Question #1 of 93

Price risk will dominate reinvestment risk when the investor's:

A) duration gap is positive.

B) investment horizon is less than the bond’s tenor.

C) duration gap is negative.

Explanation

Price risk will dominate reinvestment risk when the investor's investment horizon is less than the bond's Macaulay duration (i.e., when the duration gap is positive).

(Study Session 17, Module 54.3, LOS 54.k)

Question #2 of 93

Which of the following is *most* accurate about a bond with positive convexity?

A) Price increases and decreases at a faster rate than the change in yield.

B) Positive changes in yield lead to positive changes in price.

C) Price increases when yields drop are greater than price decreases when yields rise by the same amount.

Explanation

A convex price/yield graph has a larger increase in price as yield decreases than the decrease in price when yields increase.

(Study Session 17, Module 54.3, LOS 54.h)

Question #3 of 93

Which of the following is *least likely* to increase a bond's yield spread to the benchmark yield curve?

A) Increase in expected inflation.

B) Credit rating downgrade.

C) Decrease in liquidity.

Explanation

Interest rates on the benchmark yield curve are composed of expected inflation and the real risk-free rate. Spreads to the benchmark yield curve include premiums for credit risk and lack of liquidity.

(Study Session 17, Module 54.3, LOS 54.l)

Question #4 of 93

Which of the following will be the greatest for a putable bond at relatively high yields?

A) Effective duration of the bond.

B) Macaulay duration of the bond ignoring the option.

C) Modified duration of the bond ignoring the option.

Explanation

Modified duration is less than Macaulay duration. The effective duration of a putable bond is less than its modified duration ignoring the put option.

(Study Session 17, Module 54.1, LOS 54.b)

Question #5 of 93

A bond is priced at 95.80. Using a pricing model, an analyst estimates that a 25 bp parallel upward shift in the yield curve would decrease the bond's price to 94.75, while a 25 bp parallel downward shift in the yield curve would increase its price to 96.75. The bond's effective convexity is *closest to*:

A) 4

B) –167.

C) 3,340.

Explanation

Approximate effective convexity is calculated as $[\ V_- + V_+ - 2V_0\ ] / [\ (V_0)(\text{change in curve})^2\ ]$. $[\ 96.75 + 94.75 - 2(95.80)\ ] / [\ (95.80)(0.0025)^2\ ] = -167.01$.

(Study Session 17, Module 54.3, LOS 54.h)

Question #6 of 93

If the term structure of yield volatility slopes upward:

A) short-term interest rates are less than long-term interest rates.

B) forward interest rates are higher than spot interest rates.

C) long-term interest rates are more variable than short-term interest rates.

Explanation

If the term structure of yield volatility slopes upward, long-term interest rates are more variable than short-term interest rates.

(Study Session 17, Module 54.3, LOS 54.j)

Question #7 of 93

Donald McKay, CFA, is analyzing a client's fixed income portfolio. As of the end of the last quarter, the portfolio had a market value of $7,545,000 and a portfolio duration of 6.24. McKay is predicting that the yield for all of the securities in the portfolio will decline by 25 basis points next quarter. If McKay's prediction is accurate, the market value of the portfolio:

A) at the end of the next quarter will be approximately $7,427,300.

B) will increase by approximately $117,700.

C) will increase by approximately 6.24%.

Explanation

A portfolio's duration can be used to estimate the approximate change in value for a given change in yield. A critical assumption is that the yield for all bonds in the portfolio change by the same amount, known as a parallel shift. For this portfolio the expected change in value can be calculated as: $7,545,000 × 6.24 × 0.0025 = $117,702. The decrease in yields will cause an increase in the value of the portfolio, not a decrease.

(Study Session 17, Module 54.2, LOS 54.f)

Question #8 of 93

A UK 12-year corporate bond with a 4.25% coupon is priced at £107.30. This bond's duration and convexity are 9.5 and 107.2. If the bond's yield decreases by 125 basis points, the estimated price of the bond is *closest to*:

A) £120.95.

B) £121.84.

C) £112.72.

Explanation

Return impact	$\approx -(\text{Duration} \times \Delta\text{Yield}) + (1/2) \times (\text{Convexity} \times (\Delta\text{Yield}))^2$ $\approx -(9.5 \times -0.0125) + (1/2) \times (107.2) \times (-0.0125)^2$ $\approx 0.1188 + 0.0084$ ≈ 0.1272 or 12.72%
Estimated price of bond	$= (1 + 0.1272) \times 107.30$ $= 120.95$

(Study Session 17, Module 54.3, LOS 54.i)

Question #9 of 93

Which of the following is *most likely* to be the money duration of newly issued 360-day eurocommercial paper?

A) 360 days.

B) €25 million.

C) 4.3%.

Explanation

Money duration is expressed in currency units.

(Study Session 17, Module 54.2, LOS 54.g)

Question #10 of 93

A 30-year semi-annual coupon bond issued today with market rates at 6.75% pays a 6.75% coupon. If the market yield declines by 30 basis points, the price increases to $1,039.59. If the market yield rises by 30 basis points, the price decreases to $962.77. Which of the following choices is *closest* to the approximate percentage change in price for a 100 basis point change in the market interest rate?

A) 12.80%.

B) 3.84%.

C) 1.28%.

Explanation

Approximate % change in price =

(price if yield down − price if yield up) / (2 × initial price × yield change expressed as a decimal).

Here, the initial price is par, or $1,000 because we are told the bond was issued today at par. So, the calculation is: (1039.59 − 962.77) / (2 × 1000 × 0.003) = 76.82 / 6.00 = **12.80**.

(Study Session 17, Module 54.1, LOS 54.b)

Question #11 of 93

Holding other factors constant, the interest rate risk of a coupon bond is higher when the bond's:

A) coupon rate is higher.

B) yield to maturity is lower.

C) current yield is higher.

Explanation

In this case the only determinant that will cause higher interest rate risk is having a low yield to maturity. A higher coupon rate and a higher current yield will result in lower interest rate risk.

(Study Session 17, Module 54.2, LOS 54.e)

Question #12 of 93

A bond has a modified duration of 7 and convexity of 100. If interest rates decrease by 1%, the price of the bond will *most likely:*

A) increase by 7.5%.

B) increase by 6.5%.

C) decrease by 7.5%.

Explanation

Percentage Price Change = –(duration) (ΔYTM) + (½)convexity $(\Delta YTM)^2$

therefore

Percentage Price Change = –(7) (–0.01) + (½)(100) $(-0.01)^2$=7.5%.

(Study Session 17, Module 54.3, LOS 54.i)

Question #13 of 93

An analyst gathered the following information about a 15-year bond:

- 10% semiannual coupon.
- Modified duration of 7.6 years.

If the market yield rises 75 basis points, the bond's approximate price change is a:

A) 5.4% increase.

B) 5.7% decrease.

C) 5.4% decrease.

Explanation

$\Delta P/P = -D\Delta i$

$\Delta P/P = -7.6(+0.0075) = -0.057$, or -5.7%.

(Study Session 17, Module 54.3, LOS 54.i)

Question #14 of 93

If a Treasury bond has an annual modified duration of 10.27 and an annual convexity of 143, which of the following is *closest* to the estimated percentage price change in the bond for a 125 basis point increase in interest rates?

A) -9.33%.

B) -13.96%.

C) -11.72%.

Explanation

The estimated percentage price change = the duration effect plus the convexity effect. The formula is: $[-\text{duration} \times (\Delta YTM)] + ½[\text{convexity} \times (\Delta YTM)^2]$. Therefore, the estimated percentage price change is: $[-(10.27)(0.0125)] + [(½)(143)(0.0125)^2] = -0.128375 + 0.011172 = -0.117203 = -11.72\%$.

(Study Session 17, Module 54.3, LOS 54.i)

Question #15 of 93

An annual-pay bond is priced at 101.50. If its yield to maturity decreases 100 basis points, its price will increase to 105.90. If its yield to maturity increases 100 basis points, its price will decrease to 97.30. The bond's approximate modified convexity is *closest to*:

A) 19.7.

B) 4.2.

C) 0.2.

Explanation

Approximate modified convexity is calculated as [$V_- + V_+ - 2V_0$] / [(V_0)(change in YTM)^2]. [105.90 + 97.30 – 2(101.50)] / [101.50(0.01)^2] = 19.70.

(Study Session 17, Module 54.3, LOS 54.h)

Question #16 of 93

A bond's yield to maturity decreases from 8% to 7% and its price increases by 6%, from $675.00 to $715.50. The bond's effective duration is *closest to:*

A) 6.0.

B) 5.0.

C) 7.0.

Explanation

Effective duration is the percentage change in price for a 1% change in yield, which is given as 6.

(Study Session 17, Module 54.1, LOS 54.b)

Question #17 of 93

The price of a bond is equal to $101.76 if the term structure of interest rates is flat at 5%. The following bond prices are given for up and down shifts of the term structure of interest rates. Using the following information what is the effective duration of the bond?

Bond price: $98.46 if term structure of interest rates is flat at 6%

Bond price: $105.56 if term structure of interest rates is flat at 4%

A) 1.56.

B) 1.74.

C) 3.49.

Explanation

The effective duration is computed as follows:

$$\text{Effective duration} = \frac{105.56 - 98.46}{2 \times 101.76 \times 0.01} = 3.49$$

(Study Session 17, Module 54.1, LOS 54.b)

Question #18 of 93

Which of the following is *least likely* an advantage of estimating the duration of a bond portfolio as a weighted average of the durations of the bonds in the portfolio?

A) It is theoretically more sound than the alternative.

B) It can be used when the portfolio contains bonds with embedded options.

C) It is easier to calculate than the alternative.

Explanation

Compared to portfolio duration based on the cash flow yield of the portfolio, portfolio duration calculated as a weighted average of the durations of the individual bonds in the portfolio is easier to calculate and can be used for bonds with embedded options. Portfolio duration calculated using the cash flow yield for the entire portfolio is theoretically more correct.

(Study Session 17, Module 54.2, LOS 54.f)

Question #19 of 93

Assume that the current price of an annual-pay bond is 102.50. If its YTM increases by 0.5% the value of the bond decreases to 100 and if its YTM decreases by 0.5% the price of the bond increases to 105.5. What is the approximate modified duration of the bond?

A) 5.48.

B) 5.50.

C) 5.37.

Explanation

Approximate modified duration is computed as follows:

$$\text{Duration} = \frac{105.50 - 100}{2 \times 102.50 \times 0.005} = 5.37$$

(Study Session 17, Module 54.1, LOS 54.b)

Question #20 of 93

Key rate duration is *best* described as a measure of price sensitivity to a:

A) change in yield at a single maturity.

B) change in a bond's cash flows.

C) parallel shift in the benchmark yield curve.

Explanation

Key rate duration is the price sensitivity of a bond or portfolio to a change in the interest rate at one specific maturity on the yield curve.

(Study Session 17, Module 54.2, LOS 54.d)

Question #21 of 93

An investor purchases a fixed coupon bond with a Macaulay duration of 5.3. The bond's yield to maturity decreases before the first coupon payment. If the YTM then remains constant and the investor sells the bond after three years, the realized yield will be:

A) equal to the YTM at the date of purchase.

B) higher than the YTM at the date of purchase.

C) lower than the YTM at the date of purchase.

Explanation

If the investment horizon is shorter than the Macaulay duration, the price impact of a decrease in YTM dominates the loss of reinvestment income and the realized yield will be higher than the YTM at purchase.

(Study Session 17, Module 54.3, LOS 54.k)

Question #22 of 93

An investor who buys bonds that have a Macaulay duration less than his investment horizon:

A) is minimizing reinvestment risk.

B) will benefit from decreasing interest rates.

C) has a negative duration gap.

Explanation

A duration gap is a difference between a bond's Macaulay duration and the bondholder's investment horizon. If Macaulay duration is less than the investment horizon, the bondholder is said to have a negative duration gap and is more exposed to downside risk from decreasing interest rates (reinvestment risk) than from increasing interest rates (market price risk).

(Study Session 17, Module 54.3, LOS 54.k)

Question #23 of 93

When using duration and convexity to estimate the effect on a bond's value of changes in its credit spread, an analyst should *most appropriately* use:

A) the same method used when estimating the effect of changes in yield.

B) Macaulay duration rather than modified duration.

C) a convexity measure that has been adjusted for the bond’s credit risk.

Explanation

We can use duration and convexity to estimate the price effect of changes in spread in the same way we use them to estimate the price effect of changes in yield:

> Percent change in bond value = –duration(change in yield or spread) + (1/2)(convexity)(squared change in yield or spread)

No adjustment for credit risk is needed and an analyst should use modified or effective duration.

(Study Session 17, Module 54.3, LOS 54.l)

Question #24 of 93

The price value of a basis point (PVBP) for a 18 year, 8% annual pay bond with a par value of $1,000 and yield of 9% is *closest* to:

A) $0.44.

B) $0.80.

C) $0.82.

Explanation

PVBP = initial price – price if yield changed by 1 bps.

Initial price:	Price with change:
FV = 1000	FV = 1000
PMT = 80	PMT = 80
N = 18	N = 18
I/Y = 9%	I/Y = 9.01
CPT PV = 912.44375	CPT PV = 911.6271

PVBP = 912.44375 – 911.6271 = 0.82

(Study Session 17, Module 54.2, LOS 54.g)

Question #25 of 93

A non-callable bond has a modified duration of 7.26. Which of the following is the *closest* to the approximate price change of the bond with a 25 basis point increase in rates?

A) 1.820%.

B) -0.018%.

C) -1.820%.

Explanation

The formula for the percentage price change is: –(duration)(ΔYTM). Therefore, the estimated percentage price change using duration is: –(7.26)(0.25%) = –1.82%.

(Study Session 17, Module 54.3, LOS 54.i)

Question #26 of 93

An analyst has stated that, holding all else constant, an increase in the maturity of a coupon bond will increase its interest rate risk, and that a decrease in the coupon rate of a coupon bond will decrease its interest rate risk. The analyst is correct with respect to:

A) neither of these effects.

B) both of these effects.

C) only one of these effects.

Explanation

The analyst is correct with respect to bond maturity but incorrect with respect to coupon rate. As the maturity of a bond increases, an investor must wait longer for the eventual repayment of the bond principal. As the length of time until principal payment increases, the probability that interest rates will change increases. If interest rates increase, the present value of the final payment (which is the largest cash flow of the bond) decreases. At longer maturities, the present value decreases by greater amounts. Thus, interest rate risk increases as the maturity of the bond increases. As the coupon rate decreases, the interest rate risk of a bond increases. Lower coupons cause greater relative weight to be placed on the principal repayment. Because this cash flow occurs farther out in time, its present value is much more sensitive to changes in interest rates. As the coupon rate goes to zero (i.e., a zero-coupon bond), all of the bond's return relies on the return of principal which as stated before is highly sensitive to interest rate changes.

(Study Session 17, Module 54.2, LOS 54.e)

Question #27 of 93

A $100,000 par value bond has a full price of $99,300, a Macaulay duration of 6.5, and an annual modified duration of 6.1. The bond's money duration per $100 par value is *closest to*:

A) $606.

B) $6.06.

C) $645.

Explanation

Money duration per $100 par value = annual modified duration × full price per $100 par value = 6.1 × $99.30 = $605.73

(Study Session 17, Module 54.2, LOS 54.g)

Question #28 of 93

If the yield to maturity on a bond decreases after purchase but before the first coupon date and the bond is held to maturity, reinvestment risk is:

A) greater than price risk and the realized yield will be lower than the YTM at purchase.

B) less than price risk and the realized yield will be lower than the YTM at purchase.

C) less than price risk and the realized yield will be higher than the YTM at purchase.

Explanation

If the bond is held to maturity, the investor will receive all coupons and principal and reinvest them at a lower return than the YTM at purchase, resulting in a lower realized yield.

(Study Session 17, Module 54.1, LOS 54.a)

Question #29 of 93

The price of a bond is equal to $101.76 if the term structure of interest rates is flat at 5%. The following bond prices are given for up and down shifts of the term structure of interest rates. Using the following information what is the approximate percentage price change of the bond using effective duration and assuming interest rates decrease by 0.5%?

Bond price: $98.46 if term structure of interest rates is flat at 6%

Bond price: $105.56 if term structure of interest rates is flat at 4%

A) 0.174%.

B) 0.0087%.

C) 1.74%.

Explanation

The effective duration is computed as follows:

$$\text{Effective duration} = \frac{105.56 - 98.46}{2 \times 101.76 \times 0.01} = 3.49$$

Using the effective duration, the approximate percentage price change of the bond is computed as follows:

Percent price change = -3.49 × (-0.005) × 100 = 1.74%

(Study Session 17, Module 54.3, LOS 54.i)

Question #30 of 93

Which of the following bonds has the *highest* interest rate sensitivity? A:

A) ten year, option-free 6% coupon bond.

B) five year, 5% coupon bond callable in one year.

C) ten year, option-free 4% coupon bond.

Explanation

If two bonds are identical in all respects except their term to maturity, the longer term bond will be more sensitive to changes in interest rates. All else the same, if a bond has a lower coupon rate when compared with another, it will have greater interest rate risk. Therefore, for the option-free bonds, the 10 year 4% coupon is the longest term and has the lowest coupon rate. The call feature does not make a bond more sensitive to changes in interest rates, because it places a ceiling on the maximum price investors will be willing to pay. If interest rates decrease enough the bonds will be called.

(Study Session 17, Module 54.2, LOS 54.e)

Question #31 of 93

Jayce Arnold, a CFA candidate, considers a $1,000 face value, option-free bond issued at par. Which of the following statements about the bond's dollar price behavior is *most likely* accurate when yields rise and fall by 200 basis points, respectively? Price will:

A) decrease by $149, price will increase by $124.

B) decrease by $124, price will increase by $149.

C) increase by $149, price will decrease by $124.

Explanation

As yields increase, bond prices fall, the price curve gets flatter, and changes in yield have a smaller effect on bond prices. As yields decrease, bond prices rise, the price curve gets steeper, and changes in yield have a larger effect on bond prices. Thus, the price increase when interest rates decline must be greater than the price decrease when interest rates rise (for the same basis point change). Remember that this applies to percentage changes as well.

(Study Session 17, Module 54.3, LOS 54.i)

Question #32 of 93

Jane Walker has set a 7% yield as the goal for the bond portion of her portfolio. To achieve this goal, she has purchased a 7%, 15-year corporate bond at a discount price of 93.50. What amount of reinvestment income will she need to earn over this 15-year period to achieve a compound return of 7% on a semiannual basis?

A) $574.

B) $624.

C) $459.

Explanation

$935(1.035)^{30}$ = $2,624

Bond coupons: 30 × 35 = $1,050

Principal repayment: $1,000

2,624 − 1,000 − 1050 = $574 required reinvestment income

(Study Session 17, Module 54.1, LOS 54.a)

Question #33 of 93

A noncallable bond with seven years remaining to maturity is trading at 108.1% of a par value of $1,000 and has an 8.5% coupon. If interest rates rise 50 basis points, the bond's price will fall to 105.3% and if rates fall 50 basis points, the bond's price will rise to 111.0%. Which of the following is *closest* to the effective duration of the bond?

A) 5.27.

B) 6.12.

C) 5.54.

Explanation

The formula for effective duration is: $(V_- - V_+) / (2V_0\Delta\text{curve})$. Therefore, effective duration is: ($1.110 – $1.053) / (2 × $1.081 × 0.005) = 5.27.

(Study Session 17, Module 54.1, LOS 54.b)

Question #34 of 93

When compared to modified duration, effective duration:

A) is equal to modified duration for callable bonds but not putable bonds.

B) factors in how embedded options will change expected cash flows.

C) places less weight on recent changes in the bond's ratings.

Explanation

Effective duration considers expected changes in cash flow from features such as embedded options.

(Study Session 17, Module 54.1, LOS 54.b)

Question #35 of 93

A non-callable bond with 10 years remaining maturity has an annual coupon of 5.5% and a $1,000 par value. The yield to maturity on the bond is 4.7%. Which of the following is *closest* to the estimated price change of the bond using duration if rates rise by 75 basis points?

A) -$5.68.

B) -$47.34.

C) -$61.10.

Explanation

First, compute the current price of the bond as: FV = 1,000; PMT = 55; N = 10; I/Y = 4.7; CPT → PV = –1,062.68. Then compute the price of the bond if rates rise by 75 basis points to 5.45% as: FV = 1,000; PMT = 55; N = 10; I/Y = 5.45; CPT → PV = –1,003.78. Then compute the price of the bond if rates fall by 75 basis points to 3.95% as: FV = 1,000; PMT = 55; N = 10; I/Y = 3.95; CPT → PV = –1,126.03.

The formula for approximate modified duration is: $(V_{-}–V_{+}) / (2V_0\Delta y)$. Therefore, modified duration is: ($1,126.03 – $1,003.78) / (2 × $1,062.68 × 0.0075) = 7.67.

The formula for the percentage price change is then: –(duration)(ΔYTM). Therefore, the estimated *percentage price change* using duration is: –(7.67)(0.75%) = –5.75%. The estimated *price change* is then: (–0.0575)($1,062.68) = –$61.10

(Study Session 17, Module 54.1, LOS 54.b)

Question #36 of 93

Consider a bond with modified duration of 5.61 and convexity of 43.84. Which of the following is *closest* to the estimated percentage price change in the bond for a 75 basis point decrease in interest rates?

A) 4.21%.

B) 4.33%.

C) 4.12%.

Explanation

The estimated percentage price change is equal to the duration effect plus the convexity effect. The formula is: [–duration × (ΔYTM)] + ½[convexity × $(\Delta YTM)^2$]. Therefore, the estimated percentage price change is: [–(5.61)(–0.0075)] + [(½)(43.84)$(-0.0075)^2$] = 0.042075 + 0.001233 = 0.043308 = 4.33%.

(Study Session 17, Module 54.3, LOS 54.i)

Question #37 of 93

An investor purchases a 4-year, 6%, semiannual-pay Treasury note for $9,485. The security has a par value of $10,000. To realize a total return equal to 7.515% (its yield to maturity), all payments must be reinvested at a return of:

A) 7.515%.

B) less than 7.515%.

C) more than 7.515%.

Explanation

The reinvestment assumption that is embedded in any present value-based yield measure implies that all coupons and principal payments must be reinvested at the specific rate of return, in this case, the yield to maturity. Thus, to obtain a 7.515% total dollar return, the investor must reinvest all the coupons at a 7.515% rate of return. Total dollar return is made up of three sources, coupons, principal, and reinvestment income.

(Study Session 17, Module 54.1, LOS 54.a)

Question #38 of 93

An investor finds that for a 1% increase in yield to maturity, a bond's price will decrease by 4.21% compared to a 4.45% increase in value for a 1% decline in YTM. If the bond is currently trading at par value, the bond's approximate modified duration is *closest* to:

A) 43.30.

B) 8.66.

C) 4.33.

Explanation

Modified duration is a measure of a bond's sensitivity to changes in interest rates.

Approximate modified duration = $(V_- - V_+) / [2V_0$(change in required yield)] where:

V_- = estimated price if yield decreases by a given amount

V_+ = estimated price if yield increases by a given amount

V_0 = initial observed bond price

Thus, duration = (104.45 – 95.79)/(2 × 100 × 0.01) = 4.33. Remember that the change in interest rates must be in decimal form.

(Study Session 17, Module 54.1, LOS 54.b)

Question #39 of 93

A $1,000 par value bond has a modified duration of 5. If the market yield increases by 1% the bond's price will:

A) decrease by $60.

B) decrease by $50.

C) increase by $50.

Explanation

Approximate percentage price change of a bond = (-)(modified duration)(ΔYTM)

(-5)(1%) = -5%

($1000)(-0.05) = –$50

(Study Session 17, Module 54.3, LOS 54.i)

Question #40 of 93

Assuming the issuer does not default, can capital gains or losses be a component of the holding period return on a zero-coupon bond that is sold prior to maturity?

A) Yes, because the purchase price is less than the bond’s value at maturity.

B) Yes, because the bond’s yield to maturity may have changed.

C) No, because amortization of the discount is interest income.

Explanation

Prior to maturity, a zero-coupon bond's price may be different than its constant-yield price trajectory and the bondholder may realize a capital gain or loss by selling the bond. For a zero-coupon bond that is held to maturity, the increase from the purchase price to face value at maturity is interest income.

(Study Session 17, Module 54.1, LOS 54.a)

Question #41 of 93

Effective duration is more appropriate than modified duration as a measure of a bond's price sensitivity to yield changes when:

A) yield curve changes are not parallel.

B) the bond contains embedded options.

C) the bond has a low coupon rate and a long maturity.

Explanation

Effective duration takes into consideration embedded options in the bond. Modified duration does not consider the effect of embedded options. For option-free bonds, modified duration will be similar to effective duration. Both duration measures are based on the value impact of a parallel shift in a flat yield curve.

(Study Session 17, Module 54.1, LOS 54.c)

Question #42 of 93

The risk that a bond issuer will fail to make an interest or principal payment when due is *most accurately* described as:

A) expected loss.

B) credit risk.

C) default probability.

Explanation

Default probability refers to the risk that a bond issuer will fail to make an interest or principal payment when due. Credit risk includes both default risk and loss severity. Expected loss is equal to default probability times loss severity.

(Study Session 17, Module 55.1, LOS 55.b)

Question #43 of 93

A bond has a duration of 10.62 and a convexity of 182.92. For a 200 basis point increase in yield, what is the approximate percentage price change of the bond?

A) -24.90%.

B) -17.58%.

C) -1.62%.

Explanation

The estimated price change is:

-(duration)(ΔYTM) + ½(convexity) × $(\Delta YTM)^2$ = -10.62 × 0.02 + (½)(182.92)(0.02^2) = -0.2124 + 0.0366 = -0.1758 or –17.58%.

(Study Session 17, Module 54.3, LOS 54.i)

Question #44 of 93

An investor gathered the following information on two U.S. corporate bonds:

- Bond J is callable with maturity of 5 years
- Bond J has a par value of $10,000
- Bond M is option-free with a maturity of 5 years
- Bond M has a par value of $1,000

For each bond, which duration calculation should be applied?

	Bond J	Bond M
A)	Modified Duration	Effective Duration only

B)	Effective Duration	Effective Duration only
C)	Effective Duration	Modified Duration or Effective Duration

Explanation

Effective duration is that effective duration is used for bonds with embedded options. Modified duration assumes that all the cash flows on the bond will not change, while effective duration considers expected cash flow changes that may occur with embedded options.

(Study Session 17, Module 54.1, LOS 54.c)

Question #45 of 93

Tony Horn, CFA, is evaluating two bonds. The first bond, issued by Kano Corp., pays a 7.5% annual coupon and is priced to yield 7.0%. The second bond, issued by Samuel Corp., pays a 7.0% annual coupon and is priced to yield 8.0%. Both bonds mature in ten years. If Horn can reinvest the annual coupon payments from either bond at 7.5%, and holds both bonds to maturity, his return will be:

A) greater than 7.0% on the Kano bonds and less than 8.0% on the Samuel bonds.

B) less than 7.0% on the Kano bonds and less than 8.0% on the Samuel bonds.

C) greater than 7.0% on the Kano bonds and greater than 8.0% on the Samuel bonds.

Explanation

The yield to maturity calculation assumes that all interim cash flows are reinvested at the yield to maturity (YTM). Since Horn's reinvestment rate is 7.5%, he would realize a return higher than the 7.0% YTM of the Kano bonds, or a return less than the 8.0% YTM of the Samuel bonds.

(Study Session 17, Module 54.1, LOS 54.a)

Question #46 of 93

Which of the following bonds has the shortest duration? A bond with a:

A) 20-year maturity, 6% coupon rate.

B) 10-year maturity, 6% coupon rate.

C) 10-year maturity, 10% coupon rate.

Explanation

All else constant, a bond with a longer maturity will be more sensitive to changes in interest rates. All else constant, a bond with a lower coupon will have greater interest rate risk.

(Study Session 17, Module 54.2, LOS 54.e)

Question #47 of 93

Gus Magnuson, CFA, uses duration and convexity to estimate the effects of yield changes on bond prices. If Magnuson wishes to estimate the effects of changes in spreads on bond prices, rather than changes in yields, he may appropriately use:

A) both duration and convexity.

B) neither duration nor convexity.

C) duration, but not convexity.

Explanation

Duration and convexity can be used with changes in spreads. The estimated percent change in bond price may be expressed as:

$$-\text{duration}(\text{change in spread}) + (½)(\text{convexity})(\text{change in spread})^2$$

(Study Session 17, Module 54.3, LOS 54.l)

Question #48 of 93

How does the price-yield relationship for a callable bond compare to the same relationship for an option-free bond? The price-yield relationship is *best* described as exhibiting:

A) the same convexity for both bond types.

B) negative convexity for the callable bond and positive convexity for an option-free bond.

C) negative convexity at low yields for the callable bond and positive convexity for the option-free bond.

Explanation

Since the issuer of a callable bond has an incentive to call the bond when interest rates are very low in order to get cheaper financing, this puts an upper limit on the bond price for low interest rates and thus introduces negative convexity between yields and prices.

(Study Session 17, Module 54.3, LOS 54.h)

Question #49 of 93

A bond's duration is 4.5 and its convexity is 87.2. If interest rates rise 100 basis points, the bond's percentage price change is *closest* to:

A) -4.94%.

B) -4.50%.

C) -4.06%.

Explanation

Recall that the percentage change in prices = Duration effect + Convexity effect = [-duration × (change in yields)] + [(½)convexity × (change in yields)^2] = (-4.5)(0.01) + (½)(87.2)(0.01)^2 = -4.06%. Remember that you must use the decimal representation of the change in interest rates when computing the duration and convexity adjustments.

(Study Session 17, Module 54.3, LOS 54.i)

Question #50 of 93

Duration and convexity are *most likely* to produce more accurate estimates of interest rate risk when the term structure of yield volatility is:

A) flat.

B) downward sloping.

C) upward sloping.

Explanation

Duration and convexity assume the yield curve shifts in a parallel manner. A downward (upward) sloping term structure of yield volatility suggests shifts in the yield curve are likely to be non-parallel because short-term interest rates are more (less) volatile than long-term interest rates.

(Study Session 17, Module 54.3, LOS 54.j)

Question #51 of 93

The price value of a basis point (PVBP) for a bond is most accurately described as:

A) the product of a bond's value and its duration.

B) an estimate of the curvature of the price-yield relationship for a small change in yield.

C) the change in the price of the bond when its yield changes by 0.01%.

Explanation

PVBP represents the change in the price of the bond when its yield changes by one basis point, or 0.01%. PVBP = duration × 0.0001 × bond value. This calculation ignores convexity because for a small change in yield, the curvature of the price-yield relationship typically has no material effect on the PVBP.

(Study Session 17, Module 54.2, LOS 54.f)

Question #52 of 93

A 9-year corporate bond with a 3.25% coupon is priced at €103.96. This bond's duration and convexity are 7.8 and 69.8. If the bond's yield increases by 100 basis points, the impact on the bondholder's return is *closest to*:

A) –7.45%.

B) –7.80%.

C) +8.15%.

Explanation

Return impact	$\approx -(\text{Duration} \times \Delta\text{Yield}) + (1/2) \times (\text{Convexity} \times (\Delta\text{Yield})^2)$ $\approx -(7.8 \times 0.0100) + (1/2) \times (69.8) \times (0.0100)^2$ $\approx -0.0780 + 0.0035$ ≈ -0.0745 or -7.45%

(Study Session 17, Module 54.3, LOS 54.i)

Question #53 of 93

A non-callable bond with 4 years remaining maturity has an annual coupon of 12% and a $1,000 par value. The current price of the bond is $1,063.40. Given a parallel shift in the yield curve of 50 basis points, which of the following is *closest* to the effective duration of the bond?

A) 3.11.

B) 2.94.

C) 3.27.

Explanation

First, find the current yield to maturity of the bond as:

FV = $1,000; PMT = $120; N = 4; PV = –$1,063.40; CPT → I/Y = 10%

Then compute the price of the bond if rates rise by 50 basis points to 10.5% as:

FV = $1,000; PMT = $120; N = 4; I/Y = 10.5%; CPT → PV = –$1,047.04

Then compute the price of the bond if rates fall by 50 basis points to 9.5% as:

FV = $1,000; PMT = $120; N = 4; I/Y = 9.5%; CPT → PV = –$1,080.11

The formula for effective duration is:

$(V_{-}-V_{+}) / (2V_0\Delta\text{curve})$

Therefore, effective duration is:

($1,080.11 – $1,047.04) / (2 × $1,063.40 × 0.005) = 3.11

(Study Session 17, Module 54.1, LOS 54.b)

Question #54 of 93

A $1,000 face, 10-year, 8.00% semi-annual coupon, option-free bond is issued at par (market rates are thus 8.00%). Given that the bond price decreased 10.03% when market rates increased 150 basis points (bp),if market yields decrease by 150 bp, the bond's price will:

A) increase by more than 10.03%.

B) increase by 10.03%.

C) decrease by more than 10.03%.

Explanation

Because of positive convexity, (bond prices rise faster than they fall) for any given absolute change in yield, the increase in price will be more than the decrease in price for a fixed-coupon, noncallable bond. As yields increase, bond prices fall, and the price curve gets flatter, and changes in yield have a smaller effect on bond prices. As yields decrease, bond prices rise, and the price curve gets steeper, and changes in yield have a larger effect on bond prices. Here, for an absolute 150bp change, the price increase would be more than the price decrease.

(Study Session 17, Module 54.3, LOS 54.h)

Question #55 of 93

Which of the following five year bonds has the *highest* interest rate sensitivity?

A) Floating rate bond.

B) Zero-coupon bond.

C) Option-free 5% coupon bond.

Explanation

The Macaulay duration of a zero-coupon bond is equal to its time to maturity. Its price is greatly affected by changes in interest rates because its only cash-flow is at maturity and is discounted from the time at maturity until the present.

(Study Session 17, Module 54.2, LOS 54.e)

Question #56 of 93

Given a bond with a modified duration of 1.93, if required yields increase by 50 basis points, the expected percentage price change would be:

A) 1.000%.

B) -1.025%.

C) -0.965%.

Explanation

Approximate percentage price change of a bond = (-)(duration)(Δ YTM)

$$(-1.93)(0.5\%) = -0.965\%$$

(Study Session 17, Module 54.3, LOS 54.i)

Question #57 of 93

All else being equal, which of the following bond characteristics will lead to *lower* levels of coupon reinvestment risk for bonds that are held to maturity?

A) Shorter maturities and lower coupon levels.

B) Shorter maturities and higher coupon levels.

C) Longer maturities and higher coupon levels.

Explanation

Other things being equal, the amount of reinvestment risk embedded in a bond will decrease with lower coupons because the there will be a lesser dollar amount to reinvest and with shorter maturities because the reinvestment period is shorter.

(Study Session 17, Module 54.1, LOS 54.a)

Question #58 of 93

Which measure of duration should be matched to the bondholder's investment horizon so that reinvestment risk and market price risk offset each other?

A) Effective duration.

B) Modified duration.

C) Macaulay duration.

Explanation

Macaulay duration is the investment horizon at which reinvestment risk and market price risk approximately offset.

(Study Session 17, Module 54.3, LOS 54.k)

Question #59 of 93

Vantana Inc. has a bond outstanding with a modified duration of 5.3 and approximate convexity of 110. If yields increase by 1%, the bond price will:

A) increase by more than 5.3%.

B) decrease by less than 5.3%.

C) decrease by more than 5.3%.

Explanation

The positive convexity effect will mean yields will drop by less than 5.3% (the effect of duration alone).

Price change = $(-5.3 \times 0.01) + (0.5 \times 110 \times 0.01^2) = -0.0475 = -4.75\%$.

(Study Session 17, Module 54.3, LOS 54.i)

Question #60 of 93

Assume that a straight bond has a duration of 1.89 and a convexity of 32. If interest rates decline by 1% what is the total estimated percentage price change of the bond?

A) 1.56%.

B) 1.89%.

C) 2.05%.

Explanation

The total percentage price change estimate is computed as follows:

Total estimated price change = -1.89 × (-0.01) × 100 + (½)(32) × $(-0.01)^2$ × 100 = 2.05%

(Study Session 17, Module 54.3, LOS 54.i)

Question #61 of 93

A bond portfolio consists of a AAA bond, a AA bond, and an A bond. The prices of the bonds are $1,050, $1,000, and $950 respectively. The durations are 8, 6, and 4 respectively. What is the duration of the portfolio?

A) 6.07.

B) 6.67.

C) 6.00.

Explanation

The duration of a bond portfolio is the weighted average of the durations of the bonds in the portfolio. The weights are the value of each bond divided by the value of the portfolio:

portfolio duration = 8 × (1050 / 3000) + 6 × (1000 / 3000) + 4 × (950 / 3000) = 2.8 + 2 + 1.27 = 6.07.

(Study Session 17, Module 54.2, LOS 54.f)

Question #62 of 93

Adjusting for convexity improves an estimated price change for a bond compared to using duration alone because:

A) it measures the volatility of non-callable bonds.

B) the slope of the price/yield curve is not linear.

C) the slope of the callable bond price/yield curve is backward bending at high interest rates.

Explanation

Modified duration is a good approximation of price changes for an option-free bond only for relatively small changes in interest rates. *As rate changes grow larger, the curvature of the bond price/yield relationship becomes more prevalent, meaning that a linear estimate of price changes will contain errors.* The modified duration estimate is a linear estimate, as it assumes that the change is the same for each basis point change in required yield. *The error in the estimate is due to the curvature of the actual price path. This is the degree of convexity.* If we can generate a measure of this convexity, we can use this to improve our estimate of bond price changes.

(Study Session 17, Module 54.3, LOS 54.h)

Question #63 of 93

Consider a 25-year, $1,000 par semiannual-pay bond with a 7.5% coupon and a 9.25% YTM. Based on a yield change of 50 basis points, the approximate modified duration of the bond is *closest to*:

A) 8.73.

B) 12.50.

C) 10.03.

Explanation

Calculate the new bond prices at the 50 basis point change in rates both up or down and then plug into the approximate modified duration equation:

Current price: N = 50; FV = 1,000; PMT = (0.075/2) × 1,000 = 37.50; I/Y = 4.625; CPT → PV = $830.54.

+50 basis pts: N = 50; FV = 1,000; PMT = (0.075/2)1,000 = 37.50; I/Y = 4.875; CPT → PV = $790.59.

–50 basis pts: N = 50; FV = 1,000; PMT = (0.075/2)1,000 = 37.50; I/Y = 4.375; CPT → PV = $873.93.

Approximate modified duration = (873.93 – 790.59) / (2 × 830.54 × 0.005) = 10.03.

(Study Session 17, Module 54.1, LOS 54.b)

Question #64 of 93

Which of the following is a limitation of the portfolio duration measure? Portfolio duration only considers:

A) a nonparallel shift in the yield curve.

B) the market values of the bonds.

C) a linear approximation of the actual price-yield function for the portfolio.

Explanation

Duration is a linear approximation of a nonlinear function. The use of market values has no direct effect on the inherent limitation of the portfolio duration measure. Duration assumes a parallel shift in the yield curve, and this is an additional limitation.

(Study Session 17, Module 54.2, LOS 54.f)

Question #65 of 93

When computing the yield to maturity, the implicit reinvestment assumption is that the interest payments are reinvested at the:

A) coupon rate.

B) prevailing yield to maturity at the time interest payments are received.

C) yield to maturity at the time of the investment.

Explanation

The reinvestment assumption states that reinvestment must occur at the YTM in order for an investor to earn the YTM. The assumption also states that payments are received in a prompt and timely fashion resulting in immediate reinvestment of those funds.

(Study Session 17, Module 54.1, LOS 54.a)

Question #66 of 93

Which of the following statements about an embedded call feature in a bond is *least* accurate? The call feature:

A) exposes investors to additional reinvestment rate risk.

B) reduces the bond's capital appreciation potential.

C) increases the bond's duration, increasing price risk.

Explanation

A call provision *decreases* the bond's duration because a call provision introduces prepayment risk that should be factored in the calculation.

For the investor, one of the most significant risks of callable (or prepayable) bonds is that they can be called/retired prematurely. Because bonds are nearly always called for prepayment after interest rates have decreased significantly, the investor will find it nearly impossible to find comparable investment vehicles. Thus, investors have to replace their high-yielding bonds with much lower-yielding issues. From the bondholder's perspective, a called bond means not only a disruption in cash flow but also a sharply reduced rate of return.

Generally speaking, the following conditions apply to callable bonds:

- *The cash flows associated with callable bonds become unpredictable,* since the life of the bond could be much shorter than its term to maturity, due to the call provision.
- The bondholder is exposed to the risk of investing the proceeds of the bond at lower interest rates after the bond is called. This is known as *reinvestment risk*.
- *The potential for price appreciation is reduced,* because the possibility of a call limits or caps the price of the bond near the call price if interest rates fall.

(Study Session 17, Module 54.2, LOS 54.e)

Question #67 of 93

An investor gathered the following information about an option-free U.S. corporate bond:

- Par Value of $10 million
- Convexity of 90
- Duration of 7

If interest rates increase 2% (200 basis points), the bond's percentage price change is *closest* to:

A) -12.2%.

B) -14.0%.

C) -15.8%.

Explanation

Recall that the percentage change in prices = Duration effect + Convexity effect = [-duration × (change in yields)] + [(½)convexity × (change in yields)^2] = [(-7)(0.02) + (½)(90)(0.02)^2] = -0.12 = -12.2%. Remember that you must use the decimal representation of the change in interest rates when computing the duration and convexity adjustments.

(Study Session 17, Module 54.3, LOS 54.i)

Question #68 of 93

Negative effective convexity will *most likely* be exhibited by a:

A) callable bond at low yields.

B) putable bond at high yields.

C) callable bond at high yields.

Explanation

A callable bond trading at a low yield will most likely exhibit negative effective convexity.

(Study Session 17, Module 54.3, LOS 54.h)

Question #69 of 93

A bond has the following characteristics:

- Maturity of 30 years
- Modified duration of 16.9 years
- Yield to maturity of 6.5%

If the yield to maturity *decreases* by 0.75%, what will be the percentage change in the bond's price?

A) -12.675%.

B) 0.750%.

C) +12.675%.

Explanation

Approximate percentage price change of a bond = (-)(modified duration)(ΔYTM)

= (-16.9)(-0.75%) = +12.675%

(Study Session 17, Module 54.3, LOS 54.i)

Question #70 of 93

Which of the following statements *best* describes the concept of negative convexity in bond prices? As interest rates:

A) rise, the bond's price decreases at a decreasing rate.

B) fall, the bond's price increases at an increasing rate.

C) fall, the bond's price increases at a decreasing rate.

Explanation

Negative convexity occurs with bonds that have prepayment/call features. As interest rates fall, the borrower/issuer is more likely to repay/call the bond, which causes the bond's price to approach a maximum. As such, the bond's price increases at a decreasing rate as interest rates decrease.

(Study Session 17, Module 54.3, LOS 54.h)

Question #71 of 93

Sensitivity of a bond's price to a change in yield at a specific maturity is *least appropriately* estimated by using:

A) effective duration.

B) key rate duration.

C) partial duration.

Explanation

Effective duration is used to measure the sensitivity of a bond price to a parallel shift in the yield curve. Key rate duration, also known as partial duration, is used to measure the sensitivity of a bond price to a change in yield at a specific maturity.

(Study Session 17, Module 54.2, LOS 54.d)

Question #72 of 93

An investor buys a bond that has a Macaulay duration of 3.0 and a yield to maturity of 4.5%. The investor plans to sell the bond after three years. If the yield curve has a parallel downward shift of 100 basis points immediately after the investor buys the bond, her annualized horizon return is *most likely* to be:

A) less than 4.5%.

B) greater than 4.5%.

C) approximately 4.5%.

Explanation

With Macaulay duration equal to the investment horizon, market price risk and reinvestment risk approximately offset and the annualized horizon return should be close to the yield to maturity at purchase.

(Study Session 17, Module 54.3, LOS 54.k)

Question #73 of 93

Negative convexity is *most likely* to be observed in:

A) government bonds.

B) callable bonds.

C) zero coupon bonds.

Explanation

All noncallable bonds exhibit the trait of being positively convex. Callable bonds have negative convexity because once the yield falls below a certain point prices will rise at a decreasing rate, thus giving the price-yield relationship a negative convex shape.

(Study Session 17, Module 54.3, LOS 54.h)

Question #74 of 93

Sarah Metz buys a 10-year bond at a price below par. Three years later, she sells the bond. Her capital gain or loss is measured by comparing the price she received for the bond to its:

A) carrying value.

B) original purchase price.

C) original price less amortized discount.

Explanation

Capital gains and losses on bonds purchased at a discount or premium are measured relative to carrying value (original price plus amortized discount or minus amortized premium) from the constant-yield price trajectory, not from the purchase price.

(Study Session 17, Module 54.1, LOS 54.a)

Question #75 of 93

A bond has a convexity of 51.44. What is the approximate percentage price change of the bond due to convexity if rates rise by 150 basis points?

A) 0.58%.

B) 0.71%.

C) 0.26%.

Explanation

The convexity effect, or the percentage price change due to convexity, formula is: convexity × $(\Delta YTM)^2$. The percentage price change due to convexity is then: $(½)(51.44)(0.015)^2 = 0.0058$.

(Study Session 17, Module 54.3, LOS 54.i)

Question #76 of 93

Which of the following duration measures is *most appropriate* if an analyst expects a non-parallel shift in the yield curve?

A) Modified duration.

B) Effective duration.

C) Key rate duration.

Explanation

Price sensitivity to a non-parallel shift in the yield curve can be estimated using key rate durations. Modified duration and effective duration measure price sensitivity to a parallel shift in the yield curve.

(Study Session 17, Module 54.2, LOS 54.d)

Question #77 of 93

Which of the following statements concerning the price volatility of bonds is *most* accurate?

A) Bonds with longer maturities have lower interest rate risk.

B) As the yield on callable bonds approaches the coupon rate, the bond's price will approach a "floor" value.

C) Bonds with higher coupons have lower interest rate risk.

Explanation

Other things equal, bonds with higher coupons have lower interest rate risk. Note that the other statements are false. Bonds with longer maturities have *higher* interest rate risk. Callable bonds have a ceiling value as yields decline.

(Study Session 17, Module 54.2, LOS 54.e)

Question #78 of 93

For a given bond, the duration is 8 and the convexity is 100. For a 60 basis point decrease in yield, what is the approximate percentage price change of the bond?

A) 2.52%.

B) 4.62%.

C) 4.98%.

Explanation

The estimated price change is -(duration)(ΔYTM) + (½)(convexity) × (ΔYTM)^2 = -8 × (-0.006) + (½)(100) × (-0.006^2) = +0.0498 or 4.98%.

(Study Session 17, Module 54.3, LOS 54.i)

Question #79 of 93

An international bond investor has gathered the following information on a 10-year, annual-pay U.S. corporate bond:

- Currently trading at par value
- Annual coupon of 10%
- Estimated price if rates increase 50 basis points is 96.99%
- Estimated price is rates decrease 50 basis points is 103.14%

The bond's modified duration is *closest* to:

A) 6.58.

B) 6.15.

C) 3.14.

Explanation

Duration is a measure of a bond's sensitivity to changes in interest rates.

Modified duration = (V_- – V_+) / [2V_0(change in required yield)] where:

V_- = estimated price if yield decreases by a given amount

V_+ = estimated price if yield increases by a given amount

V_0 = initial observed bond price

Thus, modified duration = (103.14 − 96.99) / (2 × 100 × 0.005) = 6.15. Remember that the change in interest rates must be in decimal form.

(Study Session 17, Module 54.2, LOS 54.e)

Question #80 of 93

The appropriate measure of interest rate sensitivity for bonds with an embedded option is:

A) modified duration.

B) Macaulay duration.

C) effective duration.

Explanation

Effective duration is appropriate for bonds with embedded options because their future cash flows are affected by the level and path of interest rates.

(Study Session 17, Module 54.1, LOS 54.c)

Question #81 of 93

For large changes in yield, which of the following statements about using duration to estimate price changes is *most accurate*? Duration alone:

A) overestimates the increase in price for increases in yield.

B) underestimates the increase in price for decreases in yield.

C) overestimates the increase in price for decreases in yield.

Explanation

For large changes in yield, duration underestimates the increase in price when yield decreases and overestimates the decrease in price when yield increases. This is because duration is a linear estimate that does not account for the convexity (curvature) in the price/yield relationship.

(Study Session 17, Module 54.1, LOS 54.b)

Question #82 of 93

Which of the following bonds is *most likely* to exhibit the *greatest* volatility due to interest rate changes? A bond with a:

A) low coupon and a long maturity.

B) high coupon and a long maturity.

C) low coupon and a short maturity.

Explanation

Other things equal, a bond with a low coupon and long maturity will have the greatest price volatility.

(Study Session 17, Module 54.2, LOS 54.e)

Question #83 of 93

The price value of a basis point (PVBP) for a 7-year, 10% semiannual pay bond with a par value of $1,000 and yield of 6% is *closest* to:

A) $0.28.

B) $0.92.

C) $0.64.

Explanation

PVBP = initial price – price if yield changed by 1 bps.

Initial price:	Price with change:
FV = 1000	FV = 1000
PMT = 50	PMT = 50
N = 14	N = 14
I/Y = 3%	I/Y = 3.005
CPT PV = 1225.92	CPT PV = 1225.28

PVBP = 1,225.92 – 1,225.28 = 0.64

(Study Session 17, Module 54.2, LOS 54.g)

Question #84 of 93

What happens to bond durations when coupon rates increase and maturities increase? <u>As coupon rates increase, duration:As maturities increase, duration:</u>

	As coupon rates increase, duration:	As maturities increase, duration:	
A)	decreases	increases	✓
B)	increases	increases	✗
C)	decreases	decreases	✗

Explanation

As coupon rates increase the duration on the bond will decrease because investors are recieving more cash flow sooner. As maturity increases, duration will increase because the payments are spread out over a longer peiod of time.

(Study Session 17, Module 54.2, LOS 54.e)

Question #85 of 93

Which of the following statements regarding the risks inherent in bonds is *most accurate*?

A) Interest rate risk is the risk that the coupon rate will be adjusted downward if market rates decline. ✗

B) The reinvestment rate assumption in calculating bond yields is generally not significant to the bond's yield. ✗

C) Default risk deals with the likelihood that the issuer will fail to meet its obligations as specified in the indenture. ✓

Explanation

Reinvestment is crucial to bond yield, and interest rate risk is the risk of changes in a bondholder's return due to changes in a bond's yield.

(Study Session 17, Module 54.1, LOS 54.b)

Question #86 of 93

Calculate the effective duration for a 7-year bond with the following characteristics:

- Current price of $660
- A price of $639 when the yield curve shifts up 50 basis points
- A price of $684 when the yield curve shifts down by 50 basis points

A) 6.5.

B) 3.1.

C) 6.8.

Explanation

The formula for calculating the effective duration of a bond is:

$$\frac{V_{-} - V_{+}}{2V_0(\Delta \text{curve})}$$

where:

- V_- = bond value if the yield decreases by Δy
- V_+ = bond value if the yield increases by Δy
- V_0 = initial bond price

The effective duration of this bond is calculated as:

$$\frac{684 - 639}{2(660)(0.005)} = 6.8$$

(Study Session 17, Module 54.1, LOS 54.b)

Question #87 of 93

A bond with a yield to maturity of 8.0% is priced at 96.00. If its yield increases to 8.3% its price will decrease to 94.06. If its yield decreases to 7.7% its price will increase to 98.47. The modified duration of the bond is *closest to*:

A) 2.75.

B) 4.34.

C) 7.66.

Explanation

The change in the yield is 30 basis points.

Approximate modified duration = (98.47 − 94.06) / (2 × 96.00 × 0.003) = 7.6563.

(Study Session 17, Module 54.1, LOS 54.b)

Question #88 of 93

In comparing the price volatility of putable bonds to that of option-free bonds, a putable bond will have:

A) more price volatility at higher yields.

B) less price volatility at higher yields.

C) less price volatility at low yields.

Explanation

The only true statement is that putable bonds will have less price volatility at higher yields. At higher yields the put becomes more valuable and reduces the decline in price of the putable bond relative to the option-free bond. On the other hand, when yields are low, the put option has little or no value and the putable bond will behave much like an option-free bond. Therefore at low yields a putable bond will not have more price volatility nor will it have less price volatility than a similar option-free bond.

(Study Session 17, Module 54.2, LOS 54.e)

Question #89 of 93

When interest rates increase, the modified duration of a 30-year bond selling at a discount:

A) does not change.

B) decreases.

C) increases.

Explanation

The higher the yield on a bond the lower the price volatility (duration) will be. When interest rates increase the price of the bond will decrease and the yield will increase because the current yield = (annual cash coupon payment) / (bond price). As the bond price decreases the yield increases and the price volatility (duration) will decrease.

(Study Session 17, Module 54.2, LOS 54.e)

Question #90 of 93

For a given change in yields, the difference between the actual change in a bond's price and that predicted using duration alone will be greater for:

A) a short-term bond.

B) a bond with greater convexity.

C) a bond with less convexity.

Explanation

Duration is a linear measure of the relationship between a bond's price and yield. The true relationship is not linear as measured by the convexity. When convexity is higher, duration will be less accurate in predicting a bond's price for a given change in interest rates. Short-term bonds generally have low convexity.

(Study Session 17, Module 54.3, LOS 54.h)

Question #91 of 93

The term structure of yield volatility illustrates the relationship between yield volatility and:

A) time to maturity.

B) yield to maturity.

C) Macaulay duration.

Explanation

The term structure of yield volatility refers to the relationship between yield volatility and time to maturity.

(Study Session 17, Module 54.3, LOS 54.j)

Question #92 of 93

If the coupon payments are reinvested at the coupon rate during the life of a bond, then the yield to maturity:

A) may be greater or less than the realized yield.

B) is greater than the realized yield.

C) is less than the realized yield.

Explanation

For the realized yield to equal the YTM, coupon reinvestments must occur at that YTM. Whether reinvesting the coupons at the coupon rate will result in a realized yield higher or lower than the YTM depends on whether the bond is at a discount (coupon < YTM) or a premium (coupon > YTM).

(Study Session 17, Module 54.1, LOS 54.a)

Question #93 of 93

Suppose the term structure of interest rates makes an instantaneous parallel upward shift of 100 basis points. Which of the following securities experiences the *largest* change in value? A five-year:

A) coupon bond with a coupon rate of 5%.

B) floating rate bond.

C) zero-coupon bond.

Explanation

The duration of a zero-coupon bond is equal to its time to maturity since the only cash flows made is the principal payment at maturity of the bond. Therefore, it has the highest interest rate sensitivity among the four securities.

A floating rate bond is incorrect because the duration, which is the interest rate sensitivity, is equal to the time until the next coupon is paid. So this bond has a very low interest rate sensitivity.

A coupon bond with a coupon rate of 5% is incorrect because the duration of a coupon paying bond is lower than a zero-coupon bond since cash flows are made before maturity of the bond. Therefore, its interest rate sensitivity is lower.

(Study Session 17, Module 54.2, LOS 54.e)