Analysis of Risk

Test ID: 7697852

Question #1 of 126

Question ID: 415636

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) 6.00.**

✓ **B)** 6.07.

✗ **C)** 6.67.

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.

Question #2 of 126

Question ID: 415705

A restricted payment covenant in a high yield bond indenture protects lenders by:

✗ **A) making a parent company's debt rank pari passu with a subsidiary's debt.**

✗ **B)** requiring the borrower to buy back its debt if the company is sold.

✓ **C)** limiting the amount of cash paid to equity holders.

Explanation

A restricted payment covenant protects lenders by limiting the amount of cash that may be paid to equity holders. *Restricted subsidiaries'* cash flows are used to service the debt of the parent or holding company and make a parent company's debt rank pari passu with the subsidiary's debt. A *change of control put* protects lenders by requiring the borrower to buy back its debt in the event of an acquisition.

Question #3 of 126

Question ID: 472429

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.

Question #4 of 126

Question ID: 415690

Jequa is a Japanese company with the following selected financial information:

¥ billions	Year 1	Year 2	Year 3
Operating income	262	361	503
Depreciation & amortization	201	212	256
Capital expenditures	78	97	140
Cash flow from operations	303	466	361
Total debt	2,590	2,717	2,650
Dividends	70	70	72

Jequa's three-year average free cash flow-to-debt ratio on an after-dividend basis is *closest to*:

✗ **A) 10.2%.**

✓ **B)** 7.5%.

✗ **C)** 6.0%.

Explanation

Free cash flow = cash flow from operations - capital expenditures − dividends
Year 1: 303 − 78 − 70 = ¥155 billion
Year 2: 466 − 97 − 70 = ¥299 billion
Year 3: 361 − 140 − 72 = ¥149 billion

FCF/Debt:
Year 1: 155 / 2,590 = 6.0%
Year 2: 299 / 2,717 = 11.0%
Year 3: 149 / 2,650 = 5.6%

Three year average = 7.5%.

Question #5 of 126

Question ID: 415611

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) 5.37.**

✗ **B)** 5.48.

✗ **C)** 5.50.

Explanation

Approximate modified duration is computed as follows:

> *Duration* = $\frac{105.50 - 100}{}$ = 5.37

$$2 \times 102.50 \times 0.005$$

Question #6 of 126

Question ID: 415612

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)** 3.49.

✗ **C)** 1.74.

Explanation

The effective duration is computed as follows:

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

Question #7 of 126

Question ID: 415626

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

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

✓ **B)** ten year, option-free 4% coupon bond.

✗ **C)** five year, 5% coupon bond callable in one year.

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.

Question #8 of 126

Question ID: 415619

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) 7.0.**

✗ **B)** 5.0.

✓ **C)** 6.0.

Explanation

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

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Question ID: 415654

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

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

✗ **C)** decrease by $149, price will increase 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.

Question #10 of 126

Question ID: 415617

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)** 1.28%.

✗ **C)** 3.84%.

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**.

Question #11 of 126

Question ID: 415623

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

✓ **A) the bond contains embedded options.**

✗ **B)** yield curve changes are not parallel.

✗ **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.

Question #12 of 126

Question ID: 415687

The "four Cs" of credit analysis include:

✓ **A) capacity and character.**

✗ **B)** circumstances and covenants.

✗ **C)** collateral and capital.

Explanation

The "four Cs" of credit analysis are capacity, collateral, covenants, and character.

Question #13 of 126

Question ID: 415606

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

✗ **A) coupon rate.**

✓ **B)** yield to maturity at the time of the investment.

✗ **C)** prevailing yield to maturity at the time interest payments are received.

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.

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Question ID: 415618

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)** 7.66.

✗ **C)** 4.34.

Explanation

The change in the yield is 30 basis points.

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

Question #15 of 126

Question ID: 434417

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) 6.8.**

✗ **B)** 6.5.

✗ **C)** 3.1.

Explanation

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

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

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:

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

Question #16 of 126

Question ID: 415647

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

✓ **A) callable bonds.**

✗ **B)** zero coupon bonds.

✗ **C)** government 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.

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Question ID: 472435

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.

Question #18 of 126

Question ID: 434418

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.

Question #19 of 126

Question ID: 415629

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) zero-coupon bond.**

✗ **B)** floating rate bond.

✗ **C)** coupon bond with a coupon rate of 5%.

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.

Question #20 of 126

Question ID: 485814

The factors that must be considered when estimating the credit risk of a bond include:

✗ **A) the bond rating, the recovery rate, and the yield volatility.**

✓ **B)** only the bond rating and the recovery rate.

✗ **C)** only the bond rating.

Explanation

Credit risk is calculated with the probability of default (estimated from the bond rating) and the estimated recovery value should the bond default. Yield volatility is combined with duration to estimate the *price risk* of a bond.

Question #21 of 126

Question ID: 415698

Yield spreads tend to widen when equity market performance is:

✗ **A) strong.**

✗ **B)** stable.

✓ **C)** weak.

Explanation

Conditions that cause equity markets to weaken, such as poor economic growth, also tend to widen yield spreads in the bond market. Likewise, strong equity market performance tends to coincide with narrowing yield spreads. Yield spreads tend to narrow when equity markets are stable because investors "reaching for yield" increase their demand for bonds.

Question #22 of 126

Question ID: 415627

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

✓ **A) increases the bond's duration, increasing price risk.**

✗ **B)** exposes investors to additional reinvestment rate risk.

✗ **C)** reduces the bond's capital appreciation potential.

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.

Question #23 of 126

Question ID: 415693

Which of the following is the most appropriate strategy for a fixed income portfolio manager under the anticipation of an economic expansion?

✗ **A) Sell lower-rated corporate bonds and buy higher-rated corporate bonds.**

✓ **B)** Purchase corporate bonds and sell Treasury bonds.

✗ **C)** Sell corporate bonds and purchase Treasury bonds.

Explanation

During periods of economic expansion corporate yield spreads generally narrow, reflecting decreased credit risk. If yield spreads narrow, the prices of corporate bonds increase relative to the prices of Treasuries. Selling lower-rated bonds and buying higher-rated bonds is an appropriate strategy if an economic contraction is anticipated.

Question #24 of 126

Question ID: 415686

Bond X and Bond Y have the same par value, coupon, maturity, and credit rating, but Bond X trades at a higher price than Bond Y. A possible reason for this difference is that:

✗ **A) Bond X has a higher expected loss in a default.**

✗ **B)** Bond Y has a higher expected recovery rate in a default.

✓ **C)** the market expects a downgrade to Bond Y's credit rating.

Explanation

The market price difference can be accounted for by a lag in the bonds' credit rating behind the market's assessment of their creditworthiness. The bond market may be expecting a downgrade of Bond Y or an upgrade of Bond X. Bond X would have a lower price than Bond Y if it had a higher expected loss. Bond Y would have a higher price than Bond X if it had a higher expected recovery rate.

Question #25 of 126

Question ID: 415692

When calculating credit ratios, an analyst should increase a company's reported total debt if the company has:

✗ **A) a debt guarantee from a parent or third party.**

✓ **B)** operating lease obligations.

✗ **C)** a net pension asset on its balance sheet.

Explanation

Credit analysts should add to a company's total debt its obligations such as operating lease payments and underfunded pension plans. A net pension asset results from an overfunded pension plan. A credit analyst should include a debt guarantee in the total obligations of the company that is making the guarantee.

Question #26 of 126

Question ID: 415675

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

✗ **A) Credit rating downgrade.**

✓ **B)** Increase in expected inflation.

✗ **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.

Question #27 of 126

Question ID: 415695

If a U.S. investor is forecasting that the yield spread between U.S. Treasury bonds and U.S. corporate bonds is going to widen, then which of the following is most likely to be CORRECT?

✓ **A) The economy is going to contract.**

✗ **B)** The economy is going to expand.

✗ **C)** The U.S. dollar will weaken.

Explanation

If economic conditions are expected to get worse, then the probability that corporations may default increases and causes credit spreads to widen.

Question #28 of 126

Question ID: 415667

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 6.5%.**

✓ **B)** increase by 7.5%.

✗ **C)** decrease by 7.5%.

Explanation

Percentage Price Change = -(duration) (ΔYTM) + (½)convexity (ΔYTM)^2

therefore

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

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Question ID: 419143

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 credit spreads narrow by 125 basis points, the estimated price of the bond is *closest to*:

✗ **A) £121.84.**

✗ **B)** £112.72.

✓ **C)** £120.95.

Explanation

$$\text{Return impact} \approx -(\text{Duration} \times \Delta\text{Spread}) + (1/2) \times (\text{Convexity} \times (\Delta\text{Spread}))^2$$
$$\approx -(9.5 \times -0.0125) + (1/2) \times (107.2) \times (-0.0125)^2$$
$$\approx 0.1188 + 0.0084$$
$$\approx 0.1272 \text{ or } 12.72\%$$

$$\text{Estimated price of bond} = (1 + 0.1272) \times 107.30$$
$$= 120.95$$

Question #30 of 126

Question ID: 415706

In a sovereign debt credit rating, a country's foreign reserves, its external debt, and the status of its currency in foreign exchange markets are key factors for evaluating the country's:

✗ **A)** **fiscal flexibility.**

✓ **B)** international investment position.

✗ **C)** monetary flexibility.

Explanation

The five key areas for evaluating and assigning a credit rating for sovereign bonds are institutional effectiveness, economic prospects, international investment position, fiscal flexibility, and monetary flexibility. International investment position includes analysis of the country's foreign reserves, its external debt, and the status of its currency.

Question #31 of 126

Question ID: 472434

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)** **both of these effects.**

✓ **B)** only one of these effects.

✗ **C)** neither 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.

Question #32 of 126

Question ID: 415645

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)** decrease by more than 10.03%.

✗ **C)** increase by 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.

Question #33 of 126

Question ID: 415608

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)** more than 7.515%.

✗ **C)** less 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.

Question #34 of 126

Question ID: 415662

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)** -11.72%.

✗ **C)** -13.96%.

Explanation

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

Question #35 of 126

Question ID: 415657

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) increase by $50.**

✓ **B)** decrease by $50.

✗ **C)** decrease by $60.

Explanation

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

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

($1000)(-0.05) = -$50

Question #36 of 126

Question ID: 415630

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.

Question #37 of 126

Question ID: 485813

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

✗ **A) duration gap is negative.**

✗ **B)** investment horizon is less than the bond's tenor.

✓ **C)** duration gap is positive.

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).

Question #38 of 126

Question ID: 415681

Debt with a lower priority of claims than a firm's unsecured debt is *best* described as:

✓ **A) subordinated.**

✗ **B)** pari passu.

✗ **C)** second lien.

Explanation

Subordinated debt has a lower priority of claims than unsecured debt. Second lien is a form of secured debt, which has a higher priority of claims than unsecured debt. "Pari passu" refers to the equal priority of claims for different debt issues in the same category.

Question #39 of 126

Question ID: 485816

Which component of traditional credit analysis includes evaluation of industry structure, industry fundamentals, and company fundamentals?

✓ **A) Capacity.**

✗ **B)** Covenants.

✗ **C)** Collateral.

Explanation

Analyzing a corporate borrower's capacity to repay its debt obligations is similar to the top-down process used in equity analysis. Collateral analysis is evaluating the issuer's assets. Analyzing covenants involves reviewing the terms and conditions of lending agreements.

Question #40 of 126

Question ID: 434420

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

Question #41 of 126

Question ID: 415613

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) 5.54.**

✓ **B)** 5.27.

✗ **C)** 6.12.

Explanation

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

Question #42 of 126

Question ID: 415620

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) -$47.34.**

✗ **B)** -$5.68.

✓ **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

Question #43 of 126

Question ID: 415689

An increase in net income is *most likely* to decrease a borrower's:

✓ **A) debt-to-EBITDA ratio.**

✗ **B)** operating margin.

✗ **C)** FFO-to-debt ratio.

Explanation

An increase in net income is likely a result from increases in earnings before interest, taxes, depreciation and amortization (EBITDA) and operating income. An increase in net income is also likely to result in an increase in funds from operations (FFO). The only ratio listed that has earnings or operating cash flow in the denominator is the debt-to-EBITDA ratio. As the denominator increases, the ratio will decrease.

Question #44 of 126

Question ID: 485809

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) original price less amortized discount.**

✓ **B)** carrying value.

✗ **C)** original purchase price.

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.

Question #45 of 126

Question ID: 415680

Recovery rates are greatest for classes of debt with the highest:

✓ **A) priority of claims.**

✗ **B)** loss severity.

✗ **C)** default rates.

Explanation

High default rates and loss severity are indicators of potential lower recovery rates. The highest priority of claims has the lowest credit risk.

Question #46 of 126

Question ID: 415655

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)** -1.820%.

✗ **C)** -0.018%.

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%.

Question #47 of 126

Question ID: 415703

Consider three municipal bonds issued by the Greater Holmen Metropolitan Capital Improvement District, a local authority that carries an issuer rating of single-A from the major debt rating agencies. All three bonds have the same coupon rate and maturity date.

- Series W was issued to finance the rebuilding and expansion of local schools and is backed by the District's authority to levy property tax.
- Series X was issued to build a water purification plant for the region. The District charges fees to the surrounding municipalities for their use of the plant. These fees are the only source of the interest and principal payments on the bonds.
- Series Y was issued to raise funds for the general use of the District in its ordinary maintenance projects and is backed by the District's authority to levy property tax. These bonds carry a third party guarantee of principal and interest payments.

What is *most likely* the order of the market yields on these three bond issues, from highest to lowest?

✗ **A) Series X, Series Y, Series W.**

✓ **B)** Series X, Series W, Series Y.

✗ **C)** Series Y, Series W, Series X.

Explanation

Series X is a revenue bond. Because they pay interest and principal only if revenues from the project they finance are sufficient, revenue bonds are typically riskier and therefore have higher market yields than general obligation bonds. Series Y is an insured bond. Municipal bond insurance typically results in a higher rating, and therefore a lower market yield, than an equivalent bond from the same municipal issuer. So of these three bonds, Series X should have the highest market yield and Series Y the lowest.

Question #48 of 126

Question ID: 415671

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)** Macaulay duration.

✗ **C)** Modified duration.

Explanation

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

Question #49 of 126

Question ID: 415674

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) neither duration nor convexity.**

✗ **B)** duration, but not convexity.

✓ **C)** both duration and convexity.

Explanation

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

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

Question #50 of 126

Question ID: 415632

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

✗ **A) high coupon and a long maturity.**

✗ **B)** low coupon and a short maturity.

✓ **C)** low coupon and a long maturity.

Explanation

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

Question #51 of 126

Question ID: 415665

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) 4.12%.**

✓ **B)** 4.33%.

✗ **C)** 4.21%.

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%.

Question #52 of 126

Question ID: 415672

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) approximately 4.5%.**

✗ **B)** less than 4.5%.

✗ **C)** greater than 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.

Question #53 of 126

Question ID: 460706

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) 5.7% decrease.**

✗ **B)** 5.4% decrease.

✗ **C)** 5.4% increase.

Explanation

ΔP/P = −DΔi
ΔP/P = −7.6(+0.0075)= −0.057, or −5.7%.

Question #54 of 126

Question ID: 485810

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

✗ **A) Modified duration of the bond ignoring the option.**

✓ **B)** Macaulay duration of the bond ignoring the option.

✗ **C)** Effective duration of the bond.

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.

Question #55 of 126

Question ID: 415610

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

✗ **A) is greater than the realized yield.**

✗ **B)** is less than the realized yield.

✓ **C)** may be greater or 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).

Question #56 of 126

Question ID: 415668

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) -4.50%.**

✗ **B)** -4.94%.

✓ **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.

Question #57 of 126

Question ID: 434427

Analysis of a firm's intellectual capital, equity market capitalization, depreciation, and intangible assets is associated with which aspect of credit analysis?

✗ **A) Capacity.**

✓ **B)** Collateral.

✗ **C)** Covenants.

Explanation

These items are part of analyzing a borrower's collateral. Analyzing depreciation expense and equity market capitalization can provide insight into the quality of a firm's fixed assets. Intellectual capital and intangible assets can potentially be used as collateral if they can be separated from the firm and sold. Capacity refers to a borrower's ability to repay its obligations. Analysis of capacity focuses on industry structure and company fundamentals. Covenants are terms and conditions of a bond issue.

Question #58 of 126

Question ID: 415635

What happens to bond durations when coupon rates increase and maturities increase?

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

Question #59 of 126

Question ID: 415640

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)** $0.64.

✗ **C)** $0.92.

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

Question #60 of 126

Question ID: 434419

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

✓ **A) effective duration.**

✗ **B)** modified duration.

✗ **C)** Macaulay 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.

Question #61 of 126

Question ID: 415696

Which of the following is the reason why credit spreads between high quality bonds and low quality bonds widen during poor economic conditions?

✓ **A) default risk.**

✗ **B)** indenture provisions.

✗ **C)** interest risk.

Explanation

During poor economic conditions the probability of default increases and thus credit spreads widen.

Question #62 of 126

Question ID: 415664

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) 1.89%.**

✗ **B)** 1.56%.

✓ **C)** 2.05%.

Explanation

The total percentage price change estimate is computed as follows:

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

Question #63 of 126

Question ID: 415607

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: $30 \times 35 = \$1,050$

Principal repayment: $1,000

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

Question #64 of 126

Question ID: 471004

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) -17.58%.**

✗ **B)** -24.90%.

✗ **C)** -1.62%.

Explanation

The estimated price change is:

$-(\text{duration})(\Delta\text{YTM}) + ½(\text{convexity}) \times (\Delta\text{YTM})^2 = -10.62 \times 0.02 + (½)(182.92)(0.02^2) = -0.2124 + 0.0366 = -0.1758$ or -17.58%.

Question #65 of 126

Question ID: 415677

The type of credit risk that is defined as the possibility that a borrower will fail to pay interest or repay principal when due is:

✗ **A) downgrade risk.**

✗ **B)** credit spread risk.

✓ **C)** default risk.

Explanation

Default risk refers to the failure of a borrower to make timely and complete payments of interest or principal.

Question #66 of 126

Question ID: 415638

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) will increase by approximately 6.24%.**

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

✓ **C)** will increase by approximately $117,700.

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.

Question #67 of 126

Question ID: 415666

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)** 0.26%.

✗ **C)** 0.71%.

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: $(½)(51.44)(0.015)^2 = 0.0058$.

Question #68 of 126

Question ID: 415669

If the term structure of yield volatility slopes upward:

✓ **A) long-term interest rates are more variable than short-term interest rates.**

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

✗ **C)** short-term interest rates are less than long-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.

Question #69 of 126

Question ID: 434426

Which of the following bonds from the same corporate issuer has the lowest priority of claims?

✗ **A) Collateral trust bond.**

✗ **B)** Equipment trust certificate.

✓ **C)** Senior unsecured debenture.

Explanation

Secured bonds have a higher priority of claims than unsecured bonds. Collateral trust bonds and equipment trust certificates are secured bonds.

Question #70 of 126

Question ID: 415704

Support for revenue bonds comes from:

✗ **A) the full faith and credit of the issuing municipality.**

✗ **B)** property taxes based on the project.

✓ **C)** income generated by the underlying project.

Explanation

Revenue bonds are serviced by the income generated from specific projects (e.g., toll roads).

Question #71 of 126

Question ID: 472431

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) 12.50.**

✓ **B)** 10.03.

✗ **C)** 8.73.

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.

Question #72 of 126

Question ID: 415688

Fraud and malfeasance, soundness of strategy, and prior treatment of bondholders are criteria to evaluate a borrower's:

✗ **A) covenants.**

✗ **B)** capacity.

✓ **C)** character.

Explanation

Character analysis includes soundness of strategy, management's track record, accounting policies and tax strategies, fraud and malfeasance record, and prior treatment of bondholders.

Question #73 of 126

Question ID: 415634

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

✓ **A) decreases.**

✗ **B)** does not change.

✗ **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.

Question #74 of 126

Question ID: 415676

Expected loss is greatest for a corporate bond with a low:

✗ **A) recovery rate and a low probability of default.**

✓ **B)** recovery rate and a high probability of default.

✗ **C)** loss severity and a high probability of default.

Explanation

The combination of low recovery rate (high loss severity) and high probability of default will lead to greatest expected loss.

Question #75 of 126

Question ID: 415628

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

✓ **A) 10-year maturity, 10% coupon rate.**

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

✗ **C)** 20-year maturity, 6% 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.

Question #76 of 126

Question ID: 415625

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

✗ **A) Option-free 5% coupon bond.**

✗ **B)** Floating rate bond.

✓ **C)** Zero-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.

Question #77 of 126

Question ID: 415643

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

Question #78 of 126

Question ID: 415616

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) 2.94.**

✓ **B)** 3.11.

✗ **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:

> $(V_- - V_+) / (2V_0 \Delta curve)$

Therefore, effective duration is:

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

Question #79 of 126

Question ID: 415683

Structural subordination means that a parent company's debt:

✗ **A) ranks pari passu with a subsidiary's debt with respect to the subsidiary's cash flows.**

✗ **B)** has a higher priority of claims to a subsidiary's cash flows than the subsidiary's debt.

✓ **C)** has a lower priority of claims to a subsidiary's cash flows than the subsidiary's debt.

Explanation

Structural subordination means that cash flows from a subsidiary are used to pay the subsidiary's debt before they may be paid to the parent company to service its debt. As a result, parent company debt is effectively subordinate to the subsidiary's debt.

Question #80 of 126

Question ID: 415609

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 higher coupon levels.**

✗ **B)** Longer maturities and higher coupon levels.

✓ **C)** Shorter maturities and lower 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.

Question #81 of 126

Question ID: 434421

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) 0.2.**

✗ **B)** 4.2.

✓ **C)** 19.7.

Explanation

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

Question #82 of 126

Question ID: 415648

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

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

✗ **B)** it measures the volatility of non-callable bonds.

✓ **C)** the slope of the price/yield curve is not linear.

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.

Question #83 of 126

Question ID: 485815

Which of the following *best* describes risks in relying on credit agency ratings?

✗ **A) Credit ratings tend to lead market prices.**

✗ **B)** Credit ratings are assigned only at issuance.

✓ **C)** Event risk is difficult for rating agencies to assess.

Explanation

Risks specific to a company or industry such as litigation, natural disasters, and corporate events are difficult to predict and

incorporate into credit ratings. Market prices tend to lead credit ratings. Credit ratings can be revised after issuance.

Question #84 of 126

Question ID: 415678

A non-callable bond with 18 years remaining maturity has an annual coupon of 7% and a $1,000 par value. The current yield to maturity on the bond is 8%. Using a 50bp change in YTM, the approximate modified duration of the bond is:

✗ **A) 8.24.**

✓ **B)** 9.63.

✗ **C)** 11.89.

Explanation

First, compute the current price of the bond as:

> FV = $1,000; PMT = $70; N = 18; I/Y = 8%; CPT → PV = -$906.28

Next, change the yield by plus-or-minus 50 basis points.
Compute the price of the bond if rates rise by 50 basis points to 8.5% as:

> FV = $1,000; PMT = $70; N = 18; I/Y = 8.5%; CPT → PV = -$864.17

Then compute the price of the bond if rates fall by 50 basis points to 7.5% as:

> FV = $1,000; PMT = $70; N = 18; I/Y = 7.5%; CPT → PV = -$951.47

The formula for approximate modified duration is:

> $(V_- - V_+) / (2V_0\Delta YTM)$

Therefore, approximate modified duration is:

> ($951.47 - $864.17) / (2 × $906.28 × 0.005) = 9.63.

Question #85 of 126

Question ID: 415660

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) 4.98%.**

✗ **B)** 4.62%.

✗ **C)** 2.52%.

Explanation

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

Question #86 of 126

Question ID: 419144

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 credit spread widens by 100 basis points, the impact on the bondholder's return is *closest to*:

✓ **A) −7.45%.**

✗ **B)** −7.80%.

✗ **C)** +8.15%.

Explanation

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

Question #87 of 126

Question ID: 436854

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 more than 5.3%.

✓ **C)** decrease by less 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 × 0.01) + (0.5 × 110 × 0.01^2)= -0.0475 = -4.75%.

Question #88 of 126

Question ID: 415637

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

✓ **A) a linear approximation of the actual price-yield function for the portfolio.**

✗ **B)** the market values of the bonds.

✗ **C)** a nonparallel shift in the yield curve.

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.

Question #89 of 126

Question ID: 415702

Which of the following statements about municipal bonds is *least* accurate?

✓ **A) Revenue bonds have lower yields than general obligation bonds because there are more revenue bands and they have higher liquidity.**

✗ **B)** Bonds with municipal bond guarantees are more liquid in the secondary market and generally have lower required yields.

✗ **C)** A municipal bond guarantee is a form of insurance provided by a third party other than the issuer.

Explanation

General obligation bonds are backed by the full faith, credit, and taxing power of the issuer and thus tend to have lower yields than revenue bonds.

Question #90 of 126

Question ID: 415679

Senior subordinated bonds have a priority of claims over:

✗ **A) first lien debt.**

✗ **B)** secured bonds.

✓ **C)** subordinated bonds.

Explanation

First lien loans and secure bonds are senior to any unsecured debt. Senior subordinated debt is senior to subordinated debt.

Question #91 of 126

Question ID: 415641

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)** $0.82.

✗ **C)** $0.80.

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

Question #92 of 126

Question ID: 415615

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) 4.33.**

✗ **B)** 43.30.

✗ **C)** 8.66.

Explanation

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

Approximate modified duration = $(V_- - V_+) / [2V_0(\text{change in required yield})]$ 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.

Question #93 of 126

Question ID: 415691

Becque Ltd. is a European Union company with the following selected financial information:

€ billions	Year 1	Year 2	Year 3
Operating income	262	361	503
Depreciation & amortization	201	212	256
Capital expenditures	78	97	140
Cash flow from operations	303	466	361
Total debt	2,590	2,717	2,650
Dividends	70	70	72

Becque's three-year average debt-to-EBITDA ratio is *closest to*:

✓ **A) 4.6x.**

✗ **B)** 7.6x.

✗ **C)** 3.6x.

Explanation

EBITDA = Operating income + depreciation + amortization
Year 1: 262 + 201 = €463 billion
Year 2: 361 + 212 = €573 billion
Year 3: 503 + 256 = €759 billion

Debt/EBITDA ratio:
Year 1: 2,590 / 463 = 5.6x

Year 2: 2,717 / 573 = 4.7x
Year 3: 2,650 / 759 = 3.5x

Three-year average = 4.6x.

Question #94 of 126

Question ID: 415663

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) -15.8%.**
✗ **B)** -14.0%.
✓ **C)** -12.2%.

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.

Question #95 of 126

Question ID: 415673

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

✗ **A) will benefit from decreasing interest rates.**
✓ **B)** has a negative duration gap.
✗ **C)** is minimizing reinvestment risk.

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).

Question #96 of 126

Question ID: 472430

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

✗ **B)** Yes, because the purchase price is less than the bond's value at maturity.

✓ **C)** Yes, because the bond's yield to maturity may have changed.

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.

Question #97 of 126

Question ID: 434424

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

✗ **B)** lower than the YTM at the date of purchase.

✗ **C)** equal to 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.

Question #98 of 126

Question ID: 415631

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 low yields.

✓ **C)** less price volatility at higher 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.

Question #99 of 126

Question ID: 415682

One notable difference between an issuer credit rating and an issue credit rating is that an:

✗ **A) issue credit rating applies to the issuer's senior unsecured debt.**

✗ **B)** issue credit rating is always notched below the issuer rating.

✓ **C)** issuer credit rating reflects the borrower's overall creditworthiness.

Explanation

An issuer credit rating reflects the borrower's overall creditworthiness. Senior unsecured debt is usually the basis for an issuer credit rating. Notching of issue ratings can be upward or downward relative to an issuer credit rating.

Question #100 of 126

Question ID: 434416

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

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

✓ **C)** greater than price risk and the realized yield will be lower 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.

Question #101 of 126

Question ID: 415622

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.

Question #102 of 126

Question ID: 472433

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)** Key rate duration.

✗ **C)** Effective 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.

Question #103 of 126

Question ID: 434422

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) 0.0087%.**

✓ **B)** 1.74%.

✗ **C)** 0.174%.

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%

Question #104 of 126

Question ID: 415621

When compared to modified duration, effective duration:

✗ **A) places less weight on recent changes in the bond's ratings.**

✗ **B)** is equal to modified duration for callable bonds but not putable bonds.

✓ **C)** factors in how embedded options will change expected cash flows.

Explanation

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

Question #105 of 126

Question ID: 415653

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.

Question #106 of 126

Question ID: 415624

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

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

✓ **B)** Bonds with higher coupons have lower interest rate risk.

✗ **C)** Bonds with longer maturities 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.

Question #107 of 126

Question ID: 415646

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

✓ **A) fall, the bond's price increases at a decreasing rate.**

✗ **B)** rise, the bond's price decreases at a decreasing rate.

✗ **C)** fall, the bond's price increases at an increasing 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.

Question #108 of 126

Question ID: 485811

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 is easier to calculate than the alternative.

✗ **C)** It can be used when the portfolio contains bonds with embedded options.

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.

Question #109 of 126

Question ID: 415651

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

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

✗ **C)** the same convexity for both bond types.

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.

Question #110 of 126

Question ID: 415656

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) -0.965%.**

✗ **B)** -1.025%.

✗ **C)** 1.000%.

Explanation

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

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

Question #111 of 126

Question ID: 415685

Bond investors should not rely exclusively on credit agency ratings because:

✗ **A) market pricing tends to lag changes in credit ratings.**

✓ **B)** credit ratings may change over time.

✗ **C)** default rates are higher for lower-rated bonds.

Explanation

Credit ratings are not stable over time and bonds may be upgraded or downgraded during their lives. Market pricing typically leads changes in credit ratings. Default rates should be higher for lower-rated bonds if credit ratings are accurate.

Question #112 of 126

Question ID: 460705

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

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

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

✓ **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.

Question #113 of 126

Question ID: 485812

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

✗ **A) callable bond at high yields.**

✗ **B)** putable bond at high yields.

✓ **C)** callable bond at low yields.

Explanation

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

Question #114 of 126

Question ID: 415707

Compared to corporate bonds with the same credit ratings, municipal general obligation (GO) bonds typically have less credit risk because:

✗ **A) GOs are not affected by economic downturns.**

✗ **B)** governments can print money to repay debt.

✓ **C)** default rates on GOs are typically lower for same credit ratings.

Explanation

Municipal bonds usually have lower default rates than corporate bonds of the same credit ratings. GO bonds' creditworthiness is affected by economic downturns. Sovereigns can print money to repay debt, but municipalities cannot.

Question #115 of 126

Question ID: 415649

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

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

✗ **B)** Price increases and decreases at a faster rate than the change in yield.

✗ **C)** Positive changes in yield lead to positive changes in price.

Explanation

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

Question #116 of 126

Question ID: 415633

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) 3.14.**

✓ **B)** 6.15.

✗ **C)** 6.58.

Explanation

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

Modified duration = $(V_- - V_+) / [2V_0(\text{change in required yield})]$ 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.

Question #117 of 126

Question ID: 415684

A firm with a corporate family rating (CFR) of A3/A- issues secured bonds. Covenants to these bonds include a limitation on liens and a change of control put. If credit rating agencies notch this issue, its credit rating is *most likely* to be:

✗ **A) Baa1/BBB+.**

✗ **B)** Baa2/BBB.

✓ **C)** A2/A.

Explanation

Both the priority of claims and the covenants suggest this issue has less credit risk than the issuer and therefore its issue credit rating may be notched upward. The issuer's credit rating (corporate family rating) is based on its senior unsecured debt. This issue is a secured bond, and therefore has a higher seniority ranking. A change of control put protects lenders by requiring the borrower to buy back its debt in the event of an acquisition. A limitation on liens limits the amount of secured debt that a borrower can carry. Both covenants reduce the credit risk of the issue.

Question #118 of 126

Question ID: 415694

If investors expect greater uncertainty in the bond markets, yield spreads between AAA and B rated bonds are *most likely* to:

✗ **A) narrow.**

✗ **B)** slope downward.

✓ **C)** widen.

Explanation

With greater uncertainty, investors require a higher return for taking on more risk. Therefore credit spreads will widen.

Question #119 of 126

Question ID: 472432

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

✗ **A) change in a bond's cash flows.**

✗ **B)** parallel shift in the benchmark yield curve.

✓ **C)** change in yield at a single maturity.

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.

Question #120 of 126

Question ID: 434428

A corporate bond with a 4.25% coupon is priced at $104.03. This bond's duration and reported convexity are 5.3 and 0.325. If the bond's credit spread widens by 75 basis points due to a credit rating downgrade, the impact on the bondholder's return is *closest to*:

✓ **A) −3.89%.**

✗ **B)** −3.96%.

✗ **C)** +4.05%.

Explanation

Reported convexity of 0.325 needs to be scaled to match the duration squared. Because duration is 5.3, duration squared is 28.1, which implies that when scaled correctly, convexity has the value of 32.5.

$$\text{Return impact} \approx -(\text{Duration} \times \Delta\text{Spread}) + (1/2) \times (\text{Convexity} \times (\Delta\text{Spread}))^2$$

$$\approx -(5.3 \times 0.0075) + (1/2) \times 32.5 \times (0.0075)^2$$

≈ −0.0398 + 0.0009

≈ −0.0389 or 3.89%

Question #121 of 126

Question ID: 460707

Structural subordination is *most likely* to be a credit rating consideration for:

✗ **A) general obligation municipal bonds.**

✓ **B)** high-yield corporate bonds.

✗ **C)** emerging market sovereign bonds.

Explanation

Structural subordination is a credit consideration for corporate debt that results when a subsidiary has outstanding debt with a higher priority claim to the subsidiary's cash flows than the parent company's debt.

Question #122 of 126

Question ID: 434425

The risk of receiving less than market value when selling a bond is referred to as:

✗ **A) loss severity risk.**

✓ **B)** market liquidity risk.

✗ **C)** recovery rate risk.

Explanation

Market liquidity risk is the risk of receiving less than market value when selling a bond and is reflected in the size of the bid-ask spreads. Market liquidity risk is greater for the bonds of less creditworthy issuers and for the bonds of smaller issuers with relatively little publicly traded debt. Loss severity and recovery rate refer to defaults.

Question #123 of 126

Question ID: 415670

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

✗ **A) yield to maturity.**

✓ **B)** time to maturity.

✗ **C)** Macaulay duration.

Explanation

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

Question #124 of 126

Question ID: 415697

What is the *most likely* effect on yield spreads when demand for bonds is high and supply of bonds is low?

✓ **A) Yield spreads are likely to narrow.**

✗ **B)** Yield spreads are likely to widen.

✗ **C)** The effect on yield spreads will depend on whether supply or demand is the stronger influence.

Explanation

Credit spreads tend to narrow in times of high demand for bonds and widen in times of low demand for bonds. Credit spreads tend to widen under excess supply conditions, such as large issuance in a short period of time, and narrow when supply is low.

Question #125 of 126

Question ID: 415639

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

✓ **A) 25 million.**

✗ **B)** 360 days.

✗ **C)** 4.3%.

Explanation

Money duration is expressed in currency units.

Question #126 of 126

Question ID: 415658

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) 0.750%.**

✗ **B)** -12.675%.

✓ **C)** +12.675%.

Explanation

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

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