frac{\text{daysto next coupon}}{\text{annual basis}}}} + \Delta + \frac{n^{\text{th}} \text{ cashflow}}{(1 + \text{yield})^{h-1 + \frac{\text{daysto next coupon}}{\text{annual basis}}}}$$

Duration at issue or on a coupon date

Macaulay Duration =

$$\frac{\left[\begin{aligned} &(\text{present value of first coupon amount} \times \text{time to first coupon}) + \\ &(\text{present value of second coupon amount} \times \text{time to second coupon}) + \dots \\ &+ (\text{present value of (last coupon amount} + \text{nominal amount)}) \times \text{time to last coupon} \end{aligned} \right]}{\text{net present value of bond}}$$

$$\text{Modified Duration} = \frac{\text{Macaulay Duration}}{\left(1 + \frac{\text{yield}}{\text{compoundin g frequency}} \right)}$$

Calculating zero-coupon yield from an annual yield-to-maturity (bootstrapping)

zero - coupon yield for n - year term

$$= \left(\sqrt[n]{\frac{\text{final coupon amount} + \text{nominal amount}}{\text{implied present value of final coupon and nominal amount}}} - 1 \right) 100$$

FOREIGN EXCHANGE

Forward FX rate

$$\text{forward rate} = \text{spot rate} \frac{1 + \frac{\text{interest rate}_{\text{quoted currency}} \times \text{day count}}{\text{annual basis}_{\text{quoted currency}}}}{1 + \frac{\text{interest rate}_{\text{base currency}} \times \text{day count}}{\text{annual basis}_{\text{base currency}}}}$$

Covered interest arbitrage

synthetic quoted currency interest rate =

$$\left[\left(\left(1 + \frac{\text{interest rate}_{\text{base currency}} \times \text{day count}}{\text{annual basis}_{\text{base currency}}} \right) \frac{\text{forward rate}}{\text{spot rate}} \right) - 1 \right] \frac{\text{annual basis}_{\text{quoted currency}}}{\text{day count}}$$

synthetic base currency interest rate =

$$\left[\left(\left(1 + \frac{\text{interest rate}_{\text{quoted currency}} \times \text{day count}}{\text{annual basis}_{\text{quoted currency}}} \right) \frac{\text{spot rate}}{\text{forward rate}} \right) - 1 \right] \frac{\text{annual basis}_{\text{base currency}}}{\text{day count}}$$

OPTIONS

Standard deviation

$$\text{standard deviation} = \sqrt{\frac{\sum_{t=1}^n (\text{return at time } t - \text{mean return})^2}{\text{number of observations} - 1}}$$

Calculating the volatility over a period from annualised volatility

$$\text{volatility over period } t = \text{annualised volatility} \sqrt{t}$$

Where t is in years or fractions thereof.

- A. USD 124,641,442.43
- B. USD 124,636,476.94
- C. USD 124,635,416.67
- D. USD 123,915,737.30

Answer: B

Question: 2

What is the day count/annual basis convention for euroyen deposits?

- A. Actual/365
- B. Actual/360
- C. Actual/actual
- D. 30E/360

Answer: B

Question: 3

Today's date is Thursday 12th December. What is the spot value date? Assume no bank holidays.

- A. 14th December
- B. 15th December
- C. 16th December
- D. 17th December

Answer: C

Question: 4

EURIBOR is the:

- A. Daily fixing of EUR interbank deposit rates in the European market
- B. Daily fixing of EUR interbank deposit rates in the London market
- C. Another name for EUR EIBOR
- D. The ECB's official repo rate

Answer: A

Question: 5

Which of the following rates represents the highest investment yield in the euromarket?

- A. Semi-annual bond yield of 3.75 %
- B. Annual bond yield of 3.75 %
- C. Semi-annual money market yield of 3.75 %
- D. Annual money market rate of 3.75 %

Answer: C

Question: 6

Which of the following are transferable instruments?

- A. Eurocertificate of deposit
- B. US Treasury bill
- C. CP

D. All of the above

Answer: D

Question: 7

Which of the following is always a secured instrument?

- A. ECP
- B. Repo
- C. Interbank deposit
- D. CD

Answer: B

Question: 8

Which of the following is sometimes called two-name paper?

- A. ECP
- B. BA or bank bill
- C. Treasury bill
- D. CD

Answer: B

Question: 9

What usually happens to the collateral in a tri-party repo?

- A. It is put at the disposal of the buyer
- B. It is held by the seller in the name of the buyer
- C. It is held by the tri-party agent in the name of the buyer
- D. It is frozen in the seller's account with the tri-party agent

Answer: C

Question: 10

Which type of repo is the least risky for the buyer?

- A. Delivery repo
- B. HIC repo
- C. Tri-party repo
- D. There is no real difference

Answer: A

Question: 11

A customer gives you GBP 25 million at 6.625% same day for 7 days. Through a broker, you place the funds with a bank for the same period at 6.6875%. Brokerage is charged at 2 basis points per annum. What is the net profit or loss on the deal?

- A. Profit of GBP 299.66
- B. Profit of GBP 203.77
- C. Loss of GBP 299.66
- D. Loss of GBP 203.77

Answer: B

Question: 12

What are the secondary market proceeds of a CD with a face value of EUR 5 million and a coupon of 3% that was issued at par for 182 days and is now trading at 3% but with only 7 days remaining to maturity?

- A. EUR 4,997,085.03
- B. EUR 5,000,000.00
- C. EUR 5,071,086.45
- D. EUR 5,072,874.16

Answer: D

Question: 13

A CD with a face value of USD50 million and a coupon of 4.50% was issued at par for 90 days and is now trading at 4.50% with 30 days remaining to maturity. What has been the capital gain or loss since issue?

- A. +USD 373,599.00
- B. +USD 186,099.00
- C. -USD 1,400.99
- D. Nil

Answer: C

Question: 14

The tom/next GC repo rate for German government bonds is quoted to you at 1.75-80%. As collateral, you sell EUR10 million nominal of the 5.25% bund July 2012, which is worth EUR 11,260,000, with no initial margin. The Repurchase Price is:

- A. EUR 10,000,500.00
- B. EUR 10,000,486.11
- C. EUR 11,260,563.00
- D. EUR 11,260,547.36

Answer: C

Question: 15

The one-month (31-day) GC repo rate for French government bonds is quoted to you at 3.75- 80%. As collateral, you are offered EUR25 million nominal of the 5.5% OAT April 2006, which is worth EUR 28,137,500. If you impose an initial margin of 1%, the Repurchase Price is:

- A. EUR 27,947,276.43
- B. EUR 27,946,077.08
- C. EUR 27,950,071.43
- D. EUR 27,948,871.97

Answer: D

Question: 16

If EUR/USD is quoted to you as 1.1050-53, does this price represent?

- A. The number of EUP per USD
- B. The number of USD per EUR
- C. Depends on whether the price is being quoted in Europe or the US
- D. Depends on whether the price is being quoted interbank or to a customer

Answer: B

Question: 17

How much is a big figure worth per million of base currency if EUR/GBP is 0.6990?

- A. GBP 10,000
- B. EUR 10,000
- C. GBP 6,990
- D. EUR 6,990

Answer: A

Question: 18

What is the incentive for market-making?

- A. Bid/offer spread
- B. Flow information
- C. Relationships
- D. All of the above

Answer: D