

Reading 52: Introduction to Fixed-Income Valuation

Question #1 of 143

Question ID: 415519

The price and yield on a bond have:

- ☐ A) no relationship.
- ☒ B) an inverse relationship.
- ☐ C) a positive relationship.

Explanation

Interest rates and a bond's price have an inverse relationship. If interest rates increase the bond price will decrease and if interest rates decrease the bond price will increase.

References

Question From: Session 15 > Reading 52 > LOS b

Related Material:

- Key Concepts by LOS
-

Question #2 of 143

Question ID: 472423

An interpolated spread (I-spread) for a bond is a yield spread relative to:

- ☐ A) benchmark spot rates.
- ☐ B) risk-free bond yields.
- ☒ C) swap rates.

Explanation

Spreads relative to swap rates are referred to as Interpolated or I-spreads.

References

Question From: Session 15 > Reading 52 > LOS i

Related Material:

- Key Concepts by LOS
-

Question #3 of 143

Question ID: 415507

Assume a city issues a \$5 million bond to build a hockey rink. The bond pays 8% semiannual interest and will mature in 10 years. Current interest rates are 6%. What is the present value of this bond?

- ☐ A) \$5,000,000.
- ☐ B) \$3,363,478.

✓ **C)** \$5,743,874.

Explanation

Since current interest rates are lower than the coupon rate the bond will be issued at a premium. $FV = \$5,000,000$; $N = 20$; $I/Y = 3$; $PMT = (0.04)(\$5,000,000) = \$200,000$. Compute $PV = \$5,743,874$

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #4 of 143

Question ID: 434415

A disadvantage of G-spreads and I-spreads is that they are theoretically correct only if the spot yield curve is:

- X **A)** downward sloping.
- X **B)** upward sloping.
- ✓ **C)** flat.

Explanation

G-spreads and I-spreads are only correct when the spot yield curve is flat (yields are about the same across maturities).

References

Question From: Session 15 > Reading 52 > LOS i

Related Material:

- Key Concepts by LOS
-

Question #5 of 143

Question ID: 415556

The current yield on a bond is equal to:

- X **A)** the internal rate of return
- X **B)** the yield to maturity.
- ✓ **C)** annual interest divided by the current market price.

Explanation

The formula for current yield is the annual cash coupon payment divided by the bond price.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #6 of 143

Question ID: 415575

Find the yield to maturity of a 6% coupon bond, priced at \$1,115.00. The bond has 10 years to maturity and pays semi-annual coupon payments.

- ☐ A) 8.07%.
- ☒ B) 4.56%.
- ☐ C) 5.87%.

Explanation

$N = 10 \times 2 = 20$; $PV = -1,115.00$; $PMT = 60/2 = 30$; $FV = 1,000$.

Compute $I = 2.28$ (semiannual) $\times 2 = 4.56\%$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #7 of 143

Question ID: 415531

A 2-year option-free bond (par value of \$1,000) has an annual coupon of 6%. An investor determines that the spot rate of year 1 is 5% and the year 2 spot rate is 8%. Using the arbitrage-free valuation approach, the bond price is *closest* to:

- ☒ A) \$966.
- ☐ B) \$1,039.
- ☐ C) \$992.

Explanation

The arbitrage free valuation approach is the process of valuing a fixed income instrument as a portfolio of zero coupon bonds. We can calculate the price of the bond by discounting each of the annual payments by the appropriate spot rate and finding the sum of the present values. Bond price = $[60 / (1.05)] + [1,060 / (1.08)^2] = \966 . Or, in keeping with the notion that each cash flow is a separate bond, sum the following transactions on your financial calculator:

$N = 1$; $I/Y = 5.0$; $PMT = 0$; $FV = 60$; $CPT \rightarrow PV = 57.14$

$N = 2$; $I/Y = 8.0$; $PMT = 0$; $FV = 1,060$; $CPT \rightarrow PV = 908.78$

Price = $57.14 + 908.78 = \$966$.

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS
-

Question #8 of 143

Question ID: 415568

A coupon bond which pays interest \$100 annually has a par value of \$1,000, matures in 5 years, and is selling today at a \$72 discount from par value. The yield to maturity on this bond is:

- ✓ **A)** 12.00%.
- X **B)** 7.00%.
- X **C)** 8.33%.

Explanation

PMT = 100

FV = 1,000

N = 5

PV = 1,000 – 72 = 928

compute I = 11.997% or 12.00%

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #9 of 143

Question ID: 415528

A 10-year spot rate is *least likely* the:

- X **A)** appropriate discount rate on the year 10 cash flow for a 20-year bond.
- X **B)** yield-to-maturity on a 10-year zero-coupon bond.
- ✓ **C)** yield-to-maturity on a 10-year coupon bond.

Explanation

A 10-year spot rate is the yield-to-maturity on a 10-year zero-coupon security, and is the appropriate discount rate for the year 10 cash flow for a 20-year (or any maturity greater than or equal to 10 years) bond. Spot rates are used to value bonds and to ensure that bond prices eliminate any possibility for arbitrage resulting from buying a coupon security, stripping it of its coupons and principal payment, and reselling the strips as separate zero-coupon securities. The yield to maturity on a 10-year bond is the (complex) average of the spot rates for all its cash flows.

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS
-

Question #10 of 143

Question ID: 415587

A bond-equivalent yield for a money market instrument is a(n):

- X **A)** discount yield based on a 360-day year.

- ✓ **B)** add-on yield based on a 365-day year.
- X **C)** discount yield based on a 365-day year.

Explanation

A bond-equivalent yield is an add-on yield based on a 365-day year.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #11 of 143

Question ID: 415530

Using the following spot rates for pricing the bond, what is the present value of a three-year security that pays a fixed annual coupon of 6%?

- Year 1: 5.0%
- Year 2: 5.5%
- Year 3: 6.0%

- X **A)** 102.46.
- ✓ **B)** 100.10.
- X **C)** 95.07.

Explanation

This value is computed as follows:

$$\text{Present Value} = 6/1.05 + 6/1.055^2 + 106/1.06^3 = 100.10$$

The value 95.07 results if the coupon payment at maturity of the bond is neglected.

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS
-

Question #12 of 143

Question ID: 415523

If market rates do not change, as time passes the price of a zero-coupon bond will:

- X **A)** approach the purchase price.
- ✓ **B)** approach par.
- X **C)** approach zero.

Explanation

A bond's value may differ substantially from its maturity value prior to maturity. But as maturity draws nearer the bond's value converges to its maturity value. This statement is true for regular bonds as well as zero-coupon bonds.

References

Question From: Session 15 > Reading 52 > LOS b

Related Material:

- Key Concepts by LOS
-

Question #13 of 143

Question ID: 415551

A 6-year annual interest coupon bond was purchased one year ago. The coupon rate is 10% and par value is \$1,000. At the time the bond was bought, the yield to maturity (YTM) was 8%. If the bond is sold after receiving the first interest payment and the bond's yield to maturity had changed to 7%, the annual total rate of return on holding the bond for that year would have been:

- ✓ **A)** 11.95%.
- X **B)** 8.00%.
- X **C)** 7.00%.

Explanation

Price 1 year ago $N = 6$, $PMT = 100$, $FV = 1,000$, $I = 8$, Compute $PV = 1,092$

Price now $N = 5$, $PMT = 100$, $FV = 1,000$, $I = 7$, Compute $PV = 1,123$

% Return = $(1,123.00 + 100 - 1,092.46) / 1,092.46 \times 100 = 11.95\%$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #14 of 143

Question ID: 415526

In which of the following conditions is the bond selling at a premium? The coupon rate:

- ✓ **A)** is greater than current yield, which is greater than yield-to-maturity.
- X **B)** current rate and yield-to-maturity are all the same.
- X **C)** is less than current yield, which is less than yield-to-maturity.

Explanation

When a bond is selling at a premium the coupon rate will be greater than current yield and current yield will be greater than YTM.

References

Question From: Session 15 > Reading 52 > LOS b

Related Material:

- Key Concepts by LOS
-

Question #15 of 143

Question ID: 415579

A coupon bond that pays interest annually is selling at par, matures in 5 years, and has a coupon rate of 12%. The yield to maturity on this bond is:

- X A) 60.00%.
- ✓ B) 12.00%.
- X C) 8.33%.

Explanation

$N = 5$; $PMT = 120$; $PV = -1,000$; $FV = 1,000$; $CPT \rightarrow I = 12$

Hint: the YTM equals the coupon rate when a bond is selling at par.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #16 of 143

Question ID: 415512

Randy Harris is contemplating whether to add a bond to his portfolio. It is a semiannual, 6.5% bond with 7 years to maturity. He is concerned about the change in value due to interest rate fluctuations and would like to know the bond's value given various scenarios. At a yield to maturity of 7.5% or 5.0%, the bond's fair value is *closest* to:

- | | <u>7.5%</u> | <u>5.0%</u> |
|------|-------------|-------------|
| X A) | 1,032.67 | 959.43 |
| X B) | 974.03 | 1,052.36 |
| ✓ C) | 946.30 | 1,087.68 |

Explanation

Given a YTM of 7.5%, calculate the value of the bond as follows:

$N = 14$; $I/Y = 7.5/2 = 3.75\%$; $PMT = 32.50$; $FV = 1,000$; $CPT \rightarrow PV = 946.30$

Given a YTM of 5.0%, calculate the value of the bond as follows:

$N = 14$; $I/Y = 5/2 = 2.5\%$; $PMT = 32.50$; $FV = 1,000$; $CPT \rightarrow PV = 1,087.68$

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS

Question #17 of 143

Question ID: 415548

An investor buys a pure-discount note that matures in 146 days for \$971. The bond-equivalent yield is *closest to*:

- ✓ **A)** 7.5%.
- ✗ **B)** 3.0%.
- ✗ **C)** 1.2%.

Explanation

The equivalent add-on return the investor earns for the 146-day holding period is $\$1,000 / \$971 - 1 = 0.0299 = 2.99\%$. The bond-equivalent yield is $(365 / 146) \times 2.99\% = 7.47\%$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #18 of 143

Question ID: 415529

Assume the following corporate spot yield curve.

- One-year rate: 5%
- Two-year rate: 6%
- Three-year rate: 7%

If a 3-year annual-pay corporate bond has a coupon of 6%, its yield to maturity is *closest to*:

- ✗ **A)** 7.00%.
- ✗ **B)** 6.08%.
- ✓ **C)** 6.92%.

Explanation

First determine the current price of the corporate bond:

$$= 6 / 1.05 + 6 / (1.06)^2 + 106 / (1.07)^3 = 5.71 + 5.34 + 86.53 = 97.58$$

Then compute the yield of the bond:

$$N = 3; PMT = 6; FV = 100; PV = -97.58; CPT \rightarrow I/Y = 6.92\%$$

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS
-

Interest rates have fallen over the seven years since a \$1,000 par, 10-year bond was issued with a coupon of 7%. What is the present value of this bond if the required rate of return is currently four and one-half percent? (For simplicity, assume annual payments.)

- ☐ A) \$1,052.17.
- ☒ B) \$1,068.72
- ☐ C) \$1,044.33.

Explanation

Each of the remaining cash flows on the bond is discounted at the annual rate of 4.5%.

Period	Payment	Discount	PV
1	$\$1,000 \times 7\% = \70	$(1.045)^1$	\$ 66.99
2	$\$1,000 \times 7\% = \70	$(1.045)^2$	\$ 64.10
3	$\$1,000 \times 7\% = \70	$(1.045)^3$	\$ 61.34
3	\$1,000 principal	$(1.045)^3$	\$ 876.30
Total Present Value of Cash Flows			\$1,068.73

The present value can also be determined with a financial calculator. N = 3, I = 4.5%, PMT = $\$1,000 \times 7\%$, FV = \$1,000. Solve for PV = \$1,068.724.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS

An investor plans to buy a 10-year, \$1,000 par value, 8% semiannual coupon bond. If the yield to maturity of the bond is 9%, the bond's value is:

- ☐ A) \$935.82.
- ☒ B) \$934.96.
- ☐ C) \$1,067.95.

Explanation

N = 20, I = $9/2 = 4.5$, PMT = $80/2 = 40$, FV = 1,000, compute PV = \$934.96

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS

Question #21 of 143

Question ID: 472428

An investor wants to take advantage of the 5-year spot rate, currently at a level of 4.0%. Unfortunately, the investor just invested all of his funds in a 2-year bond with a yield of 3.2%. The investor contacts his broker, who tells him that in two years he can purchase a 3-year bond and end up with the same return currently offered on the 5-year bond. What 3-year forward rate beginning two years from now will allow the investor to earn a return equivalent to the 5-year spot rate?

- ☐ A) 5.6%.
- ☒ B) 4.5%.
- ☐ C) 3.5%.

Explanation

$$(1.04^5 / 1.032^2)^{1/3} - 1 = 4.5\%.$$

References

Question From: Session 15 > Reading 52 > LOS h

Related Material:

- Key Concepts by LOS
-

Question #22 of 143

Question ID: 415544

Austin Traynor is considering buying a \$1,000 face value, semi-annual coupon bond with a quoted price of 104.75 and accrued interest since the last coupon of \$33.50. Ignoring transaction costs, how much will the seller receive at the settlement date?

- ☐ A) \$1,014.00.
- ☐ B) \$1,047.50.
- ☒ C) \$1,081.00.

Explanation

The full price is equal to the flat or clean price plus interest accrued from the last coupon date. Here, the flat price is $1,000 \times 104.75\%$, or $1,000 \times 1.0475 = 1,047.50$. Thus, the full price = $1,047.50 + 33.50 = 1,081.00$.

References

Question From: Session 15 > Reading 52 > LOS d

Related Material:

- Key Concepts by LOS
-

Question #23 of 143

Question ID: 415517

A new-issue, 15-year, \$1,000 face value 6.75% semi-annual coupon bond is priced at \$1,075. Which of the following describes the bond and the relationship of the bond's market yield to the coupon?

- ☐ **A)** Discount bond, required market yield is greater than 6.75%.
- ☐ **B)** Premium bond, required market yield is greater than 6.75%.
- ☒ **C)** Premium bond, required market yield is less than 6.75%.

Explanation

When the issue price is greater than par, the bond is selling at a premium. We also know that the *current market required rate is less than the coupon rate* of 6.75%, because the bond is selling at a premium.

For the examination, remember the following relationships:

Type of Bond	Market Yield to Coupon	Price to Par
Premium	Market Yield < Coupon	Price > Par
Par	Market Yield = Coupon	Price = Par
Discount	Market Yield > Coupon	Price < Par

References

Question From: Session 15 > Reading 52 > LOS b

Related Material:

- Key Concepts by LOS

Question #24 of 143

Question ID: 442252

What is the yield to maturity (YTM) on a semiannual-bond basis of a 20-year, U.S. zero-coupon bond selling for \$300?

- ☒ **A)** 6.11%.
- ☐ **B)** 3.06%.
- ☐ **C)** 7.20%.

Explanation

$N = 40$; $PV = -300$; $FV = 1,000$; $CPT \rightarrow I = 3.055 \times 2 = 6.11$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS

Question #25 of 143

Question ID: 434413

Given that the one-year spot rate is 6.05% and the two-year spot rate is 7.32%, assuming annual compounding what is the one-year forward rate starting one year from now?

- ☒ **A)** 8.61%.
- ☐ **B)** 8.34%.
- ☐ **C)** 7.87%.

Explanation

The forward rate is computed as follows:

$$\text{Forward rate}_{1,2} = \frac{(1 + \text{spot rate}_{0,2})^2}{(1 + \text{spot rate}_{0,1})^1} - 1 = \frac{(1 + 0.0732)^2}{(1 + 0.0605)^1} - 1 = 8.61\%$$

References

Question From: Session 15 > Reading 52 > LOS h

Related Material:

- Key Concepts by LOS

Question #26 of 143

Question ID: 636936

A 4 percent Treasury bond has 2.5 years to maturity. Spot rates are as follows:

6 month	1 year	1.5 years	2 years	2.5 years
2%	2.5%	3%	4%	6%

The note is currently selling for \$976. Determine the arbitrage profit, if any, that is possible.

- X **A)** \$43.22.
- ✓ **B)** \$19.22.
- X **C)** \$37.63.

Explanation

The no-arbitrage price of a bond is determined by discounting each of its cash flows at the appropriate spot rate. Any difference between the no-arbitrage price and the market price of a bond represents a potential arbitrage profit.

$$\begin{aligned} &= \frac{20}{1.01} + \frac{20}{1.0125^2} + \frac{20}{1.015^3} + \frac{20}{1.02^4} + \frac{1020}{1.03^5} \\ &= 19.80 + 19.51 + 19.13 + 18.48 + 879.86 = \$956.78 \\ &976 - 956.78 = \$19.22 \end{aligned}$$

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS

Question #27 of 143

Question ID: 415552

An investor purchased a 10-year zero-coupon bond with a yield to maturity of 10% and a par value of \$1,000. What would her rate of return be at the end of the year if she sells the bond? Assume the yield to maturity on the bond is 9% at the time it is sold and annual compounding periods are used.

- ✓ **A)** 19.42%.

X **B)** 15.00%.

X **C)** 16.00%.

Explanation

Purchase price: $I = 10$; $N = 10$; $PMT = 0$; $FV = 1,000$; $CPT \rightarrow PV = 385.54$

Selling price: $I = 9$; $N = 9$; $PMT = 0$; $FV = 1,000$; $CPT \rightarrow PV = 460.43$

% Return = $(460.43 - 385.54) / 385.54 \times 100 = 19.42\%$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #28 of 143

Question ID: 415567

If a \$1,000 bond has a 14% coupon rate and a current price of 950, what is the current market yield?

✓ **A)** 14.74%.

X **B)** 14.00%.

X **C)** 15.36%.

Explanation

$(0.14)(1,000) = \$140$ coupon

$140/950 \times 100 = 14.74$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #29 of 143

Question ID: 434414

Given that the two-year spot rate is 5.89% and the one-year forward rate one-year from now is 6.05%, assuming annual compounding what is the one year spot rate?

✓ **A)** 5.73%.

X **B)** 5.91%.

X **C)** 5.67%.

Explanation

The spot rate is computed as follows:

$$\text{spot rate}_{0,1} = \frac{(1 + \text{spot rate}_{0,2})^2}{(1 + \text{forward rate}_{1,2})^1} - 1 = \frac{(1 + 0.0589)^2}{(1 + 0.0605)^1} - 1 = 5.73\%$$

References

Question From: Session 15 > Reading 52 > LOS h

Related Material:

- Key Concepts by LOS

Question #30 of 143

Question ID: 460692

Neuman Company has bonds outstanding with five years to maturity that trade at a spread of +240 basis points above the five-year government bond yield. Neuman also has five-year bonds outstanding that are identical in all respects except that they are convertible into 30 shares of Neuman common stock. At which of the following spreads are the convertible bonds *most likely* to trade?

- X **A)** +330 basis points.
- X **B)** +270 basis points.
- ✓ **C)** +210 basis points.

Explanation

Because a conversion option is favorable for the bondholder, the convertible bonds should trade at a lower spread than otherwise identical non-convertible bonds.

References

Question From: Session 15 > Reading 52 > LOS i

Related Material:

- Key Concepts by LOS

Question #31 of 143

Question ID: 415569

A 12% coupon bond with semiannual payments is callable in 5 years. The call price is \$1,120. If the bond is selling today for \$1,110, what is the yield-to-call?

- ✓ **A)** 10.95%.
- X **B)** 11.25%.
- X **C)** 10.25%.

Explanation

PMT = 60; N = 10; FV = 1,120; PV = 1,110; CPT → I = 5.47546

(5.47546)(2) = 10.95

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #32 of 143

Question ID: 415554

Harmon Moving has a 13.25% coupon semiannual coupon bond currently trading in the market at \$1,229.50. The bond has eight years remaining until maturity, but only two years until first call on the issue at 107.50% of \$1,000 par value. Which of the following is *closest* to the yield to first call on the bond?

- ☐ A) 9.14%.
- ☒ B) 4.72%.
- ☐ C) 5.16%.

Explanation

To compute yield to first call, enter: FV = \$1,075; N = $2 \times 2 = 4$; PMT = \$66.25; PV = -1,229.50, CPT \rightarrow I/Y = 2.36%, annualized as $(2.36)(2) = 4.72\%$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #33 of 143

Question ID: 415533

The arbitrage-free bond valuation approach can *best* be described as the:

- ☐ A) use of a single discount factor.
- ☒ B) use of a series of spot interest rates that reflect the current term structure.
- ☐ C) geometric average of the spot interest rates.

Explanation

The use of multiple discount rates (i.e., a series of spot rates that reflect the current term structure) will result in more accurate bond pricing and in so doing, will eliminate any meaningful arbitrage opportunities. That is why the use of a series of spot rates to discount bond cash flows is considered to be an arbitrage-free valuation procedure.

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS
-

Question #34 of 143

Question ID: 415515

Consider a 6-year \$1,000 par bond priced at \$1,011. The coupon rate is 7.5% paid semiannually. Six-year bonds with comparable credit quality have a yield to maturity (YTM) of 6%. Should an investor purchase this bond?

- ☒ **A)** Yes, the bond is undervalued by \$64.
- ☐ **B)** No, the bond is overvalued by \$64.
- ☐ **C)** Yes, the bond is undervalued by \$38.

Explanation

FV = 1,000

PMT = 37.5

N = 12

I/Y = 3%

CPT PV = 1,074.66

1,074.66 - 1,011 = 64

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #35 of 143

Question ID: 415595

Given the one-year spot rate $S_1 = 0.06$ and the implied 1-year forward rates one, two, and three years from now of: ${}_1y1_y = 0.062$; ${}_2y1_y = 0.063$; ${}_3y1_y = 0.065$, what is the theoretical 4-year spot rate?

- ☐ **A)** 6.75%.
- ☐ **B)** 6.00%.
- ☒ **C)** 6.25%.

Explanation

$S_4 = [(1.06)(1.062)(1.063)(1.065)]^{1/4} - 1 = 6.25\%$.

References

Question From: Session 15 > Reading 52 > LOS h

Related Material:

- Key Concepts by LOS
-

Question #36 of 143

Question ID: 415492

What value would an investor place on a 20-year, 10% annual coupon bond, if the investor required an 11% rate of return?

- ☐ **A)** \$879.
- ☐ **B)** \$1,035

✓ **C)** \$920.

Explanation

$N = 20$, $I/Y = 11$, $PMT = 100$, $FV = 1,000$, CPT PV

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #37 of 143

Question ID: 529154

The six-month spot rate is 4.0% and the 1 year spot rate is 4.5%, both stated on a semiannual bond basis. The implied six-month rate six months from now, stated on a semiannual bond basis, is *closest to*:

✗ **A)** 6%.

✗ **B)** 4%.

✓ **C)** 5%.

Explanation

$$6m6m/2 = [(1 + S_2/2)^2 / (1 + S_1/2)^1] - 1 = [(1.0225)^2 / (1.02)^1] - 1$$

$$[1.0455 / 1.02] - 1 = 0.025$$

$$6m6m = 0.025 \times 2 = 0.05$$

References

Question From: Session 15 > Reading 52 > LOS h

Related Material:

- Key Concepts by LOS
-

Question #38 of 143

Question ID: 415593

The six-year spot rate is 7% and the five-year spot rate is 6%. The implied one-year forward rate five years from now is *closest to*:

✗ **A)** 6.5%.

✓ **B)** 12.0%.

✗ **C)** 5.0%.

Explanation

$$5y1y = [(1 + S_6)^6 / (1 + S_5)^5] - 1 = [(1.07)^6 / (1.06)^5] - 1 = [1.5 / 1.338] - 1 = 0.12$$

References

Question From: Session 15 > Reading 52 > LOS h

Related Material:

- Key Concepts by LOS
-

Question #39 of 143

Question ID: 415590

A spot rate curve is *most accurately* described as yields to maturity for:

- ☐ A) money market securities.
- ☒ B) zero-coupon bonds.
- ☐ C) government bonds.

Explanation

A spot rate curve illustrates the yields for single payments to be made in various future periods, including short-term and long-term periods.

References

Question From: Session 15 > Reading 52 > LOS g

Related Material:

- Key Concepts by LOS
-

Question #40 of 143

Question ID: 434407

Consider a bond selling for \$1,150. This bond has 28 years to maturity, pays a 12% annual coupon, and is callable in 8 years for \$1,100. The yield to call is *closest to*:

- ☐ A) 10.55%.
- ☒ B) 10.05%.
- ☐ C) 9.25%.

Explanation

$N = 8$; $PMT = 120$; $PV = -1,150$; $FV = 1,100$; $CPT I/Y = 10.0554$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #41 of 143

Question ID: 460689

A single yield used to discount all of a bond's cash flows when calculating its price is *most accurately* described as the bond's:

- ☐ A) current yield.

- ☐ **B)** simple yield.
- ☒ **C)** yield to maturity.

Explanation

Yield to maturity is the discount rate used to discount each of a bond's cash flows when calculating the bond's price. Current yield is a bond's annual coupon payment divided by its price. Simple yield is a bond's annual coupon payment plus amortization of a discount or minus amortization of a premium.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #42 of 143

Question ID: 415605

The zero volatility spread (Z-spread) is the spread that:

- ☒ **A)** is added to each spot rate on the government yield curve that will cause the present value of the bond's cash flows to equal its market price.
- ☐ **B)** results when the cost of the call option in percent is subtracted from the option adjusted spread.
- ☐ **C)** is added to the yield to maturity of a similar maturity government bond to equal the yield to maturity of the risky bond.

Explanation

The zero volatility spread (Z-spread) is the interest rate that is added to each zero-coupon bond spot rate that will cause the present value of the risky bond's cash flows to equal its market value. The nominal spread is the spread that is added to the YTM of a similar maturity government bond that will then equal the YTM of the risky bond. The zero volatility spread (Z-spread) is the spread that results when the cost of the call option in percent is added to the option adjusted spread.

References

Question From: Session 15 > Reading 52 > LOS i

Related Material:

- Key Concepts by LOS
-

Question #43 of 143

Question ID: 415577

What is the current yield for a 5% three-year bond whose price is \$93.19?

- ☐ **A)** 5.00%.
- ☒ **B)** 5.37%.
- ☐ **C)** 2.68%.

Explanation

The current yield is computed as follows:

$$\text{Current yield} = 5\% \times 100 / \$93.19 = 5.37\%$$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #44 of 143

Question ID: 415563

An 11% coupon bond with annual payments and 10 years to maturity is callable in 3 years at a call price of \$1,100. If the bond is selling today for 975, the *yield to call* is:

- ✓ **A)** 14.97%.
- ✗ **B)** 9.25%.
- ✗ **C)** 10.26%.

Explanation

$$\text{PMT} = 110, N = 3, FV = 1,100, PV = 975$$

Compute I = 14.97

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #45 of 143

Question ID: 415572

A \$1,000 bond with an annual coupon rate of 10% has 10 years to maturity and is currently priced at \$800. What is the bond's approximate yield-to-maturity?

- ✗ **A)** 11.7%.
- ✗ **B)** 12.6%.
- ✓ **C)** 13.8%.

Explanation

$$FV = 1,000, PMT = 100, N = 10, PV = -800$$

Compute I = 13.8

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #46 of 143

Question ID: 415601

Suppose that the six-month spot rate is equal to 7% and the two-year spot rate is 6%. The one-and a half-year forward rate starting six months from now has to:

- ✓ **A)** be less than 6%.
- ✗ **B)** be more than 6%.
- ✗ **C)** lie between 6% and 7%.

Explanation

The following relationship has to hold:

$(1 + \text{spot rate}_{0,0.5/2})^1 * (1 + \text{forward rate}_{0.5,2/2})^3 = (1 + \text{spot rate}_{0,2/2})^4$. For this relationship to hold the forward rate has to be less than 6%.

References

Question From: Session 15 > Reading 52 > LOS h

Related Material:

- Key Concepts by LOS
-

Question #47 of 143

Question ID: 415578

A 20-year, 9% semi-annual coupon bond selling for \$914.20 offers a yield to maturity of:

- ✗ **A)** 9%.
- ✗ **B)** 8%
- ✓ **C)** 10%.

Explanation

$N = 40$; $PMT = 45$; $PV = -914.20$; $FV = 1,000$; $CPT \rightarrow I/Y = 5\%$

$YTM = 5\% \times 2 = 10\%$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #48 of 143

Question ID: 434410

A \$1,000 par value note is priced at an annualized discount of 1.5% based on a 360-day year and has 150 days to maturity. The note will have a bond equivalent yield that is:

- X **A)** lower than 1.5%.
- ✓ **B)** higher than 1.5%.
- X **C)** equal to 1.5%.

Explanation

The BEY is an add-on yield based on a 365-day year. The discount of 1.5% implies a discount of $\$1,000 \times 1.5\% \times 150/360 = \6.25 . The current price is therefore $\$1,000 - \$6.25 = \$993.75$.

This gives a HPR of $\$6.25 / \$993.75 = 0.629\%$.

$BEY = 0.629\% \times 365/150 = 1.53\%$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #49 of 143

Question ID: 415586

Sysco Foods has a 10-year bond outstanding with an annual coupon of 6.5%. If the bond is currently priced at \$1,089.25, which of the following is *closest* to the semiannual-bond basis yield?

- X **A)** 5.42%.
- ✓ **B)** 5.26%.
- X **C)** 5.33%.

Explanation

First, find the annual yield to maturity of the bond as: $FV = \$1,000$; $PMT = \$65$; $N = 10$; $PV = -1,089.25$; $CPT \rightarrow I/Y = 5.33\%$. Then, find the semiannual-bond basis yield as: $2 \times [(1 + 0.0533)^{0.5} - 1] = 0.0526 = 5.26\%$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #50 of 143

Question ID: 460685

Other things equal, for option-free bonds:

- X **A)** a bond's value is more sensitive to yield increases than to yield decreases.
- X **B)** the value of a low-coupon bond is less sensitive to interest rate changes than the value of a high-coupon bond.
- ✓ **C)** the value of a long-term bond is more sensitive to interest rate changes than the value of a short-term bond.

Explanation

Long-term, low-coupon bonds are more sensitive than short-term and high-coupon bonds. Prices are more sensitive to rate decreases than to rate increases (duration rises as yields fall).

References

Question From: Session 15 > Reading 52 > LOS b

Related Material:

- Key Concepts by LOS
-

Question #51 of 143

Question ID: 415527

Which of the following statements regarding zero-coupon bonds and spot interest rates is CORRECT?

- ☐ A) If the yield to maturity on a 2-year zero coupon bond is 6%, then the 2-year spot rate is 3%.
- ☒ B) Price appreciation creates all of the zero-coupon bond's return.
- ☐ C) Spot interest rates will never vary across the term structure.

Explanation

Zero-coupon bonds are quite special. Because zero-coupon bonds have no coupons (all of the bond's return comes from price appreciation), investors have no uncertainty about the rate at which coupons will be invested. Spot rates are defined as interest rates used to discount a single cash flow to be received in the future. If the yield to maturity on a 2-year zero is 6%, we can say that the 2-year spot rate is 6%.

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS
-

Question #52 of 143

Question ID: 434406

An analyst wants to estimate the yield to maturity on a non-traded 4-year, annual pay bond rated A. Among actively traded bonds with the same rating, 3-year bonds are yielding 3.2% and 6-year bonds are yielding 5.0%. Using matrix pricing the analyst should estimate a YTM for the non-traded bond that is *closest* to:

- ☒ A) 3.8%.
- ☐ B) 3.6%.
- ☐ C) 4.1%.

Explanation

Interpolating: $3.2\% + [(4 - 3) / (6 - 3)] \times (5.0\% - 3.2\%) = 3.8\%$

References

Question From: Session 15 > Reading 52 > LOS e

Related Material:

- Key Concepts by LOS
-

Question #53 of 143

Question ID: 415542

In the context of bonds, accrued interest:

- ☐ A) is discounted along with other cash flows to arrive at the dirty, or full price.
- ☒ B) equals interest earned from the previous coupon to the sale date.
- ☐ C) covers the part of the next coupon payment not earned by seller.

Explanation

This is a correct definition of accrued interest on bonds.

The other choices are false. Accrued interest *is not discounted* when calculating the price of the bond. The statement, "covers the part of the next coupon payment not earned by seller," should read, "...not earned by *buyer*."

References

Question From: Session 15 > Reading 52 > LOS d

Related Material:

- Key Concepts by LOS
-

Question #54 of 143

Question ID: 415498

What is the value of a 10-year, semi-annual, 8% coupon bond with a \$1,000 face value if similar bonds are now yielding 10%?

- ☐ A) \$1,000.00.
- ☒ B) \$875.38.
- ☐ C) \$1,373.87.

Explanation

Using the financial calculator: $N = 10 \times 2 = 20$; $PMT = \$80/2 = \40 ; $I/Y = 10/2 = 5\%$; $FV = \$1,000$; Compute the bond's value $PV = \$875.38$.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #55 of 143

Question ID: 472421

A \$1,000 par, semiannual-pay bond is trading for 89.14, has a coupon rate of 8.75%, and accrued interest of \$43.72. The flat price of the bond is:

- ✓ **A)** \$891.40.
- X **B)** \$847.69.
- X **C)** \$935.12.

Explanation

The flat price of the bond is the quoted price, 89.14% of par value, which is \$891.40.

References

Question From: Session 15 > Reading 52 > LOS d

Related Material:

- Key Concepts by LOS
-

Question #56 of 143

Question ID: 415501

A coupon bond that pays interest annually has a par value of \$1,000, matures in 5 years, and has a yield to maturity of 10%. What is the value of the bond today if the coupon rate is 8%?

- ✓ **A)** \$924.18.
- X **B)** \$1,500.00.
- X **C)** \$2,077.00.

Explanation

FV = 1,000

N = 5

I = 10

PMT = 80

Compute PV = 924.18.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #57 of 143

Question ID: 434408

Consider a bond selling for \$1,150. This bond has 28 years to maturity, pays a 12% annual coupon, and is callable in 8 years for \$1,100. The yield to maturity is *closest to*:

- X **A)** 9.26%.
- ✓ **B)** 10.34%.
- X **C)** 10.55%.

Explanation

$N = 28$; $PMT = 120$; $PV = -1,150$; $FV = 1,000$; $CPT\ I/Y = 10.3432$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #58 of 143

Question ID: 415521

If a bond sells at a discount and market rates are expected to stay the same until maturity, the price of the bond will:

- ☐ **A)** increase over time, approaching the par value minus the final interest payment at maturity.
- ☐ **B)** remain constant until maturity.
- ☒ **C)** increase over time, approaching the par value at maturity.

Explanation

The bond's price will increase towards the par value over time.

References

Question From: Session 15 > Reading 52 > LOS b

Related Material:

- Key Concepts by LOS
-

Question #59 of 143

Question ID: 415546

To determine the full price of a corporate bond, a dealer is *most likely* to calculate accrued interest based on:

- ☐ **A)** 30-day months and 365-day years.
- ☐ **B)** Actual day counts.
- ☒ **C)** 30-day months and 360-day years.

Explanation

Accrued interest for corporate bonds is typically calculated using the 30/360 method. For government bonds, accrued interest is typically calculated using the actual/actual method.

References

Question From: Session 15 > Reading 52 > LOS d

Related Material:

- Key Concepts by LOS
-

Question #60 of 143

Question ID: 485807

Matrix pricing is used primarily for pricing bonds that:

- ☐ A) differ from their benchmark bond's maturity.
- ☐ B) differ from their benchmark bond's credit rating.
- ☒ C) have low liquidity.

Explanation

For bonds that do not trade or trade infrequently, matrix pricing uses the yields on similar issues that do trade to estimate the required yield on the illiquid bonds.

References

Question From: Session 15 > Reading 52 > LOS e

Related Material:

- Key Concepts by LOS
-

Question #61 of 143

Question ID: 415543

Assume a bond's quoted price is 105.22 and the accrued interest is \$3.54. The bond has a par value of \$100. What is the bond's *clean* price?

- ☐ A) \$108.76.
- ☐ B) \$103.54.
- ☒ C) \$105.22.

Explanation

The clean price is the bond price without the accrued interest so it is equal to the quoted price.

References

Question From: Session 15 > Reading 52 > LOS d

Related Material:

- Key Concepts by LOS
-

Question #62 of 143

Question ID: 415564

A 15-year, 10% annual coupon bond is sold for \$1,150. It can be called at the end of 5 years for \$1,100. What is the bond's yield to call (YTC)?

- ☐ A) 8.4%.
- ☒ B) 8.0%.
- ☐ C) 9.2%.

Explanation

Input into your calculator:

$N = 5$; $FV = 1,100$; $PMT = 100$; $PV = -1,150$; $CPT \rightarrow I/Y = 7.95\%$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #63 of 143

Question ID: 683891

For an option-free bond, as the yield to maturity increases, the bond price:

- ✓ **A)** decreases at a decreasing rate.
- ✗ **B)** increases at a decreasing rate.
- ✗ **C)** decreases at an increasing rate.

Explanation

The relationship between price and yield for an option-free bond is inverse and convex toward the origin. As the yield increases, the price decreases, but at a decreasing rate.

References

Question From: Session 15 > Reading 52 > LOS b

Related Material:

- Key Concepts by LOS
-

Question #64 of 143

Question ID: 457304

A 20-year, 10% semi-annual coupon bond selling for \$925 has a yield to maturity (YTM) of:

- ✗ **A)** 9.23%.
- ✗ **B)** 11.23%.
- ✓ **C)** 10.93%.

Explanation

$N = 40$, $PMT = 50$, $PV = -925$, $FV = 1,000$, $CPT I/Y = 5.4653 \times 2 = 10.9305$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #65 of 143

Tony Ly is a Treasury Manager with Deeter Holdings, a large consumer products holding company. The Assistant Treasurer has asked Ly to calculate the current yield and the Yield-to-first Call on a bond the company holds that has the following characteristics:

- 7 years to maturity
- \$1,000 face value
- 7.0% semi-annual coupon
- Priced to yield 9.0%
- Callable at \$1,060 in two years

If Ly calculates correctly, the current yield and yield to call are approximately:

	<u>CY</u>	<u>YTC</u>
✓ A)	7.80%	15.82%
X B)	7.80%	15.72%
X C)	7.78%	15.82%

Explanation

To calculate the CY and YTC, we first need to calculate the present value of the bond: $FV = 1,000$, $N = 14 = 7 \times 2$, $PMT = 35 = (1000 \times 0.07)/2$, $I/Y = 4.5$ ($9 / 2$), Compute $PV = -897.77$ (negative sign because we entered the FV and payment as positive numbers).

Then, $CY = (\text{Face value} \times \text{Coupon}) / PV \text{ of bond} = (1,000 \times 0.07) / 897.77 = 7.80\%$.

And finally, YTC calculation: $FV = 1,060$ (price at first call), $N = 4$ (2×2), $PMT = 35$ (same as above), $PV = -897.77$ (negative sign because we entered the FV and payment as positive numbers), Compute $I/Y = 7.91$ (semi-annual rate, need to multiply by 2) = **15.82%**.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS

Question #66 of 143

Question ID: 415576

A 20 year, 8% semi-annual coupon, \$1,000 par value bond is selling for \$1,100. The bond is callable in 4 years at \$1,080. What is the bond's yield to call?

- ✓ **A)** 6.87.
- X **B)** 8.13.
- X **C)** 7.21.

Explanation

$n = 4(2) = 8$; $PMT = 80/2 = 40$; $PV = -1,100$; $FV = 1,080$

Compute $YTC = 3.435(2) = 6.87\%$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #67 of 143

Question ID: 415535

Current spot rates are as follows:

- 1-Year: 6.5%
- 2-Year: 7.0%
- 3-Year: 9.2%

Which of the following statements is *most accurate*

- ☐ **A)** For a 3-year annual pay coupon bond, all cash flows can be discounted at 9.2% to find the bond's arbitrage-free value.
- ☒ **B)** For a 3-year annual pay coupon bond, the first coupon can be discounted at 6.5%, the second coupon can be discounted at 7.0%, and the third coupon plus maturity value can be discounted at 9.2% to find the bond's arbitrage-free value.
- ☐ **C)** The yield to maturity for 3-year annual pay coupon bond can be found by taking the geometric average of the 3 spot rates.

Explanation

Spot interest rates can be used to price coupon bonds by taking each individual cash flow and discounting it at the appropriate spot rate for that year's payment. Note that the yield to maturity is the bond's internal rate of return that equates all cash flows to the bond's price. Current spot rates have nothing to do with the bond's yield to maturity.

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS
-

Question #68 of 143

Question ID: 415602

The one-year spot rate is 5% and the two-year spot rate is 6.5%. What is the one-year forward rate starting one year from now?

- ☒ **A)** 8.02%.
- ☐ **B)** 7.87%.
- ☐ **C)** 5.00%.

Explanation

The forward rate is computed as follows:

One-year forward rate = $1.065^2 / 1.05 - 1 = 8.02\%$

References

Question From: Session 15 > Reading 52 > LOS h

Related Material:

- Key Concepts by LOS
-

Question #69 of 143

Question ID: 415557

PG&E has a bond outstanding with a 7% semiannual coupon that is currently priced at \$779.25. The bond has remaining maturity of 10 years but has a first put date in 4 years at the par value of \$1,000. Which of the following is *closest* to the yield to first put on the bond?

- ✓ **A)** 14.46%.
- X **B)** 7.73%.
- X **C)** 14.92%.

Explanation

To compute yield to first put, enter: FV = \$1,000; N = $2 \times 4 = 8$; PMT = \$35; PV = -\$779.25; CPT → I/Y = 7.23%, annualized as $(7.23)(2) = 14.46\%$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #70 of 143

Question ID: 415493

Today an investor purchases a \$1,000 face value, 10%, 20-year, semi-annual bond at a discount for \$900. He wants to sell the bond in 6 years when he estimates the yields will be 9%. What is the estimate of the future price?

- X **A)** \$946.
- ✓ **B)** \$1,079.
- X **C)** \$1,152.

Explanation

In 6 years, there will be 14 years ($20 - 6$), or $14 \times 2 = 28$ semi-annual periods remaining of the bond's life So, $N = (20 - 6)(2) = 28$; $PMT = (1,000 \times 0.10) / 2 = 50$; $I/Y = 9/2 = 4.5$; $FV = 1,000$; CPT → $PV = 1,079$.

Note: Calculate the PV (we are interested in the PV 6 years from now), not the FV.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #71 of 143

Question ID: 415558

A 10% coupon bond, annual payments, maturing in 10 years, is expected to make all coupon payments, but to pay only 50% of par value at maturity. What is the expected yield on this bond if the bond is purchased for \$975?

- ☐ A) 10.68%.
- ☐ B) 8.68%.
- ☒ C) 6.68%.

Explanation

PMT = 100; N = 10; FV = 500; PV = -975; CPT → I = 6.68

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #72 of 143

Question ID: 415513

A zero-coupon bond has a yield to maturity of 9.6% (annual basis) and a par value of \$1,000. If the bond matures in 10 years, today's price of the bond would be:

- ☐ A) \$422.41.
- ☒ B) \$399.85.
- ☐ C) \$391.54.

Explanation

I = 9.6; FV = 1,000; N = 10; PMT = 0; CPT → PV = 399.85

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #73 of 143

Question ID: 415504

A bond with a face value of \$1,000 pays a semi-annual coupon of \$60. It has 15 years to maturity and a yield to maturity of 16% per year. What is the value of the bond?

- ☒ A) \$774.84.
- ☐ B) \$832.88.

X C) \$697.71.

Explanation

FV = 1,000; PMT = 60; N = 30; I = 8; CPT → PV = 774.84

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #74 of 143

Question ID: 415524

A year ago a company issued a bond with a face value of \$1,000 with an 8% coupon. Now the prevailing market yield is 10%. What happens to the bond? The bond:

- ✓ A) is traded at a market price of less than \$1,000.
- X B) is traded at a market price higher than \$1,000.
- X C) price is not affected by the change in market yield, and will continue to trade at \$1,000.

Explanation

A bond's price/value has an inverse relationship with interest rates. Since interest rates are increasing (from 8% when issued to 10% now) the bond will be selling at a discount. This happens so an investor will be able to purchase the bond and still earn the same yield that the market currently offers.

References

Question From: Session 15 > Reading 52 > LOS b

Related Material:

- Key Concepts by LOS
-

Question #75 of 143

Question ID: 415488

Which of the following statements regarding zero-coupon bonds and spot interest rates is *most* accurate?

- ✓ A) A coupon bond can be viewed as a collection of zero-coupon bonds.
- X B) Price appreciation creates only some of the zero-coupon bond's return.
- X C) Spot interest rates will never vary across time.

Explanation

Zero-coupon bonds are quite special. Because zero-coupon bonds have no coupons (all of the bond's return comes from price appreciation), investors have no uncertainty about the rate at which coupons will be invested. Spot rates are defined as interest rates used to discount a single cash flow to be received in the future. Any bond can be viewed as the sum of the present value of its individual cash flows where each of those cash flows are discounted at the appropriate zero-coupon bond spot rate.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS

Question #76 of 143

Question ID: 415510

Consider a bond that pays an annual coupon of 5% and that has three years remaining until maturity. Assume the term structure of interest rates is flat at 6%. If the term structure of interest rates does not change over the next twelve-month interval, the bond's price change (as a percentage of par) will be *closest to*:

- ✓ **A)** 0.84.
- X **B)** -0.84.
- X **C)** 0.00.

Explanation

The bond price change is computed as follows:

Bond Price Change = New Price – Old Price = $(5/1.06 + 105/1.06^2) - (5/1.06 + 5/1.06^2 + 105/1.06^3) = 98.17 - 97.33 = 0.84$.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS

Question #77 of 143

Question ID: 415490

Assume a city issues a \$5 million bond to build a new arena. The bond pays 8% semiannual interest and will mature in 10 years. Current interest rates are 9%. What is the present value of this bond and what will the bond's value be in seven years from today?

	<u>Present Value</u>	<u>Value in 7 Years from Today</u>
✓ A)	4,674,802	4,871,053
X B)	4,674,802	4,931,276
X C)	5,339,758	4,871,053

Explanation

Present Value:

Since the current interest rate is above the coupon rate the bond will be issued at a discount. $FV = \$5,000,000$; $N = 20$; $PMT = (0.04)(5 \text{ million}) = \$200,000$; $I/Y = 4.5$; $CPT \rightarrow PV = -\$4,674,802$

Value in 7 Years:

Since the current interest rate is above the coupon rate the bond will be issued at a discount. $FV = \$5,000,000$; $N = 6$; $PMT = (0.04)(5 \text{ million}) = \$200,000$; $I/Y = 4.5$; $CPT \rightarrow PV = -\$4,871,053$

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #78 of 143

Question ID: 415508

An investor buys a 25-year, 10% annual pay bond for \$900 and will sell the bond in 5 years when he estimates its yield will be 9%. The price for which the investor expects to sell this bond is *closest to*:

- X **A)** \$1,122.
- ✓ **B)** \$1,091.
- X **C)** \$964.

Explanation

This is a present value problem 5 years in the future.

$N = 20$, $PMT = 100$, $FV = 1000$, $I/Y = 9$

CPT PV = -1,091.29

The \$900 purchase price is not relevant for this problem.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #79 of 143

Question ID: 415505

An investor purchased a 6-year annual interest coupon bond one year ago. The coupon rate of interest was 10% and par value was \$1,000. At the time she purchased the bond, the yield to maturity was 8%. The amount paid for this bond one year ago was:

- X **A)** \$1,125.53.
- X **B)** \$1,198.07.
- ✓ **C)** \$1,092.46.

Explanation

$N = 6$

$PMT = (0.10)(1,000) = 100$

$I = 8$

$FV = 1,000$

CPT = ?

PV = 1,092.46

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #80 of 143

Question ID: 415496

Georgia Corporation has \$1,000 par value bonds with 10 years remaining maturity. The bonds carry a 7.5% coupon that is paid semi-annually. If the current yield to maturity on similar bonds is 8.2%, what is the current value of the bonds?

- ✓ **A)** \$952.85.
- X **B)** \$569.52.
- X **C)** \$1,123.89.

Explanation

The coupon payment each six months is $(\$1,000)(0.075 / 2) = \37.50 . To value the bond, enter FV = \$1,000; PMT = \$37.50; N = $10 \times 2 = 20$; I/Y = $8.2 / 2 = 4.1\%$; CPT → PV = -952.85.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #81 of 143

Question ID: 434409

If the required margin on a floating rate note is greater than the quoted margin, it is *most likely* that the:

- ✓ **A)** credit quality of the FRN has decreased.
- X **B)** bond will be priced above par at the reset date.
- X **C)** reference rate on the FRN has increased.

Explanation

If the required margin is greater than the quoted margin, the credit quality of the bond must have decreased and the bond will be priced below par at the reset date.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #82 of 143

Question ID: 415532

A 3-year option-free bond (par value of \$1,000) has an annual coupon of 9%. An investor determines that the spot rate of year 1 is 6%, the year 2 spot rate is 12%, and the year 3 spot rate is 13%. Using the arbitrage-free valuation approach, the bond price is *closest* to:

- ✓ **A)** \$912.
- X **B)** \$968.
- X **C)** \$1,080.

Explanation

We can calculate the price of the bond by discounting each of the annual payments by the appropriate spot rate and finding the sum of the present values. $\text{Price} = [90 / (1.06)] + [90 / (1.12)^2] + [1,090 / (1.13)^3] = 912$. Or, in keeping with the notion that each cash flow is a separate bond, sum the following transactions on your financial calculator:

N = 1; I/Y = 6.0; PMT = 0; FV = 90; CPT → PV = 84.91

N = 2; I/Y = 12.0; PMT = 0; FV = 90; CPT → PV = 71.75

N = 3; I/Y = 13.0; PMT = 0; FV = 1,090; CPT → PV = 755.42

Price = 84.91 + 71.75 + 755.42 = \$912.08.

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS

Question #83 of 143

Question ID: 460693

Bond X is a noncallable corporate bond maturing in ten years. Bond Y is also a corporate bond maturing in ten years, but Bond Y is callable at any time beginning three years from now. Both bonds carry a credit rating of AA. Based on this information:

- X **A)** The option adjusted spread of Bond Y will be greater than its zero-volatility spread.
- X **B)** The zero-volatility spread of Bond X will be greater than its option-adjusted spread.
- ✓ **C)** Bond Y will have a higher zero-volatility spread than Bond X.

Explanation

Bond Y will have the higher Z-spread due to the call option embedded in the bond. This option benefits the issuer, and investors will demand a higher yield to compensate for this feature. The option-adjusted spread removes the value of the option from the spread calculation, and would always be less than the Z-spread for a callable bond. Since Bond X is noncallable, the Z-spread and the OAS will be the same.

References

Question From: Session 15 > Reading 52 > LOS i

Related Material:

- Key Concepts by LOS
-

Question #84 of 143

Question ID: 415599

If the current two-year spot rate is 6% while the one-year forward rate for one year is 5%, what is the current spot rate for one year?

- ☐ A) 5.5%.
- ☐ B) 5.0%.
- ☒ C) 7.0%.

Explanation

$$(1 + 1_y 1_y)(1 + s_1) = (1 + s_2)^2$$

$$(1 + 0.05)(1 + s_1) = (1 + 0.06)^2$$

$$(1 + s_1) = (1.06)^2 / (1 + 0.05)$$

$$1 + s_1 = 1.1236 / 1.05$$

$$1 + s_1 = 1.0701$$

$$s_1 = 0.07 \text{ or } 7\%$$

References

Question From: Session 15 > Reading 52 > LOS h

Related Material:

- Key Concepts by LOS
-

Question #85 of 143

Question ID: 415549

Whitetail Company issues 73-day commercial paper that will pay \$1,004 at maturity per \$1,000 face value. The bond-equivalent yield is *closest to*:

- ☐ A) 2.02%.
- ☒ B) 2.00%.
- ☐ C) 1.97%.

Explanation

The add-on yield for the 73-day holding period is $\$1,004 / \$1,000 - 1 = 0.4\%$. The bond-equivalent yield, which is an add-on yield based on a 365-day year, is $(365 / 73) \times 0.4\% = 2.0\%$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #86 of 143

Question ID: 472422

A fixed coupon callable bond issued by Protohype Inc. is trading with a yield to maturity of 6.4%. Compared to this YTM, the bond's option-adjusted yield will be:

- X **A)** the same.
- ✓ **B)** lower.
- X **C)** higher.

Explanation

The option-adjusted yield is the yield a bond with an embedded option would have if it were option-free. For a callable bond, the option-adjusted yield is lower than the YTM. This is because the call option may be exercised by the issuer, rather than the bondholder. Bond investors require a higher yield to invest in a callable bond than they would require on an otherwise identical option-free bond.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS

Question #87 of 143

Question ID: 434412

Given that the one-year spot rate is 5.76% and the 1.5-year spot rate is 6.11%, assuming semiannual compounding what is the six-month forward rate starting one year from now?

- ✓ **A)** 6.81%.
- X **B)** 6.97%.
- X **C)** 7.04%.

Explanation

The forward rate is computed as follows:

$$\text{Forward rate}_{1,1.5} = 2 \times \left(\frac{\left(1 + \frac{\text{spot rate}_{0,1.5}}{2}\right)^3}{\left(1 + \frac{\text{spot rate}_{0,1}}{2}\right)^2} - 1 \right) = 2 \times \left(\frac{\left(1 + \frac{0.0611}{2}\right)^3}{\left(1 + \frac{0.0576}{2}\right)^2} - 1 \right) = 6.81\%$$

References

Question From: Session 15 > Reading 52 > LOS h

Related Material:

- Key Concepts by LOS

Question #88 of 143

Question ID: 415583

A five-year bond with a 7.75% semiannual coupon currently trades at 101.245% of a par value of \$1,000. Which of the following is *closest* to the current yield on the bond?

- X A) 7.53%.
- X B) 7.75%.
- ✓ C) 7.65%.

Explanation

The current yield is computed as: (Annual Cash Coupon Payment) / (Current Bond Price). The annual coupon is: (\$1,000) (0.0775) = \$77.50. The current yield is then: (\$77.50) / (\$1,012.45) = 0.0765 = 7.65%.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #89 of 143

Question ID: 415553

An investor is interested in buying a 4-year, \$1,000 face value bond with a 7% coupon and semi-annual payments. The bond is currently priced at \$875.60. The first put price is \$950 in 2 years. The yield to put is *closest* to:

- X A) 8.7%.
- ✓ B) 11.9%.
- X C) 10.4%.

Explanation

$N = 2 \times 2 = 4$; $PV = -875.60$; $PMT = 70/2 = 35$; $FV = 950$; $CPT \rightarrow I/Y = 5.94 \times 2 = 11.88\%$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #90 of 143

Question ID: 415541

The one-year spot rate is 7.00%. One-year forward rates are 8.15% one year from today, 10.30% two years from today, and 12.00% three years from today.

The value of a 4-year, 11% annual pay, \$1,000 per bond is *closest* to:

- X A) \$984.
- ✓ B) \$1,060.
- X C) \$1,052.

Explanation

Spot Rates:

Year 1 = 7%.

Year 2 = $[(1.07)(1.0815)]^{1/2} - 1 = 7.57\%$.

Year 3 = $[(1.07)(1.0815)(1.103)]^{1/3} - 1 = 8.48\%$.

Year 4 = $[(1.07)(1.0815)(1.103)(1.120)]^{1/4} - 1 = 9.35\%$.

Bond Value:

N = 1; FV = 110; I/Y = 7; CPT → PV = 102.80

N = 2; FV = 110; I/Y = 7.57; CPT → PV = 95.06

N = 3; FV = 110; I/Y = 8.48; CPT → PV = 86.17

N = 4; FV = 1,110; I/Y = 9.35; CPT → PV = 776.33

$102.80 + 95.06 + 86.17 + 776.33 = 1,060.36$

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS
-

Question #91 of 143

Question ID: 415499

A coupon bond that pays interest annually has a par value of \$1,000, matures in 5 years, and has a yield to maturity of 10%. What is the value of the bond today if the coupon rate is 12%?

✓ **A)** \$1,075.82.

X **B)** \$1,077.22

X **C)** \$927.90.

Explanation

FV = 1,000

N = 5

I = 10

PMT = 120

CPT = ?

PV = 1,075.82.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #92 of 143

Question ID: 415604

A Treasury bond due in one-year has a yield of 8.5%. A Treasury bond due in 5 years has a yield of 9.3%. A bond issued by General Motors due in 5 years has a yield of 9.9%. A bond issued by Exxon due in one year has a yield of 9.4%. The yield spreads on the bonds issued by Exxon and General Motors are:

	<u>Exxon</u>	<u>General Motors</u>
✓ A)	0.9%	0.6%
X B)	0.1%	1.4%
X C)	0.1%	0.6%

Explanation

$$9.4 - 8.5 = 0.9$$

$$9.9 - 9.3 = 0.6$$

References

Question From: Session 15 > Reading 52 > LOS i

Related Material:

- Key Concepts by LOS
-

Question #93 of 143

Question ID: 415562

A coupon bond pays annual interest, has a par value of \$1,000, matures in 4 years, has a coupon rate of \$100, and a yield to maturity of 12%. The current yield on this bond is:

- X **A)** 11.25%.
- X **B)** 9.50%.
- ✓ **C)** 10.65%.

Explanation

$$FV = 1,000; N = 4; PMT = 100; I = 12; CPT \rightarrow PV = 939.25.$$

Current yield = coupon / current price

$$100 / 939.25 \times 100 = 10.65$$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #94 of 143

Question ID: 415537

An investor gathers the following information about a 2-year, annual-pay bond:

- Par value of \$1,000
- Coupon of 4%
- 1-year spot interest rate is 2%
- 2-year spot interest rate is 5%

Using the above spot rates, the current price of the bond is *closest* to:

- X **A)** \$1,010.
- ✓ **B)** \$983.
- X **C)** \$1,000.

Explanation

The value of the bond is simply the present value of discounted future cash flows, using the appropriate spot rate as the discount rate for each cash flow. The coupon payment of the bond is \$40 ($0.04 \times 1,000$). The bond price = $40/(1.02) + 1,040/(1.05)^2 = \982.53 .

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS

Question #95 of 143

Question ID: 479062

What is the probable change in price of a 30-year semiannual 6.5% coupon, \$1000 par value bond yielding 8% if the yield decreases to 7%?

- X **A)** \$98.83.
- ✓ **B)** \$107.31.
- X **C)** \$106.34.

Explanation

Price at 8% is $N = 60$, $FV = \$1,000$, $I = 4\%$, $PMT = \$32.50$, $CPT PV = \$830.32$; price at 7% is $N = 60$, $FV = \$1,000$, $I = 3.5\%$, $PMT = \$32.50$, $CPT PV = \$937.64$. Change in price is $\$937.64 - \$830.32 = \$107.31$.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS

Question #96 of 143

Question ID: 415503

What value would an investor place on a 20-year, 10% annual coupon bond, if the investor required a 10% rate of return?

- X **A)** \$1,104.

- X **B)** \$920.
- ✓ **C)** \$1,000.

Explanation

$N = 20$; $I/Y = 10$; $PMT = 100$; $FV = 1,000$; $CPT \rightarrow PV = 1,000$

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #97 of 143

Question ID: 415591

A yield curve for coupon bonds is composed of yields on bonds with similar:

- ✓ **A)** issuers.
- X **B)** coupon rates.
- X **C)** maturities.

Explanation

Yield curves are typically constructed for bonds of the same or similar issuers, such as a government bond yield curve or AA rated corporate bond yield curve.

References

Question From: Session 15 > Reading 52 > LOS g

Related Material:

- Key Concepts by LOS
-

Question #98 of 143

Question ID: 415547

An analyst using matrix pricing will estimate the value of a bond based on:

- X **A)** a probability model for default risk.
- ✓ **B)** yields to maturity of other bonds.
- X **C)** the issuer's cost of capital from all sources.

Explanation

Matrix pricing is a method for valuing a non-traded or infrequently traded bond based on the yields to maturity of similar bonds that are traded more frequently.

References

Question From: Session 15 > Reading 52 > LOS e

Related Material:

- Key Concepts by LOS
-

Question #99 of 143

Question ID: 415545

Accrued interest on a bond that is sold between coupon dates is:

- ☐ A) split between the buyer and seller.
- ☒ B) paid to the seller.
- ☐ C) paid to the buyer.

Explanation

Accrued interest from the most recent coupon payment date to the settlement date is owed to the seller of a bond and is included in the full price.

References

Question From: Session 15 > Reading 52 > LOS d

Related Material:

- Key Concepts by LOS
-

Question #100 of 143

Question ID: 460687

An investor who is calculating the arbitrage-free value of a government security should discount each cash flow using the:

- ☒ A) government spot rate that is specific to its maturity.
- ☐ B) risk-free rate.
- ☐ C) government note yield that is specific to its maturity.

Explanation

To calculate a government bond's arbitrage-free value, each cash flow is discounted using the government spot rate that is specific to the maturity of the cash flow.

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS
-

Question #101 of 143

Question ID: 415584

Suppose that IBM has a \$1,000 par value bond outstanding with a 12% semiannual coupon that is currently trading at 102.25 with seven years to maturity. Which of the following is *closest* to the yield to maturity (YTM) on the bond?

- X **A)** 11.21%.
- X **B)** 11.91%.
- ✓ **C)** 11.52%.

Explanation

To find the YTM, enter PV = -\$1,022.50; PMT = \$60; N = 14; FV = \$1,000; CPT → I/Y = 5.76%. Now multiply by 2 for the semiannual coupon payments: $(5.76)(2) = 11.52\%$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #102 of 143

Question ID: 441030

A bond with a 12% annual coupon, 10 years to maturity and selling at 88 percent of par has a yield to maturity of:

- X **A)** between 13% and 14%.
- X **B)** between 10% and 12%.
- ✓ **C)** over 14%.

Explanation

PMT = 12; N = 10; PV = -88; FV = 100; CPT → I = 14.3

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #103 of 143

Question ID: 415522

A 5-year bond with a 10% coupon has a present yield to maturity of 8%. If interest rates remain constant one year from now, the price of the bond will be:

- ✓ **A)** lower.
- X **B)** higher.
- X **C)** the same.

Explanation

A premium bond sells at more than face value, thus as time passes the bond value will converge upon the face value.

References

Question From: Session 15 > Reading 52 > LOS b

Related Material:

- Key Concepts by LOS
-

Question #104 of 143

Question ID: 713758

A 30-year, 10% annual coupon bond is sold at par. It can be called at the end of 10 years for \$1,100. What is the bond's yield to call (YTC)?

- X A) 10.0%.
- ✓ B) 10.6%.
- X C) 8.9%.

Explanation

$N = 10$; $PMT = 100$; $PV = -1,000$; $FV = 1,100$; $CPT \rightarrow I = 10.6$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #105 of 143

Question ID: 460690

A semiannual-pay bond is callable in five years at \$1,080. The bond has an 8% coupon and 15 years to maturity. If an investor pays \$895 for the bond today, the yield to call is *closest to*:

- ✓ A) 12.1%.
- X B) 9.3%.
- X C) 10.2%.

Explanation

YTC: $N = 10$; $PV = -895$; $PMT = 80 / 2 = 40$; $FV = 1080$; $CPT \rightarrow I/Y = 6.035 \times 2 = 12.07\%$.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #106 of 143

Question ID: 415573

What is the yield to call on a bond that has an 8% coupon paid annually, \$1,000 face value, 10 years to maturity and is first callable in 6 years? The current market price is \$1,100. The call price is the face value plus 1-year's interest.

- ✓ **A)** 7.02%.
- X **B)** 6.00%.
- X **C)** 7.14%.

Explanation

N = 6; PV = -1,100.00; PMT = 80; FV = 1,080; Compute I/Y = 7.02%.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #107 of 143

Question ID: 415494

Given a required yield to maturity of 6%, what is the intrinsic value of a semi-annual pay coupon bond with an 8% coupon and 15 years remaining until maturity?

- ✓ **A)** \$1,196.
- X **B)** \$1,095.
- X **C)** \$1,202.

Explanation

This problem can be solved most easily using your financial calculator. Using semiannual payments, $I = 6/2 = 3\%$; $PMT = 80/2 = \$40$; $N = 15 \times 2 = 30$; $FV = \$1,000$; $CPT \rightarrow PV = \$1,196$.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #108 of 143

Question ID: 415596

The one-year spot rate is 6% and the one-year forward rates starting in one, two and three years respectively are 6.5%, 6.8% and 7%.

What is the four-year spot rate?

- X **A)** 6.51%.
- ✓ **B)** 6.57%.
- X **C)** 6.58%.

Explanation

The four-year spot rate is computed as follows:

Four-year spot rate = $[(1 + 0.06)(1 + 0.065)(1 + 0.068)(1 + 0.07)]^{1/4} - 1 = 6.57\%$

References

Question From: Session 15 > Reading 52 > LOS h

Related Material:

- Key Concepts by LOS
-

Question #109 of 143

Question ID: 415520

Consider a 10%, 10-year bond sold to yield 8%. One year passes and interest rates remained unchanged (8%). What will have happened to the bond's price during this period?

- ☐ A) It will have remained constant.
- ☐ B) It will have increased.
- ☒ C) It will have decreased.

Explanation

The bond is sold at a premium, as time passes the bond's price will move toward par. Thus it will *fall*.

$N = 10$; $FV = 1,000$; $PMT = 100$; $I = 8$; $CPT \rightarrow PV = 1,134$

$N = 9$; $FV = 1,000$; $PMT = 100$; $I = 8$; $CPT \rightarrow PV = 1,125$

References

Question From: Session 15 > Reading 52 > LOS b

Related Material:

- Key Concepts by LOS
-

Question #110 of 143

Question ID: 436852

If yield to maturity and risk factors remain constant over the remainder of a coupon bond's life, and the bond is trading at a discount today, it will have a:

- ☐ A) positive current yield and a capital gain.
- ☒ B) positive current yield, only.
- ☐ C) negative current yield and a capital gain.

Explanation

A coupon bond will have a positive current yield. It will not have a capital gain because its price will increase toward par along its constant-yield price trajectory as long as its YTM remains constant.

References

Question From: Session 15 > Reading 52 > LOS b

Related Material:

- Key Concepts by LOS

Question #111 of 143

Question ID: 415559

A 20-year, 9% annual coupon bond selling for \$1,098.96 offers a yield of:

- ☐ A) 10%.
- ☒ B) 8%.
- ☐ C) 9%.

Explanation

$N = 20$, $PMT = 90$, $PV = -1,098.96$, $FV = 1,000$, CPT I/Y

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #112 of 143

Question ID: 415518

A 10-year, \$1,000 face value 8% semi-annual coupon bond is priced at \$950. Which of the following statements about this bond is *most accurate*?

- ☐ A) The current market required rate is less than the coupon rate.
- ☒ B) The bond is selling at a discount.
- ☐ C) The bond is selling at a premium.

Explanation

When the issue price is less than par, the bond is selling at a discount.

We also know that the *current market required rate is greater than the coupon rate* because the bond is selling at a discount.

References

Question From: Session 15 > Reading 52 > LOS b

Related Material:

- Key Concepts by LOS
-

Question #113 of 143

Question ID: 415588

The margin above or below LIBOR that is used to determine a floating-rate note's coupon payments is *most accurately* described as its:

- ☒ A) quoted margin.
- ☐ B) required margin.
- ☐ C) discount margin.

Explanation

The quoted margin of a floating-rate note is the number of basis points added to or subtracted from the note's reference rate to determine its coupon payments. The required margin or discount margin is the number of basis points above or below the reference rate that would cause the note's price to return to par value at each reset date. Required margin may be different from quoted margin if a note's credit quality has changed since issuance.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #114 of 143

Question ID: 485808

An investor purchases a 5-year, A-rated, 7.95% coupon, semiannual-pay corporate bond at a yield to maturity of 8.20%. The bond is callable at 102 in three years. The bond's yield to call is *closest to*:

- X **A)** 8.6%.
- X **B)** 8.3%.
- ✓ **C)** 8.9%.

Explanation

First determine the price paid for the bond:

$N = 5 \times 2 = 10$; $I/Y = 8.20 / 2 = 4.10$; $PMT = 7.95 / 2 = 3.975$; $FV = 100$; CPT PV = -98.99

Then use this value and the call price and date to determine the yield to call:

$N = 3 \times 2 = 6$; $PMT = 7.95 / 2 = 3.975$; $PV = -98.99$; $FV = 102$; CPT $I/Y = 4.4686 \times 2 = 8.937\%$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #115 of 143

Question ID: 415538

Given the following spot rate curve:

Spot Rate

1-yr zero = 9.50%

2-yr zero = 8.25%

3-yr zero = 8.00%

4-yr zero = 7.75%

5-yr zero = 7.75%

What will be the market price of a five-year, 9% annual coupon rate bond?

- ☐ A) \$1,067.78.
- ☒ B) \$1,047.68.
- ☐ C) \$1,000.00.

Explanation

$90 / (1 + 0.095) + 90 / (1 + 0.0825)^2 + 90 / (1 + 0.08)^3 + 90 / (1 + 0.0775)^4 + 1,090 / (1 + 0.0775)^5 = \$1,047.68.$

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS
-

Question #116 of 143

Question ID: 460684

Consider a \$1,000-face value, 12-year, 8%, semiannual coupon bond with a YTM of 10.45%. The change in value for a decrease in yield of 38 basis points is:

- ☐ A) \$21.18.
- ☒ B) \$23.06.
- ☐ C) \$22.76.

Explanation

With YTM = 10.45% (I/Y = 5.225), PMT = 40, N = 24, FV = 1,000, PV = \$834.61. With YTM = 10.07% (I/Y = 5.035), PV = \$857.67, an increase of \$23.06.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #117 of 143

Question ID: 415540

Assume that a callable bond's call period starts two years from now with a call price of \$102.50. Also assume that the bond pays an annual coupon of 6% and the term structure is flat at 5.5%. Which of the following is the price of the bond assuming that it is called on the first call date?

- ☒ A) \$103.17.
- ☐ B) \$102.50.
- ☐ C) \$100.00.

Explanation

The bond price is computed as follows:

$$\text{Bond price} = 6/1.055 + (102.50 + 6)/1.055^2 = \$103.17$$

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS
-

Question #118 of 143

Question ID: 460691

Which of the following adjustments is *most likely* to be made to the day count convention when calculating corporate bond yield spreads to government bond yields?

- ☐ A) Adjust both the corporate and government bond yields to actual months and years.
- ☐ B) Adjust the government bond yield to actual months and years.
- ☒ C) Adjust the corporate bond yield to actual months and years.

Explanation

Corporate bond yields are typically based on a 30/360 day count. When calculating spreads, corporate yields are often restated to the actual/actual basis typically used to state government bond yields.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #119 of 143

Question ID: 415603

The 3-year spot rate is 10%, and the 4-year spot rate is 10.5%. What is the 1-year forward rate 3 years from now?

- ☐ A) 11.0%.
- ☐ B) 10.0%.
- ☒ C) 12.0%.

Explanation

$$[(1 + S_4)^4 / (1 + S_3)^3] - 1 = 12.01\% = 12\%.$$

References

Question From: Session 15 > Reading 52 > LOS h

Related Material:

- Key Concepts by LOS
-

Question #120 of 143

Question ID: 415514

A zero-coupon bond matures three years from today, has a par value of \$1,000 and a yield to maturity of 8.5% (assuming semi-annual compounding). What is the current value of this issue?

- ☐ A) \$782.91.
- ☒ B) \$779.01.
- ☐ C) \$78.29.

Explanation

The value of the bond is computed as follows:

Bond Value = $\$1,000 / 1.0425^6 = \779.01 .

N = 6; I/Y = 4.25; PMT = 0; FV = 1,000; CPT → PV = 779.01.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #121 of 143

Question ID: 415594

Suppose the 3-year spot rate is 12.1% and the 2-year spot rate is 11.3%. Which of the following statements concerning forward and spot rates is *most* accurate? The 1-year:

- ☒ A) forward rate two years from today is 13.7%.
- ☐ B) forward rate two years from today is 13.2%.
- ☐ C) forward rate one year from today is 13.7%.

Explanation

The equation for the three-year spot rate, S_3 , is $(1 + S_1)(1 + {}_1y_1y)(1 + {}_2y_1y) = (1 + S_3)^3$. Also, $(1 + S_1)(1 + {}_1y_1y) = (1 + S_2)^2$. So, $(1 + {}_2y_1y) = (1 + S_3)^3 / (1 + S_2)^2$, computed as: $(1 + 0.121)^3 / (1 + 0.113)^2 = 1.137$. Thus, ${}_2y_1y = 0.137$, or 13.7%.

References

Question From: Session 15 > Reading 52 > LOS h

Related Material:

- Key Concepts by LOS
-

Question #122 of 143

Question ID: 415571

Which of the following describes the yield to worst? The:

- ☐ A) lowest of all possible prices on the bond.
- ☒ B) lowest of all possible yields to call.

X **C)** yield given default on the bond.

Explanation

Yield to worst involves the calculation of yield to call for every possible call date, and determining which of these results in the lowest expected return.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #123 of 143

Question ID: 415589

The Treasury spot rate yield curve is *closest* to which of the following curves?

- X **A)** Par bond yield curve.
- X **B)** Forward yield curve rate.
- ✓ **C)** Zero-coupon bond yield curve.

Explanation

The spot rate yield curve shows the appropriate rates for discounting single cash flows occurring at different times in the future. Conceptually, these rates are equivalent to yields on zero-coupon bonds. The par bond yield curve shows the YTMs at which bonds of various maturities would trade at par value. Forward rates are expected future short-term rates.

References

Question From: Session 15 > Reading 52 > LOS g

Related Material:

- Key Concepts by LOS
-

Question #124 of 143

Question ID: 415566

A 20-year, \$1,000 face value, 10% semi-annual coupon bond is selling for \$875. The bond's yield to maturity is:

- ✓ **A)** 11.62%.
- X **B)** 11.43%.
- X **C)** 5.81%.

Explanation

$N = 40$ (2×20 years); $PMT = 50$ ($0.10 \times 1,000$) / 2; $PV = -875$; $FV = 1,000$; $CPT \rightarrow I/Y = 5.811 \times 2$ (for annual rate) = 11.62%.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #125 of 143

Question ID: 415555

A 20-year bond with a par value of \$1,000 and an annual coupon rate of 6% currently trades at \$850. It has a yield to maturity of:

- ☐ A) 7.9%.
- ☐ B) 6.8%.
- ☒ C) 7.5%.

Explanation

$N = 20$; $FV = 1,000$; $PMT = 60$; $PV = -850$; $CPT \rightarrow I = 7.5$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #126 of 143

Question ID: 415509

An investor buys a 20-year, 10% semi-annual bond for \$900. She wants to sell the bond in 6 years when she estimates yields will be 10%. What is the estimate of the future price?

- ☐ A) \$1,079.
- ☐ B) \$946.
- ☒ C) \$1,000.

Explanation

Since yields are projected to be 10% and the coupon rate is 10%, we know that the bond will sell at par value.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #127 of 143

Question ID: 415570

Consider a 5-year, semiannual, 10% coupon bond with a maturity value of 1,000 selling for \$1,081.11. The first call date is 3 years from now and the call price is \$1,030. What is the yield-to-call?

- ☐ A) 7.28%.
- ☒ B) 7.82%.

X **C)** 3.91%.

Explanation

$N = 6$; $PMT = 50$; $FV = 1,030$; $PV = -1,081.11$; $CPT \rightarrow I = 3.91054$

$3.91054 \times 2 = 7.82$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #128 of 143

Question ID: 498313

What is the present value, stated as a percentage of par, of a three-year security that pays a fixed annual coupon of 6% using a discount rate of 7%?

X **A)** 100.00.

X **B)** 92.48.

✓ **C)** 97.38.

Explanation

This value is computed as follows:

$\text{Present Value} = 6/1.07 + 6/1.07^2 + 106/1.07^3 = 97.38$

The value 92.48 results if the coupon payment at maturity of the bond is neglected. The coupon rate and the discount rate are not equal so 100.00 cannot be the correct answer.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #129 of 143

Question ID: 415585

What is the annual-pay yield for a bond with a semiannual-bond basis yield of 5.6%?

X **A)** 5.52%.

✓ **B)** 5.68%.

X **C)** 5.60%.

Explanation

The annual-pay yield is computed as follows:

Annual-pay yield = $[(1 + 0.056 / 2)^2 - 1]$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #130 of 143

Question ID: 415497

What value would an investor place on a 20-year, \$1,000 face value, 10% annual coupon bond, if the investor required a 9% rate of return?

- ☐ A) \$920.
- ☒ B) \$1,091.
- ☐ C) \$879.

Explanation

N = 20; I/Y = 9; PMT = 100 ($0.10 \times 1,000$); FV = 1,000; CPT → PV = 1,091.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #131 of 143

Question ID: 415534

A three-year annual coupon bond has a par value of \$1,000 and a coupon rate of 5.5%. The spot rate for year 1 is 5.2%, the spot rate for year two is 5.5%, and the spot rate for year three is 5.7%. The value of the coupon bond is *closest to*:

- ☐ A) \$1,000.00.
- ☐ B) \$937.66.
- ☒ C) \$995.06.

Explanation

You need to find the present value of each cash flow using the spot rate that coincides with each cash flow.

The present value of cash flow 1 is: FV = \$55; PMT = 0; I/Y = 5.2%; N = 1; CPT → PV = -\$52.28.

The present value of cash flow 2 is: FV = \$55; PMT = 0; I/Y = 5.5%; N = 2; CPT → PV = -\$49.42.

The present value of cash flow 3 is: FV = \$1,055; PMT = 0; I/Y = 5.7%; N = 3; CPT → PV = -\$893.36.

The most you pay for the bond is the sum of: $\$52.28 + \$49.42 + \$893.36 = \995.06 .

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS
-

Question #132 of 143

Question ID: 460686

Ron Logan, CFA, is a bond manager. He purchased \$50 million in 6.0% coupon Southwest Manufacturing bonds at par three years ago. Today, the bonds are priced to yield 6.85%. The bonds mature in nine years. The Southwest bonds are trading at a:

- ☐ A) premium, and the yield to maturity has decreased since purchase.
- ☒ B) discount, and the yield to maturity has increased since purchase.
- ☐ C) discount, and the yield to maturity has decreased since purchase.

Explanation

The yield on the bonds has increased, indicating that the value of the bonds has fallen below par. The bonds are therefore trading at a discount. If a bond is selling at a discount, the bond's current price is lower than its par value and the bond's YTM is higher than the coupon rate. Since Logan bought the bonds at par (coupon = YTM = 6%), the YTM has increased.

References

Question From: Session 15 > Reading 52 > LOS b

Related Material:

- Key Concepts by LOS
-

Question #133 of 143

Question ID: 415495

What is the present value of a 7% semiannual-pay bond with a \$1,000 face value and 20 years to maturity if similar bonds are now yielding 8.25%?

- ☐ A) \$879.52.
- ☐ B) \$1,000.00.
- ☒ C) \$878.56.

Explanation

$N = 20 \times 2 = 40$; $I/Y = 8.25/2 = 4.125$; $PMT = 70/2 = 35$; and $FV = 1,000$.

Compute $PV = 878.56$.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #134 of 143

Question ID: 415565

A 20-year, 9% semi-annual coupon bond selling for \$1,000 offers a yield to maturity of:

- ✓ **A)** 9%.
- X **B)** 11%.
- X **C)** 10%.

Explanation

$$N = (20 \times 2) = 40$$

$$\text{pmt} = 90/2 = 45$$

$$\text{PV} = -1000$$

$$\text{FV} = 1000$$

$$\text{cpt } i = 4.5 \times 2 = 9\%$$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #135 of 143

Question ID: 442253

A \$1,000 par value, 10% annual coupon bond with 15 years to maturity is priced at \$951. The bond's yield to maturity is:

- X **A)** equal to its current yield.
- ✓ **B)** greater than its current yield.
- X **C)** less than its current yield.

Explanation

The bond's YTM is:

$$N = 15; \text{PMT} = 100; \text{PV} = -951; \text{FV} = 1,000; \text{CPT } I/Y = 10.67\%$$

Current Yield = annual coupon payment / bond price

$$\text{CY} = 100 / \$951 = 0.1051 \text{ or } 10.51\%$$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #136 of 143

Question ID: 415561

Calculate the current yield and the yield-to-first call on a bond with the following characteristics:

- 5 years to maturity
- \$1,000 face value
- 8.75% semi-annual coupon
- Priced to yield 9.25%

- Callable at \$1,025 in two years

	<u>Current Yield</u>	<u>Yield-to-Call</u>
✓ A)	8.93%	11.02%
X B)	9.83%	19.80%
X C)	8.93%	5.51%

Explanation

To calculate the CY and YTC, we first need to calculate the present value of the bond: $FV = 1,000$; $N = 5 \times 2 = 10$; $PMT = (1000 \times 0.0875) / 2 = 43.75$; $I/Y = (9.25 / 2) = 4.625$; $CPT \rightarrow PV = -980.34$ (negative sign because we entered the FV and payment as positive numbers). Then, $CY = (\text{Face value} \times \text{Coupon}) / PV \text{ of bond} = (1,000 \times 0.0875) / 980.34 = \mathbf{8.93\%}$.

And the YTC calculation is: $FV = 1,025$ (price at first call); $N = (2 \times 2) = 4$; $PMT = 43.75$ (same as above); $PV = -980.34$ (negative sign because we entered the FV and payment as positive numbers); $CPT \rightarrow I/Y = 5.5117$ (semi-annual rate, need to multiply by 2) = **11.02%**.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS

Question #137 of 143

Question ID: 415560

A \$1,000 par value, 10%, semiannual, 20-year debenture bond is currently selling for \$1,100. What is this bond's current yield and will the current yield be higher or lower than the yield to maturity?

	<u>Current Yield</u>	<u>Current Yield vs. YTM</u>
X A)	8.9%	higher
X B)	8.9%	lower
✓ C)	9.1%	higher

Explanation

Current yield = annual coupon payment/price of the bond

$$CY = 100/1,100 = 0.0909$$

The current yield will be between the coupon rate and the yield to maturity. The bond is selling at a premium, so the YTM must be less than the coupon rate, and therefore the current yield is greater than the YTM.

The YTM is calculated as: $FV = 1,000$; $PV = -1,100$; $N = 40$; $PMT = 50$; $CPT \rightarrow I = 4.46 \times 2 = 8.92$

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #138 of 143

Question ID: 415539

Using the following spot rates, what is the price of a three-year bond with annual coupon payments of 5%?

- One-year rate: 4.78%
- Two-year rate: 5.56%
- Three-year rate: 5.98%

✓ **A)** \$97.47.

X **B)** \$93.27.

X **C)** \$98.87.

Explanation

The bond price is computed as follows:

$$\text{Bond price} = (5 / 1.0478) + (5 / 1.0556^2) + (105 / 1.0598^3) = \$97.47$$

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS
-

Question #139 of 143

Question ID: 415536

A 2-year option-free bond (par value of \$10,000) has an annual coupon of 15%. An investor determines that the spot rate of year 1 is 16% and the year 2 spot rate is 17%. Using the arbitrage-free valuation approach, the bond price is *closest* to:

X **A)** \$8,401.

✓ **B)** \$9,694.

X **C)** \$11,122.

Explanation

We can calculate the price of the bond by discounting each of the annual payments by the appropriate spot rate and finding the sum of the present values. $\text{Price} = [1,500 / (1.16)] + [11,500 / (1.17)^2] = \$9,694$. Or, in keeping with the notion that each cash flow is a separate bond, sum the following transactions on your financial calculator:

N=1, I/Y=16.0, PMT=0, FV=1,500, CPT PV=1,293

N=2, I/Y=17.0, PMT=0, FV=11,500, CPT PV=8,401

Price = 1,293 + 8,401 = \$9,694.

References

Question From: Session 15 > Reading 52 > LOS c

Related Material:

- Key Concepts by LOS
-

Question #140 of 143

Question ID: 415491

A coupon bond that pays interest semi-annually has a par value of \$1,000, matures in 5 years, and has a yield to maturity of 10%. What is the value of the bond today if the coupon rate is 8%?

- X A) \$1,144.31.
- ✓ B) \$922.78.
- X C) \$1,221.17.

Explanation

FV = 1,000; N = 10; PMT = 40; I = 5; CPT → PV = 922.78.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS
-

Question #141 of 143

Question ID: 460688

McClintock 8% coupon bonds maturing in 10 years are currently trading at 97.55. These bonds are option-free and pay coupons semiannually. The McClintock bonds have a:

- X A) current yield less than 8.0%.
- ✓ B) yield to maturity greater than 8.0%.
- X C) true yield greater than the street convention.

Explanation

A bond trading at a discount will have a YTM greater than its coupon. The current yield is $8 / 97.55 = 8.2\%$. True yield is adjusted for payments delayed by weekends and holidays and is equal to or slightly less than the yield on a street convention basis.

References

Question From: Session 15 > Reading 52 > LOS f

Related Material:

- Key Concepts by LOS
-

Question #142 of 143

Question ID: 415516

An investor gathered the following information about two 7% annual-pay, option-free bonds:

- Bond R has 4 years to maturity and is priced to yield 6%
- Bond S has 7 years to maturity and is priced to yield 6%

- Both bonds have a par value of \$1,000.

Given a 50 basis point parallel upward shift in interest rates, what is the value of the two-bond portfolio?

- X **A)** \$2,086.
- X **B)** \$2,030.
- ✓ **C)** \$2,044.

Explanation

Given the shift in interest rates, Bond R has a new value of \$1,017 ($N = 4$; $PMT = 70$; $FV = 1,000$; $I/Y = 6.50\%$; $CPT \rightarrow PV = 1,017$). Bond S's new value is \$1,027 ($N = 7$; $PMT = 70$; $FV = 1,000$; $I/Y = 6.50\%$; $CPT \rightarrow PV = 1,027$). After the increase in interest rates, the new value of the two-bond portfolio is \$2,044 ($1,017 + 1,027$).

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS

Question #143 of 143

Question ID: 460683

Consider a 10-year, 6% coupon, \$1,000 par value bond, paying annual coupons, with a 10% yield to maturity. The change in the bond price resulting from a 400 basis point increase in yield is *closest to*:

- X **A)** \$480.
- X **B)** \$1,160.
- ✓ **C)** \$170.

Explanation

Using the 10% yield to maturity, the price of the bond originally is \$754.22:

$N = 10$; $I/Y = 10$; $PMT = 60$; $FV = 1000$; $CPT PV = \$754.22$

Using the 14% yield to maturity, the price of the bond changes to \$582.71:

$N = 10$; $I/Y = 14$; $PMT = 60$; $FV = 1000$; $CPT PV = \$582.71$

Therefore, the price is expected to change from \$754.22 to \$582.71, a decrease of \$171.51.

References

Question From: Session 15 > Reading 52 > LOS a

Related Material:

- Key Concepts by LOS