

# **Level I of the CFA® 2025 Exam**

Questions with Answers - Fixed Income

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## **Learning Module 1: Fixed Income Instrument Features**

Q.55 Regarding fixed income, which of these statements is *least likely* a negative covenant?

- A. Negative pledges.
- B. Insure and maintain assets.
- C. Restrictions on prior claims.

The correct answer is **B**.

Positive covenants refer to actions that the issuer of the bond is obligated to perform. These actions often include maintaining certain financial ratios, making regular interest payments, returning the principal at maturity, maintaining the underlying collateral, insuring assets, and providing the lender with regular financial statements. In this case, the requirement to 'insure and maintain assets' is a commitment that the issuer must fulfill, making it a positive covenant.

**A is incorrect.** Negative pledges are a type of negative covenant. Negative covenants are restrictions that limit what the issuer of the bond can do. They are designed to protect the interests of the bondholders by preventing the issuer from taking actions that could potentially harm the bondholders' investment. A negative pledge is a promise by the issuer not to use certain assets as security for future debts, which could potentially jeopardize the bondholders' claim on those assets.

**C is incorrect.** Restrictions on prior claims are also a type of negative covenant. These restrictions prevent the issuer from allowing other creditors to have a higher claim on the issuer's assets than the bondholders. This ensures that the bondholders' investment is protected and that they will be among the first to be repaid in the event of a default.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (b): Describe the contents of a bond indenture and contrast affirmative and negative covenants.**

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Q.2534 An asset-backed security is *most likely* different from a covered bond with respect to the fact that:

- A. no special purpose entity (SPE) is created for a covered bond.
- B. special legislation is created to protect the assets in the covered pool.
- C. covered bonds do not have a provision of recourse to the issuing firm to replace or augment non-performing assets in the covered pool.

The correct answer is **A**.

An asset-backed security (ABS) and a covered bond differ primarily in the structure and legal framework surrounding the underlying assets. The key difference lies in the creation of a special purpose entity (SPE) for asset-backed securities, which is not a practice for covered bonds. In the case of ABS, the underlying assets are transferred to an SPE, which is a separate legal entity created specifically for the securitization process. This SPE holds the assets, thereby isolating them from the issuer's balance sheet.

**B is incorrect.** Both asset-backed securities and covered bonds are subject to specific legislation and regulatory frameworks that govern their creation, issuance, and the protection of the underlying assets. This legislation ensures that the interests of investors are safeguarded. For covered bonds, the legislation typically includes provisions that protect the cover pool and ensure its availability to meet bondholder claims, even in the event of the issuer's insolvency.

**C is incorrect.** The provision of recourse is another area where asset-backed securities and covered bonds differ, but not in the way suggested by this option. Covered bonds offer dual recourse, allowing investors to claim against both the issuer and the cover pool in case of default. This dual recourse provides an additional layer of security for investors. In contrast, asset-backed securities typically offer single recourse, with investors having a claim only against the pool of securitized assets.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (a): Describe the features of a fixed-income security.**

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Q.2536 Which of the following is *least likely* a method of external credit enhancement?

- A. Surety bonds.
- B. Bank guarantees.
- C. Cash reserve fund.

The correct answer is **C**.

The cash reserve fund, is considered an internal credit enhancement method rather than an external one. Credit enhancement strategies are crucial for improving the creditworthiness of debt issuances, making them more attractive to investors by reducing the risk of default. Internal credit enhancements are mechanisms that are built within the structure of the debt issuance itself to provide additional security to investors.

**A is incorrect.** They involve a third party, typically an insurance company, which guarantees to pay the bondholders a specified amount if the issuer defaults. This guarantee reduces the risk to the bondholders since they have an additional source of repayment beyond the issuer's assets. Surety bonds do not rely on the issuer's internal resources but rather on the financial strength and promise of the external guarantor, making them a clear example of external credit enhancement.

**B is incorrect.** Bank guarantees serve as another form of external credit enhancement. In this arrangement, a bank or another financial institution promises to cover any missed payments on the debt issuance up to a certain amount. Similar to surety bonds, bank guarantees provide bondholders with an additional layer of security that is external to the issuer. This mechanism relies on the external support of the bank, distinguishing it from internal methods of credit enhancement.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (b): Describe the contents of a bond indenture and contrast affirmative and negative covenants.**

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Q.3887 Which of the following factors *least likely* distinguishes investment-grade from high-yield bond issues?

- A. Liquidity.
- B. Maturity.
- C. Credit quality.

The correct answer is **B**.

Maturity is the factor that least likely distinguishes investment-grade bonds from high-yield bonds. The maturity of a bond refers to the length of time until the principal amount of the bond is to be paid back to the bondholder. It is a characteristic that can vary widely within both investment-grade and high-yield bond categories. Bonds within these categories can have short, medium, or long-term maturities.

**A is incorrect.** Investment-grade bonds are issued by entities that are considered to have a lower risk of default, making them more attractive to a broader range of investors. As a result, these bonds tend to have a more active secondary market, which enhances their liquidity. On the other hand, high-yield bonds, also known as junk bonds, are issued by entities with a higher risk of default. This higher risk makes them less attractive to conservative investors, resulting in a less active secondary market and lower liquidity.

**C is incorrect.** Credit quality is a primary factor that distinguishes investment-grade bonds from high-yield bonds. Credit quality refers to the creditworthiness of the bond issuer and is an indication of the issuer's ability to meet its debt obligations. Investment-grade bonds are issued by entities that are deemed to have a relatively low risk of default. These bonds are rated BBB- or higher by Standard & Poor's, or Baa3 or higher by Moody's. High-yield bonds, on the other hand, are issued by entities with a higher risk of default and are rated below these thresholds.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (a): Describe the features of a fixed-income security.**

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Q.4417 Which of the following *most likely* describes a bond's principal? The amount that:

- A. fluctuates with market interest rates.
- B. an issuer agrees to repay investors at maturity.
- C. represents the total interest accrued over a bond's life.

The correct answer is **B**.

The bond's principal, also known as the face value or par value, is the fixed amount that the issuer of the bond agrees to repay the bondholder upon the bond's maturity. This amount is established at the time the bond is issued and is specified in the bond agreement or indenture. It is the principal amount on which interest payments, if any, are calculated during the life of the bond.

**A is incorrect.** The bond's principal is not affected by changes in market interest rates. While the market price of a bond may fluctuate based on changes in interest rates due to the inverse relationship between bond prices and interest rates, the principal amount remains unchanged. Market interest rates affect the bond's yield and its price in the secondary market, not the principal.

**C is incorrect.** The principal is not the sum of the interest accrued over the life of the bond. Interest payments are derived from the bond's coupon rate applied to the principal and are paid periodically to bondholders over the bond's term. The principal is distinct from these interest payments and represents the lump sum to be repaid at the end of the bond's term, not the accumulation of interest.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (a): Describe the features of a fixed-income security.**

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Q.4421 Which type of bond is *most likely* to pay principal in equal or variable increments over time rather than in a lump sum at maturity?

- A. Amortizing bond.
- B. Floating-rate note.
- C. Zero-coupon bond.

The correct answer is **A**.

An amortizing bond, such as a mortgage-backed security (MBS) or an asset-backed security (ABS), often structured similarly to a traditional mortgage loan, requires borrowers to make regular payments that include both interest and principal repayment. These payments reduce the principal balance over the life of the bond, unlike traditional bonds that typically pay back the entire principal at maturity.

**B is incorrect.** A floating-rate note (FRN) pays interest that fluctuates with market interest rates, typically by referencing a base rate such as LIBOR plus a spread. The principal of an FRN is usually repaid at maturity, not in increments over the life of the bond. However, there are some structured FRNs that may include provisions for principal amortization, but these are less common and not the defining characteristic of FRNs.

**C is incorrect.** A zero-coupon bond does not make periodic interest payments and pays the principal only at maturity. The bond is purchased at a discount to its face value, and the difference between the purchase price and the face value represents the bondholder's return.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (a): Describe the features of a fixed-income security.**

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Q.4422 If a bond has a par value of USD 10,000 and a coupon rate of 4.5% with semiannual payments, the semiannual interest payment is *closest to*:

- A. USD 90
- B. USD 225
- C. USD 450

The correct answer is **B**.

To calculate the semiannual interest payment for a bond, we use the formula:

$$\text{Semiannual interest payment} = \frac{\text{Bond par value} \times \text{Coupon rate}}{\text{Number of payments per year}}$$

In this case, the bond has a par value of USD 10,000 and a coupon rate of 4.5%, with payments made semiannually, which means there are 2 payments per year. Therefore, the calculation is as follows:

$$\text{Semiannual interest payment} = \text{USD}10,000 \times 0.0452 = \text{USD}225$$

***CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (a): Describe the features of a fixed-income security.***

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Q.4423 A five-year bond trades at USD 980 per USD 1,000 in face value. If its annual coupon is 3.2%, its current yield is *closest to*:

- A. 3.076%
- B. 3.265%
- C. 3.469%

The correct answer is **B**.

The current yield is a measure of the income (interest or dividends) that an investment provides relative to its current price. It is calculated as the annual income (interest or dividends) divided by the current price of the security.

For a bond with an annual coupon of 3.2% and trading at USD 980 per USD 1,000 in face value, the calculation is as follows:

$$\begin{aligned}\text{Current Yield (CY)} &= \frac{\text{Annual coupon}}{\text{Bond price}} \\ &= \frac{3.2\% \times \text{USD } 1,000}{\text{USD } 980} = \frac{\text{USD } 32}{\text{USD } 980} \\ &= 3.265\%\end{aligned}$$

***CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (a): Describe the features of a fixed-income security.***

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Q.4424 Which of the following *best* describes a negative covenant in a bond indenture?

- A. A clause that signifies a default if the issuer defaults on any other debt obligation.
- B. An action that the borrower promises to perform, such as providing timely financial reports.
- C. A restriction placed on the issuer to prevent actions that might increase the risk of default, such as limitations on further borrowings.

The correct answer is **C**.

Negative covenants in a bond indenture are designed to protect the interests of the bondholders by imposing restrictions on the issuer's actions that could potentially increase the risk of default. These covenants are crucial in maintaining the financial stability and creditworthiness of the issuer by preventing them from engaging in risky financial activities. By restricting certain actions of the issuer, negative covenants help in preserving the value of the bond and safeguarding the investment made by the bondholders.

**A is incorrect.** A clause that signifies a default if the issuer defaults on any other debt obligation is known as a cross-default clause. This type of clause is not a negative covenant but rather a mechanism that provides bondholders with additional security by linking the issuer's default on any debt to the default on the bond in question. It ensures that bondholders have a claim or can take action if the issuer defaults on other financial obligations, thereby offering a layer of protection.

**B is incorrect.** An action that the borrower promises to perform, such as providing timely financial reports, falls under the category of affirmative covenants rather than negative covenants. Affirmative covenants require the issuer to undertake certain actions or meet specific conditions, which can include maintaining certain financial ratios, providing regular financial statements, or ensuring the maintenance of the issuer's assets.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (b): Describe the contents of a bond indenture and contrast affirmative and negative covenants.**

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Q.4425 Which of the following covenants is *most likely* to commit the borrower to adhere to relevant laws and regulations?

- A. Negative Covenant
- B. Cross-default Clause
- C. Affirmative Covenant

The correct answer is **C**.

Affirmative covenants, also known as positive covenants, are commitments that the borrower agrees to perform, such as maintaining certain financial ratios, providing financial statements, and adhering to relevant laws and regulations. Compliance with legal and regulatory requirements is a fundamental aspect of affirmative covenants.

**A is incorrect.** Negative covenants impose restrictions on the borrower's actions, aiming to protect the lender's interest by preserving the borrower's operational and financial status quo, rather than actively ensuring compliance with laws and regulations.

**B is incorrect.** The cross-default clause is a contractual provision that defines a default event through the borrower's failure to meet obligations on other debts. It is a mechanism to protect lenders by broadening the conditions under which a borrower can be considered in default, rather than directly enforcing legal and regulatory adherence.

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Q.4426 A corporation issues a bond with a covenant that restricts the sale of significant assets without the approval of bondholders. Which type of covenant does this *most likely* define?

- A. Pari passu clause.
- B. Negative Covenant.
- C. Cross-default Clause.

The correct answer is **B**.

A covenant that restricts the sale of significant assets without the approval of bondholders is a prime example of a negative covenant. Negative covenants are contractual agreements embedded within the bond's indenture that limit or prohibit certain actions by the issuer unless agreed upon by the bondholders.

These covenants are designed to protect the interests of the bondholders by preserving the company's assets and financial stability, which in turn, ensures the issuer's ability to meet its debt obligations. The covenant aims to prevent the issuer from potentially compromising its financial position and the collateral value backing the bond, which could adversely affect the bondholders.

**A is incorrect.** The pari passu clause is related to the equal treatment of all parties in the same class of debt, ensuring that no single creditor receives preferential treatment over others. This clause is typically involved in the ranking of debts and does not directly relate to the restrictions on the sale of assets or other specific actions by the issuer.

**C is incorrect.** The cross-default clause is a provision that triggers a default on a bond if the issuer defaults on another financial obligation. This clause is designed to protect bondholders by providing an early warning mechanism and additional security in case the issuer faces financial difficulties. It is not directly related to the restrictions on the issuer's actions, such as the sale of significant assets, but rather focuses on the issuer's performance on its broader financial obligations.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (b): Describe the contents of a bond indenture and contrast affirmative and negative covenants.**

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Q.4427 Which of the following *most likely* describes the source of repayment for asset-backed securities (ABS)?

- A. Firm's operating cash flows.
- B. Taxation power of the issuing government.
- C. Cash flows generated from a collection of loans or receivables held by a designated special purpose issuer.

The correct answer is **C**.

Asset-backed securities are a type of financial instrument that are secured by a pool of assets, typically consisting of loans like auto loans, credit card receivables, or mortgages. These securities allow the issuer to generate liquidity by selling interests in the pool of assets to investors.

The cash flows from the underlying assets, such as payments of principal and interest made by the borrowers, are used to pay the investors. This structure provides a mechanism for financial institutions to finance a large array of consumer and business credit without using their own balance sheets directly.

**A is incorrect.** It suggests that the firm's operating cash flows are the source of repayment for asset-backed securities. This is not accurate. While corporate bonds and other types of debt financing might rely on the issuing firm's operating cash flows for repayment, ABS are distinct in that they are secured by and repaid through the cash flows generated from a specific pool of assets, not the general cash flows of the issuing firm.

**B is incorrect.** It indicates that the taxation power of the issuing government is the source of repayment for asset-backed securities. This description more accurately applies to government bonds or municipal securities, where the government's ability to levy taxes can be used to repay investors.

Asset-backed securities, on the other hand, do not rely on the taxation power of any government entity. Instead, they are backed by the cash flows from the underlying assets within the pool managed by the special purpose issuer.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (a): Describe the features of a fixed-income security.**

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Q.4428 Which of the following issuers *most likely* has the lowest credit risk within a specific region?

- A. Corporate Issuers
- B. Local Governments
- C. National or Sovereign Governments

The correct answer is **C**.

National or Sovereign Governments typically have the lowest credit risk within a specific region. This is primarily due to their unique financial capabilities and responsibilities, including the power to levy taxes and, in many cases, to print money. These governments have a broader range of tools at their disposal to manage debt obligations compared to other issuers. Furthermore, sovereign governments often have a vested interest in maintaining a strong reputation in international financial markets to facilitate future borrowing at favorable rates.

**A is incorrect.** Corporate issuers are typically subject to a higher level of credit risk compared to sovereign and local government issuers. This increased risk stems from their exposure to market competition, operational risks, regulatory changes, and economic cycles that can adversely affect their financial performance and, consequently, their ability to service debt. Unlike sovereign governments, corporations cannot levy taxes or print money, which limits their financial flexibility in managing debt obligations.

**B is incorrect.** Local Governments, while generally having lower credit risk than corporate issuers, still face a higher credit risk compared to national or sovereign governments. This is due to their more limited revenue-generating capabilities and their susceptibility to regional economic conditions. Local governments may rely on property taxes, sales taxes, and other revenue sources that can fluctuate significantly with the local economy's health.

***CFA Level I, Fixed Income, Learning Module 15: Credit Analysis for Government Issuers, LOS 15a: explain special considerations when evaluating the credit of sovereign and non-sovereign government debt issuers and issues.***

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Q.4429 Which type of issuer *best* describes entities created to own specific assets like loans and finance them by issuing securities to investors?

- A. Special Purpose Entities
- B. Quasi-Government Entities
- C. Supranational Organizations

The correct answer is **A**.

Special Purpose Entities (SPEs) are entities specifically established with the narrow mandate of owning assets such as loans and financing their purchase through the issuance of securities to investors. They are instrumental in securitization transactions that seek to isolate and mitigate financial risk, benefiting from a legal structure that typically segregates their operations from the parent company for the protection of investors.

**B is incorrect.** Quasi-Government Entities, while often involved in public financing activities, are not commonly created to own distinct assets such as loans for securitization purposes. These entities are more involved with functions that support governmental objectives rather than the direct issuance of securities backed by specific asset pools.

**C is incorrect.** Supranational Organizations transcend national boundaries and are usually established through international treaties to pursue collaborative international objectives, rather than to engage in the ownership and securitization of discrete asset classes like loans.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (a): Describe the features of a fixed-income security.**

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Q.4430 Which type of securities is *best* described as providing short-term liquidity and being considered low risk?

- A. Perpetual Bonds.
- B. Money Market Securities.
- C. Capital Market Securities.

The correct answer is **B**.

Money Market Securities are designed for short-term investments, typically with maturities of less than one year. These instruments are sought after for their low risk profile and high liquidity, making them an ideal choice for investors looking to maintain cash flow or to park funds in a low-risk, easily accessible vehicle.

**A is incorrect.** Perpetual Bonds, also known as consols, have no maturity date, meaning they pay interest indefinitely. They are not generally considered low-risk due to their perpetual nature and interest rate sensitivity, and they do not provide short-term liquidity due to their long-term, indefinite structure.

**C is incorrect.** Capital Market Securities include longer-term debt and equity instruments, which are usually held for investment purposes rather than short-term liquidity management. They can exhibit a higher risk profile compared to money market instruments.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (a): Describe the features of a fixed-income security.***

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Q.4431 Which term *best* describes a loan repayment method involving monthly payments consisting of both principal repayment and interest, resulting in a gradual reduction of the outstanding balance over the loan's term?

- A. Perpetual Repayment Method.
- B. Incremental Repayment Method.
- C. Lump Sum Repayment at Maturity.

The correct answer is **B**.

The term that best describes a loan repayment method involving monthly payments consisting of both principal repayment and interest, resulting in a gradual reduction of the outstanding balance over the loan's term, is the Incremental Repayment Method. This method is characterized by a structured approach where each payment made by the borrower includes a portion that goes towards paying off the principal amount borrowed and a portion that covers the interest on the outstanding balance. As a result, with each successive payment, the remaining balance of the loan decreases.

**A is incorrect.** The Perpetual Repayment Method does not accurately describe the loan repayment structure in question. In finance, a "perpetual" structure typically refers to financial instruments with no maturity date, such as perpetual bonds, which pay interest indefinitely without principal repayment. This concept is fundamentally different from the scenario described, where the loan involves regular payments that reduce the principal amount over a specified term until the loan is fully repaid.

**C is incorrect.** Lump Sum Repayment at Maturity refers to a repayment strategy where the borrower is required to pay the entire principal amount in one single payment at the end of the loan term. This method does not involve regular monthly payments that include both principal and interest. Instead, the borrower may pay periodic interest payments during the term of the loan but defers the repayment of the principal amount until the loan's maturity.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (a): Describe the features of a fixed-income security.**

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Q.4432 Which feature of the bond indenture is *most likely* used by an issuer to limit certain activities that could jeopardize the position of the bondholders?

- A. Covenants
- B. Maturity date clauses
- C. Interest rate stipulations

The correct answer is **A**.

Covenants within a bond indenture are specific agreements or clauses designed to protect bondholders by placing restrictions on the actions of the issuer. These covenants can range from maintaining certain financial ratios to restrictions on further debt issuance or asset sales.

The primary purpose of these covenants is to ensure that the issuer does not engage in activities that might undermine the bond's value or the bondholders' interests. By limiting certain risky activities, covenants help maintain the issuer's creditworthiness and the bond's value, thereby protecting the investment made by the bondholders.

**B is incorrect.** Maturity date clauses denote the date on which the bond will mature and the principal is due to be paid back to the bondholders. While important for defining the term of the bond, these clauses do not directly limit the issuer's operational or financial activities. The maturity date is a fundamental characteristic of a bond that informs investors about the time horizon of their investment, but it does not impose restrictions on the issuer's behavior beyond the obligation to repay the principal at the specified time.

**C is incorrect.** Interest rate stipulations relate to the terms concerning the coupon payments of a bond. These stipulations define the interest rate that the issuer agrees to pay to the bondholders, usually expressed as a percentage of the bond's face value. While the interest rate is a critical component of a bond's terms, affecting its yield and market value, it does not limit the issuer's operational decisions or financial policies.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (b): Describe the contents of a bond indenture and contrast affirmative and negative covenants.***

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Q.4433 Which underlying factor *most likely* describes the reason U.S. Treasury bonds are considered suitable for a client's risk-free asset allocation?

- A. The bonds' high liquidity in global markets.
- B. The full faith and credit of the U.S. government.
- C. The bonds' historical performance and returns.

The correct answer is **B**.

The primary reason U.S. Treasury bonds are considered suitable for a client's risk-free asset allocation is the full faith and credit of the U.S. government. This term signifies the government's unwavering commitment to fulfilling its debt obligations, which in turn minimizes the risk of default to an almost negligible level. The U.S. government's ability to raise taxes and print currency as a means to ensure the repayment of its debts is a cornerstone of the perceived safety of these bonds.

**A is incorrect.** While the high liquidity of U.S. Treasury bonds is indeed a significant advantage, it is not the primary factor that renders them suitable for risk-free asset allocation. Liquidity refers to the ease with which an asset can be bought or sold in the market without affecting its price. Although this characteristic is highly beneficial, especially for investors who may need to quickly convert their investments into cash, it does not inherently reduce the risk of the investment.

**C is incorrect.** The historical performance and returns of U.S. Treasury bonds, while indicative of their stability and reliability, do not constitute the basis for their classification as risk-free assets. Historical data can provide insights into the bonds' past behavior under various economic conditions, but it is not a guarantee of future performance. The risk-free perception of U.S. Treasury bonds is fundamentally linked to the backing of the U.S. government, not to their historical returns.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (a): Describe the features of a fixed-income security.***

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Q.4434 For a municipal bond issued to finance a specific project like a toll bridge, which source of repayment should investors primarily focus on to evaluate the bond's credit risk?

- A. General tax revenues of the city.
- B. Toll revenues generated by the bridge.
- C. Federal government subsidies for infrastructure.

The correct answer is **B**.

For a municipal bond issued to finance a specific project like a toll bridge, the primary source of repayment that investors should focus on is the toll revenues generated by the bridge. This approach is crucial for evaluating the bond's credit risk because the bond is a revenue bond, meaning its repayment is secured by the revenue streams generated by the project it finances. In this case, the tolls collected from the bridge users directly impact the issuer's ability to meet its financial obligations.

**A is incorrect.** General tax revenues of the city are not the dedicated repayment source for a revenue bond issued for a specific project like a toll bridge. While general obligation bonds are backed by the full faith and credit of the issuing municipality and are repaid through general tax revenues, revenue bonds are different. They are secured by specific revenue sources, in this case, the tolls from the bridge.

**C is incorrect.** Their availability can be influenced by changes in political priorities, budget constraints, and legislative processes. Therefore, focusing on federal government subsidies does not provide a reliable basis for evaluating the credit risk of a municipal bond that is supposed to be repaid through project-specific revenues, such as tolls from a bridge.

***CFA Level I, Fixed Income, Learning Module 15: Credit Analysis for Government Issuers, LOS 15a: explain special considerations when evaluating the credit of sovereign and non-sovereign government debt issuers and issues.***

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Q.4435 Which type of bond is a financially distressed airline *most likely* to issue in order to assure investors of repayment and what would be the primary source of security for the bondholders?

- A. Unsecured bond, relying on operating cash flows.
- B. Secured bond, using its fleet of airplanes as collateral.
- C. Government-backed bond, using federal guarantees.

The correct answer is **B**.

A financially distressed airline is more likely to issue a secured bond, using its fleet of airplanes as collateral. This approach provides a tangible asset as security to the bondholders, which significantly increases the bond's appeal, especially in situations where the issuer's financial stability is in question. The use of tangible assets as collateral is a common practice in securing bonds, as it offers a form of assurance to investors that they will recover their investment in the event of a default.

**A is incorrect.** Issuing an unsecured bond, which relies solely on the airline's operating cash flows for repayment, would be an unattractive option for investors given the airline's financial distress. Operating cash flows are a measure of the cash that a company generates from its normal business operations. Investors typically seek higher levels of security in their investments, especially when the issuer is facing financial challenges. An unsecured bond in such a scenario would likely be perceived as too risky, as it does not provide any collateral that can be used to recover the investment in the event of a default.

**C is incorrect.** While a government-backed bond could indeed offer a high level of assurance to investors due to federal guarantees, it is not a common or easily accessible option for most privately operated airlines. Government backing for bonds is typically reserved for specific projects or entities that align with national interests or during extraordinary economic circumstances. For a financially distressed airline, obtaining such guarantees would require special arrangements and may not be feasible.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (a): Describe the features of a fixed-income security.**

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Q.4436 Which strategy would a technology company *most likely* employ to secure lower interest rates on its bonds without significantly hampering its operating flexibility, and what might be the trade-off involved?

- A. Increasing the maturity date, potentially increasing interest rate risk.
- B. Offering its patents as collateral, potentially reducing operating flexibility.
- C. Issuing bonds through a third-party guarantor, potentially increasing counterparty risk.

The correct answer is **C**.

A technology company may opt to secure lower interest rates through a third-party guarantor, which can vouch for the bond's repayment, leading to more favorable borrowing terms. The trade-off here is the introduction of counterparty risk, which is the risk that the guarantor may fail to fulfill its obligation.

**A is incorrect.** Using patents as collateral can indeed lower interest rates due to the added security, but this can significantly limit the company's ability to operate freely as these patents cannot be utilized elsewhere without affecting the bond terms.

**B is incorrect:** Lengthening the maturity date of the bonds might reduce annual interest costs, but it doesn't necessarily preserve operating flexibility. Moreover, a longer maturity can increase the bond's exposure to interest rate risk, which is the risk that rising interest rates will negatively affect the bond's value.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 1: Fixed Income Instrument Features. LOS (b): Describe the contents of a bond indenture and contrast affirmative and negative covenants.**

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## **Learning Module 2: Fixed Income Cash Flows and Types**

Q.57 A debt instrument whose entire face value is paid in one lump sum on the maturity date is *most likely* called:

- A. a bullet bond.
- B. a partially amortized bond.
- C. a fully amortized bond.

The correct answer is **A**.

A bullet bond is a type of debt instrument where the entire face value is paid in one lump sum on the maturity date. This type of bond does not involve any periodic principal payments. Instead, the entire principal amount is repaid at once when the bond matures.

This structure allows the issuer to delay the repayment of principal until the end of the bond's term, which can be beneficial for companies with irregular cash flows or those seeking to manage their short-term liquidity needs.

**B is incorrect.** A fully amortized means that principal and interest payments are made gradually over the term of the debt contract. The borrower makes payments according to the loan's amortization schedule.

**C is incorrect.** A partially amortized bond is a hybrid bond that has features of both bullet bonds and fully amortized bonds. Although the borrower pays off a portion of the debt with regular monthly payments, they also make a “balloon payment”—a large lump sum—on the loan maturity date. In other words, only a portion of the full loan value is amortized, with a significant lump-sum payment due at the end of the loan's term.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (a): Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors**

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Q.58 An investor is holding an inverse floating rate note. If interest rates increase, the periodic coupons paid to the investor will *most likely*:

- A. increase.
- B. decrease.
- C. remain unchanged.

The correct answer is **B**.

An inverse floating rate note, also known as an inverse floater, is a type of bond or other type of debt instrument that has a coupon rate which moves inversely with market interest rates. In other words, when market interest rates increase, the coupon rate of an inverse floater decreases, and vice versa.

This inverse relationship is a defining characteristic of these types of notes and is what differentiates them from regular floating rate notes, which have coupon rates that move in the same direction as market interest rates.

**A is incorrect.** This would be true for a regular floating rate note, not an inverse floating rate note. In the case of an inverse floater, the coupon rate decreases when interest rates increase. Therefore, the investor would receive lower periodic coupons, not higher ones.

**C is incorrect.** The coupon rate of an inverse floating rate note is variable, not fixed. It changes in response to changes in market interest rates, moving in the opposite direction. Therefore, if interest rates increase, the coupon rate of an inverse floater will decrease, not remain the same, leading to lower periodic coupons for the investor.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (b): Describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.**

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Q.59 Payment-in-kind coupon bonds, that allow the issuer to pay interests in the form of additional bonds rather than cash, are *most likely* favorable for:

- A. the issuer.
- B. the investor.
- C. both the issuer and the investor.

The correct answer is **A**.

Payment-in-kind (PIK) coupon bonds, which allow the issuer to pay interest in the form of additional bonds rather than cash, are most favorable for the issuer. This is because PIK bonds provide the issuer with greater financial flexibility. They reduce the issuer's immediate cash outflow obligations, which can be particularly beneficial in situations where the issuer may be facing cash flow constraints or when the borrowed funds have not yet been fully utilized or the project financed by the bond issuance has not yet started generating a consistent, sustainable stream of returns.

**B is incorrect.** While PIK bonds can offer higher potential returns to investors due to the compounding effect of interest payments being made in the form of additional bonds, they also carry higher risks. Specifically, the investor is exposed to the risk that the issuer may not be able to repay the principal or the accumulated interest at maturity, particularly if the issuer is using PIK bonds due to cash flow constraints.

**C is incorrect.** While PIK bonds can provide benefits to both issuers and investors under certain circumstances, they are not universally favorable for both parties. Whether PIK bonds are favorable for the investor depends on the investor's risk tolerance, income needs, and investment objectives.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (a): Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.**

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Q.60 A callable bond is a bond that *most likely*:

- A. gives the issuer the right to redeem all or part of the bond before the maturity date.
- B. gives the bondholder the right to exchange the bond for a specific number of common shares.
- C. gives the bondholder the right to sell the bond back to the issuer at a predetermined price before maturity.

The correct answer is **A**.

A callable bond is a type of bond that provides the issuer with the right, but not the obligation, to redeem all or part of the bond before its maturity date. This feature allows the issuer to take advantage of falling interest rates by paying off the existing debt and reissuing new bonds at a lower interest rate.

**B is incorrect.** A convertible bond gives the bondholder the right, but not the obligation, to convert the bond into a predetermined number of common shares of the issuing company. This feature provides the bondholder with the potential for capital appreciation if the company's stock price increases. However, it does not give the issuer the right to redeem the bond before its maturity date.

**C is incorrect.** A puttable bond gives the bondholder the right, but not the obligation, to sell the bond back to the issuer at a predetermined price before its maturity date. This feature provides the bondholder with protection against rising interest rates. However, it does not give the issuer the right to redeem the bond before its maturity date.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (a): Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.***

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Q.62 A convertible bond is *most likely* favorable for:

- A. the investor only.
- B. the issuer only.
- C. both the issuer and the investor.

The correct answer is **C**.

A convertible bond is a type of financial instrument that combines the features of bonds and stocks. It is a bond that gives the holder the right to convert it into a predetermined number of shares of the issuing company at any time during its life. This unique feature makes convertible bonds attractive to both investors and issuers.

**A is incorrect.** It suggests that convertible bonds are favorable only to the investor. While it is true that convertible bonds offer investors the potential for capital appreciation if the issuer's stock price increases, they also provide the safety of a fixed income investment. This dual benefit, however, does not mean that convertible bonds are only beneficial to investors.

**B is incorrect.** It implies that convertible bonds are beneficial only to the issuer. While issuers do benefit from lower borrowing costs and the potential to convert debt into equity, investors also gain from the potential for capital appreciation and the safety of a fixed income investment.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (b): Describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.**

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Q.66 Which of these statements *most likely* describes a Euro Bond?

- A. A bond issued in Euros in U.S. territory.
- B. A bond issued in the currency of the country or market in which it is issued.
- C. A bond issued in a currency other than the currency of the country or market in which it is issued.

The correct answer is **C**.

A Euro Bond is defined as a bond issued in a currency other than the currency of the country or market in which it is issued. This characteristic allows issuers to take advantage of favorable interest rates in foreign markets and provides investors with the opportunity to diversify their portfolios with foreign investments without the need to directly engage in foreign exchange transactions.

**A is incorrect.** While it is possible for a Euro Bond to be denominated in Euros and issued in the U.S., the defining characteristic of a Euro Bond is not the currency in which it is denominated (Euros in this case), but rather the fact that it is issued in a currency other than that of the country or market in which it is issued.

**B is incorrect.** A bond issued in the currency of the country or market in which it is issued is typically referred to as a domestic bond, not a Euro Bond. A Euro Bond, by definition, is issued in a currency other than that of the country or market in which it is issued.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (b): Describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.**

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Q.830 In which of the following situations would the issuance of a deferred coupon bond be *most appropriate*?

- A. When financing a new project.
- B. When there's a predicted increase in market interest rates.
- C. When there's a predicted decrease in market interest rates.

The correct answer is **A**.

A deferred coupon bond is a type of fixed-rate coupon bond which does not make coupon payments for a predetermined period, usually several years after issue, but then pays the full amount of interest accrued at maturity. Interest payments may also be staggered but only after the deferred period has ended. This financial instrument is particularly advantageous for entities that anticipate a delay in generating revenue from their investments or projects.

By deferring the interest payments, the issuer can better manage cash flow, allocating resources to essential project development activities without the pressure of meeting periodic interest obligations. This financial strategy is especially beneficial for projects with long gestation periods, where returns are expected to materialize only after substantial development work.

**B is incorrect.** This option incorrectly suggests that the issuance of a deferred coupon bond is most appropriate when there's a predicted increase in market interest rates. While it's true that locking in current interest rates before an anticipated increase can be beneficial, the primary advantage of deferred coupon bonds lies in their ability to alleviate immediate financial pressure on issuers by postponing interest payments. The decision to issue such bonds is more closely related to the issuer's cash flow needs and project financing requirements rather than speculative interest rate movements.

**C is incorrect.** The suggestion that a deferred coupon bond is most suitable when there's a predicted decrease in market interest rates does not align with the bond's fundamental purpose. Deferred coupon bonds are designed to provide financial flexibility to issuers by delaying interest payments, not to capitalize on interest rate forecasts. While interest rate expectations might influence the overall financing strategy, the decision to issue a deferred coupon bond primarily hinges on the issuer's need to manage cash flow effectively during the early stages of a project, rather than on speculative market conditions.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (a): Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.**

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Q.833 Which of the following is *most likely* impacted by inflation in the case of capital-indexed bonds?

- A. The principal.
- B. The interest.
- C. Both the principal and the interest.

The correct answer is **C**.

A capital-indexed bond is a bond whose base payment rises and falls with the Consumer Price Index (CPI).

Although the coupon rate for interest remains fixed, the inflation-adjusted principal value is used to compute the interest payable. In the end, therefore, both the principal payment and interest increase.

**Example:**

Suppose ABC Bonds are issued at a face value of \$1000, with a coupon rate of 10% and a maturity of 1 year. Assume that the payment of interest will happen on maturity together with the principal amount. Further, assume the annual rate of inflation is 3%.

At the end of the year, the inflation-adjusted principal shall be  $\$1,030 = 1,000 * 1.03$

The interest payable shall be  $\$103 = 1,030 * 0.1$

The total payment shall be  $\$1,133 = \$1,030 + \$103$

***CFA Level I, Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS b: describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.***

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Q.834 A balloon payment is *least likely* common in which of the following categories of fixed-income securities?

- A. Bullet bonds.
- B. Fully amortizing bonds.
- C. Partially amortizing bonds.

The correct answer is **B**.

Fully amortizing bonds are structured in such a way that the borrower repays the principal and interest through regular payments over the life of the bond, leading to a complete payoff of the bond at maturity without the need for a balloon payment. A balloon payment refers to a large, lump-sum payment due at the end of a loan's term, which is not characteristic of fully amortizing bonds. In these bonds, the payment schedule is designed to ensure that each payment gradually reduces the principal amount while also covering the interest, eventually leading to the full repayment of the bond by the end of its term.

**A is incorrect.** Bullet bonds are characterized by the principal amount being paid in a single lump sum at the bond's maturity date rather than being amortized over the life of the bond. This structure is fundamentally different from that of fully amortizing bonds, where the principal is gradually paid down through regular payments. Bullet bonds do not involve periodic principal payments, and thus, the entire principal amount is due at the end of the bond's term.

**C is incorrect.** Partially amortizing bonds incorporate elements of both bullet bonds and fully amortizing bonds. They require the borrower to make regular payments that cover a portion of the principal and interest over the bond's term, but these payments do not fully amortize the bond's principal amount. Instead, a balloon payment is required at maturity to cover the remaining principal amount. This structure means that partially amortizing bonds, unlike fully amortizing bonds, do involve a balloon payment, making them more similar to bullet bonds in this respect.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (a): Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.**

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Q.835 Anne had purchased bonds that were backed up by a sinking fund arrangement. The serial number of her bonds was selected by a lottery for repayment. In which of the following cases would Anne *most likely* suffer a loss?

- A. A reduction in market interest rate.
- B. An increase in market interest rate.
- C. There is no difference in market interest rates.

The correct answer is **A**.

When Anne's bonds, backed by a sinking fund arrangement, are selected for repayment due to a reduction in market interest rates, she is likely to suffer a loss. This scenario unfolds because the proceeds from the bond repayment would be reinvested in a market environment where interest rates are lower, leading to a diminished return on the reinvested funds. Sinking funds are mechanisms used by issuers to set aside money over time to ensure the principal on a debt is repaid at maturity. The purpose is to provide security to the bondholders and reduce the risk of default.

**B is incorrect.** In reality, if market interest rates were to rise, the early repayment of Anne's bonds could potentially benefit her, as she would be able to reinvest the proceeds at a higher interest rate, potentially earning a higher return than what was previously available. Thus, an increase in market interest rates would likely mitigate, rather than exacerbate, the reinvestment risk associated with the sinking fund provision.

**C is incorrect.** Suggesting that there is no difference in market interest rates would not result in a loss for Anne is misleading. The premise of the question implies a change in market conditions that would impact Anne's investment. Therefore, stating that there is no difference in market interest rates does not directly address the scenario where Anne would experience a loss, which is accurately described by a reduction in market interest rates leading to lower reinvestment returns.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (a): Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.**

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Q.836 Under which of the categories would you *most likely* classify a bond that pays interest in additional bonds rather than cash during the initial period?

- A. Equity-linked bonds.
- B. Credit-linked coupon bonds.
- C. Payment-in-kind coupon bonds.

The correct answer is **C**.

Payment-in-kind (PIK) coupon bonds are a unique financial instrument that allows the issuer to pay interest with additional bonds rather than cash during the initial period. This mechanism is particularly beneficial for companies that wish to preserve cash or may not have sufficient cash flow to meet interest obligations. By issuing additional bonds as interest payments, the issuer can defer cash outlays to a later date, which might be advantageous during periods of tight cash flow or when the issuer expects better financial performance in the future.

**A is incorrect.** Equity-linked bonds are debt instruments where the return is tied to the performance of a specific equity (such as a stock or a basket of stocks). The interest or principal repayment might be linked to the performance of the equity, making the returns on these bonds variable and dependent on the equity market. This does not include bonds that pay interest in the form of additional bonds, as the defining characteristic of equity-linked bonds is their direct linkage to equity performance, not the method of interest payment.

**B is incorrect.** Credit-linked coupon bonds are another specialized type of bond where the coupon rate is linked to the credit performance of the issuer. If the credit rating of the issuer improves, the coupon payments might decrease, reflecting the lower risk associated with the bond. Conversely, if the issuer's credit rating deteriorates, the coupon payments might increase to compensate investors for the higher risk.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (a): Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.**

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Q.2491 What is the *most likely* similar to a sinking fund provision when issuing bonds?

- A. term bonds.
- B. serial bonds.
- C. medium term notes.

The correct answer is **B**.

A sinking fund provision is a mechanism used by bond issuers to systematically retire a portion of their debt before maturity, thereby reducing credit risk and ensuring a smoother repayment process. Serial bonds, which are structured so that different portions of the bond issue mature at different times, closely resemble the sinking fund provision in their approach to debt repayment. By having staggered maturity dates, serial bonds ensure that the issuer does not face a large lump-sum repayment at a single point in time, similar to how a sinking fund provision spreads out the repayment burden over several periods.

**A is incorrect.** Term bonds, also known as bullet bonds, do not closely resemble a sinking fund provision. Term bonds have a single maturity date when the entire principal amount is due to be repaid. This contrasts with the sinking fund provision's approach of gradually reducing debt liability over time. The basic structure of term bonds—repaying the principal in a lump sum at maturity—differs significantly from the periodic repayment strategy inherent in sinking fund provisions and serial bonds.

**C is incorrect.** Medium-term notes (MTNs) are debt instruments that typically have maturities ranging from one to 10 years and offer flexibility in terms of how they are structured and sold. However, like term bonds, MTNs usually do not incorporate a mechanism for periodic repayment of the principal before the final maturity date. Instead, the principal is often repaid in a lump sum at maturity.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (a): Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.**

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Q.2528 A bond with a fixed coupon rate is called all of the following, *except*:

- A. plain vanilla bond.
- B. conventional bond.
- C. pure discount bond.

The correct answer is **C**.

A bond with a fixed coupon rate is commonly referred to as a plain vanilla bond or a conventional bond because it represents the most basic type of bond in the market. These bonds pay a fixed interest rate (coupon) to bondholders, typically semi-annually or annually, until maturity, at which point the principal amount (face value) is repaid. The predictability of cash flows from the fixed coupon payments and the return of principal at maturity are key characteristics that define plain vanilla and conventional bonds.

**A is incorrect.** A plain vanilla bond is indeed a bond with a fixed coupon rate. This term is used to describe the simplest form of a bond without any special features. The "vanilla" descriptor implies that the bond is straightforward, offering regular, fixed interest payments and the return of principal at maturity. These characteristics align with the definition of a bond with a fixed coupon rate, making option A an accurate description, not an exception.

**B is incorrect.** A conventional bond is another term for a bond with a fixed coupon rate. It signifies a traditional bond structure where the issuer makes periodic interest payments to bondholders based on a fixed rate of interest applied to the principal (or face value) of the bond. At maturity, the issuer repays the principal amount to the bondholders.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (a): Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.***

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Q.2532 An investor engaged in tax evasion would *most likely* prefer:

- A. bearer bonds.
- B. registered bonds.
- C. U.S Treasury Bonds

The correct answer is **A**.

A bearer bond is an unregistered debt security issued by corporations or governments, which makes it significantly attractive for individuals aiming to evade taxes. Unlike registered bonds, bearer bonds do not have the owner's name or details recorded by the issuing entity. The ownership of a bearer bond is determined solely by possession. This anonymity provides a convenient loophole for tax evasion, as it complicates the process for tax authorities to track the ownership and tax obligations associated with these bonds.

**B is incorrect.** Registered bonds are directly opposite to bearer bonds in terms of transparency and traceability. When a bond is registered, the issuer maintains a record of the owner's name and contact information, along with any transactions related to the bond. This level of documentation ensures that interest payments are made directly to the registered owner, and any transfer of ownership is properly recorded.

**C is incorrect.** U.S. Treasury Bonds are a specific type of registered bond issued by the U.S. government. Like other registered bonds, the ownership of U.S. Treasury Bonds is recorded, and interest payments are made directly to the bondholder. This registration process ensures a high level of transparency and accountability, making these bonds an unsuitable choice for tax evasion. The clear record-keeping and reporting requirements associated with U.S. Treasury Bonds allow tax authorities to efficiently monitor and tax the interest income earned by bondholders.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (b): Describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.***

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Q.2533 Which of the following statements is/are *most likely* correct? Statement I. Special Purpose Entities (SPEs) cannot issue bonds at a lower interest rate than bonds issued by the originating corporation. Statement II. Bonds issued by Special Purpose Entities (SPEs) are called securitized bonds.

- A. Both statements are correct.
- B. Both statements are incorrect.
- C. Only one statement is correct.

The correct answer is C.

Special Purpose Entities (SPEs) have the capability to issue bonds at a lower interest rate than those issued by the originating corporation. This is primarily due to the fact that bonds issued by SPEs are often seen as carrying less risk.

The structure of an SPE is designed to be bankruptcy remote, meaning it is legally and operationally separate from the originating corporation. This separation reduces the risk to bondholders in the event of the originating corporation's bankruptcy, as the assets and liabilities of the SPE are isolated from those of the parent company.

**Statement I is incorrect.** It suggests that SPEs cannot issue bonds at a lower interest rate than the originating corporation, which contradicts the operational and legal structure of SPEs designed to minimize risk and potentially lower borrowing costs. The bankruptcy-remote nature of SPEs, along with the specific asset or project backing, often results in a risk profile that is distinct and potentially more favorable than that of the originating corporation, thereby allowing for the issuance of bonds at lower interest rates.

**Statement II is correct.** Bonds issued by SPEs are indeed referred to as securitized bonds. These financial instruments are secured by an underlying pool of assets, which can include loans, accounts receivables, or other financial assets. The cash flows from these assets are used to pay interest and principal on the bonds. Securitization allows for the transformation of illiquid assets into securities that can be sold to investors, providing liquidity and funding to the originating corporation or entity.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (b): Describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.**

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Q.2535 An investor buys a pure discount bond, holds it to maturity, and receives its par value. For tax purposes, the increase in the bond's value is *most likely* to be treated as:

- A. capital gain.
- B. interest income.
- C. tax-exempt income.

The correct answer is **B**.

The increase in the value of a pure discount bond, as it approaches its par value at maturity, is most likely to be treated as interest income for tax purposes. This treatment is consistent across many jurisdictions, where the gain realized by the bondholder is considered a form of interest rather than a capital gain. This is because the bond was purchased at a discount, and the increase in value represents the time value of money rather than a capital appreciation in the traditional sense. Therefore, this increase is taxed as interest income, which is typically subject to ordinary income tax rates rather than the potentially lower capital gains rates.

**A is incorrect.** Suggesting that the increase in the bond's value is treated as a capital gain misunderstands the nature of the income derived from pure discount bonds. Capital gains tax typically applies to profits from the sale of assets or investments where there is an increase in the capital value of the investment. This characteristic makes the income from such bonds more akin to interest income.

**C is incorrect.** While certain types of bonds, such as some municipal bonds, may offer tax-exempt interest income, the general treatment for pure discount bonds, like zero-coupon bonds, is as taxable interest income. Tax-exempt income typically refers to specific categories of income that are exempt from taxation due to policy reasons, which does not generally apply to the interest income recognized from holding pure discount bonds to maturity.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (b): Describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.**

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Q.2537 Buyers of bonds with call provisions *most likely* face:

- A. credit risk.
- B. liquidity risk.
- C. reinvestment risk.

The correct answer is **C**.

Buyers of bonds with call provisions are most likely to face reinvestment risk. This is because call provisions allow the issuer to redeem the bond before its maturity date, typically when interest rates have fallen. This means that investors may have to reinvest the principal at a lower interest rate than the original bond, potentially leading to lower income. Reinvestment risk is particularly significant in a declining interest rate environment, where bonds are more likely to be called. The issuer will opt to refinance the debt at a lower cost, forcing investors to find alternative investments that may offer lower yields.

**A is incorrect.** Credit risk refers to the risk that the bond issuer will default on its obligations, either by failing to pay the interest or by not returning the principal at maturity. While credit risk is a concern for all bond investors, it is not directly related to the call provision of a bond. The call provision primarily introduces reinvestment risk rather than affecting the issuer's creditworthiness.

**B is incorrect.** Liquidity risk pertains to the risk that an investor will not be able to sell the bond quickly at a fair market price. While liquidity risk can affect bond investors, it is not the primary risk associated with call provisions. Call provisions specifically introduce reinvestment risk by potentially forcing investors to reinvest proceeds at lower interest rates.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (b): Describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.**

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Q.2540 Bonds that convert from debt to common equity automatically if a specific event occurs are *most likely* called:

- A. Convertible bonds.
- B. bonds with warrants.
- C. contingent convertible bonds.

The correct answer is **C**.

Contingent convertible bonds, commonly known as CoCos, are a financial instrument that automatically converts from debt to equity under certain predefined conditions. These conditions are typically related to the financial health of the issuing entity, such as a bank. For instance, if a bank's core Tier 1 capital ratio falls below a certain threshold, CoCos will convert into equity. The conversion helps in stabilizing the bank's financial status without the need for external intervention or bailout, making CoCos a critical tool for risk management within the banking sector.

**A is incorrect.** Convertible bonds are a type of bond that gives the bondholder the right, but not the obligation, to convert their bonds into a predetermined number of shares of the issuing company's stock at certain times during the bond's life, usually at the discretion of the bondholder. Unlike contingent convertible bonds, the conversion of traditional convertible bonds is not triggered by the issuer's financial metrics reaching predefined thresholds.

**B is incorrect.** Bonds with warrants are another form of hybrid securities, but they differ significantly from contingent convertible bonds. A warrant is essentially a long-term option that gives the holder the right to buy the company's stock at a predetermined price before the warrant expires. When bonds are issued with warrants, the investor receives a bond (debt instrument) and a warrant (equity option) separately. The bond and the warrant can be detached and sold independently.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (b): Describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.**

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Q.2541 A bond with a \$1,000 par value has a conversion price of \$40, and the market price of the common share is \$50. The conversion ratio is *closest to*:

- A. 20 shares per bond.
- B. 25 shares per bond.
- C. 100 shares per bond.

The correct answer is **B**.

The conversion ratio of a bond is a critical metric that determines how many shares of the company's stock a bondholder can receive upon converting their bond into equity. The conversion ratio is calculated by dividing the par value of the bond by the conversion price. In this case, the par value of the bond is \$1,000, and the conversion price is \$40. Therefore, the conversion ratio can be calculated as follows:

$$\begin{aligned}\text{Conversion ratio} &= \frac{\text{Par value of the bond}}{\text{Conversion price}} \\ \text{Conversion ratio} &= \frac{1,000}{40} = 25 \text{ shares per bond}\end{aligned}$$

***CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (a): Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.***

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Q.2542 A feature of a payment-in-kind bond is *most likely* that:

- A. regular coupon payments do not begin until a period of time after issuance.
- B. it allows the issuer to make the coupon payments by increasing the principal amount of the outstanding bonds, essentially paying bond interest with more bonds.
- C. it carries a provision stating that the coupon rate will go up by a certain amount if the credit rating of the issuer falls and go down if the credit rating of the issuer improves.

The correct answer is **B**.

A payment-in-kind (PIK) bond is a financial instrument that provides issuers with the flexibility to pay interest not in cash, but by issuing additional bonds to the bondholder. This feature is particularly useful for companies that wish to conserve cash or when they are in a tight cash flow situation.

By opting to increase the principal amount of the outstanding bonds instead of paying cash, issuers can defer cash outflows and potentially use their available resources for other critical operations or investments. The interest that is "paid" through the issuance of additional bonds is added to the principal amount, and the bondholder will receive this increased amount at maturity or when the bond is redeemed.

**A is incorrect.** This option describes deferred coupon bonds, not payment-in-kind bonds. Deferred coupon bonds are characterized by a delay in the commencement of regular coupon payments. Typically, these bonds do not pay interest for an initial period after issuance but compensate for this by paying higher interest rates later on or at maturity.

**C is incorrect.** In a credit-linked bond, the coupon rate increases if the issuer's credit rating deteriorates, reflecting the higher risk to the bondholder, and decreases if the issuer's credit rating improves, reflecting the lower risk. This mechanism is designed to compensate investors for changes in credit risk over the life of the bond.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (a): Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.**

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Q.2543 Is the following statement correct? "Convertible bonds can be issued with higher yields compared to otherwise identical straight bonds."

- A. Yes.
- B. No, because convertible bonds have the same yields as straight bonds.
- C. No, because convertible bonds have lower yields compared to straight bonds.

The correct answer is **C**.

Convertible bonds typically have lower yields compared to otherwise identical straight bonds. This is primarily due to the additional value that the conversion feature provides to the bondholders. The conversion option allows bondholders to convert their bonds into a predetermined number of shares of the issuing company's stock, usually at a set price. As a result, investors are willing to accept lower yields on convertible bonds in exchange for the potential upside in the issuer's equity.

**A is incorrect.** This optionality provides potential for additional gains through conversion into equity, which is not available in straight bonds. Straight bonds, lacking this conversion feature, compensate investors with higher yields for their lack of participation in the issuer's equity appreciation. The presence of the conversion option in convertible bonds typically leads to lower yields compared to straight bonds, as investors are compensated for the additional value and potential upside of the conversion feature.

**B is incorrect.** The yields on convertible bonds are generally lower than those on otherwise identical straight bonds due to the added value of the conversion feature. The conversion option embedded in convertible bonds offers potential equity participation, which is valued by investors. As a result, investors are willing to accept lower yields on convertible bonds in exchange for the conversion feature, which provides potential for additional gains if the issuer's stock performs well.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (b): Describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.**

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Q.2544 An issuer will *least likely* exercise a call option on a bond when:

- A. default risk is decreasing.
- B. the market yield on the bond is increasing.
- C. interest rates in the market are decreasing.

The correct answer is **B**.

An issuer is least likely to exercise a call option on a bond when the market yield on the bond is increasing. A call option on a bond provides the issuer with the right, but not the obligation, to repurchase the bond before its maturity at a predetermined price. This option is valuable to the issuer primarily in scenarios where refinancing the debt would be cheaper due to lower interest rates in the market or improved creditworthiness of the issuer, which reduces the default risk and, consequently, the required yield by investors.

**A is incorrect.** If the default risk is decreasing, it implies an improvement in the issuer's creditworthiness. This improvement can lead to a decrease in the required yield by investors for holding the issuer's bonds, making it an opportune time for the issuer to exercise the call option. By calling the existing bonds, the issuer can refinance its debt at a lower interest rate, reducing its cost of borrowing. This scenario aligns with the conditions under which an issuer would likely exercise a call option.

**C is incorrect.** When interest rates in the market are decreasing, it becomes cheaper for the issuer to borrow money. In such a scenario, the issuer can benefit from exercising the call option on existing bonds with higher interest rates and reissuing new bonds at the current lower rates. This strategy allows the issuer to reduce its interest expenses by taking advantage of the favorable interest rate environment. Therefore, decreasing interest rates in the market create a conducive situation for the issuer to exercise the call option on a bond.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (b): Describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.**

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Q.2545 A call option *most likely* has value to the issuer because it gives the issuer the right to redeem the bond and issue a new bond (borrow) if :

- A. the market yield on the bond declines.
- B. the market yield on the bond increases.
- C. the market yield on the bond remains unchanged.

The correct answer is **A**.

A call option embedded in a bond provides significant value to the issuer primarily because it offers the flexibility to refinance the debt at more favorable terms under certain market conditions. This allows the issuer to reduce the cost of borrowing, as they can replace the higher-interest debt with cheaper debt, reflecting the current lower market yields.

This is beneficial in a declining interest rate environment, where the cost of borrowing can be significantly reduced, leading to potential savings on interest payments and an overall reduction in the financial burden on the issuer.

**B is incorrect.** Suggesting that a call option has value to the issuer if the market yield on the bond remains unchanged does not capture the primary benefit of the call option. The main advantage of a call option is the issuer's ability to refinance at lower interest rates when market yields decline. If the market yields remain unchanged, there is no financial incentive for the issuer to exercise the call option, as the cost of borrowing would not improve.

**C is incorrect.** This option does not apply to the question as it was not one of the original choices provided. The focus should be on understanding the conditions under which a call option provides value to the issuer, which is primarily when the market yield on the bond declines, allowing for refinancing at lower rates.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (a): Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.***

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Q.2546 A bond with a \$1,000 par value has a conversion price of \$40 and the market price of the common share is \$50. The conversion value is *closest to*:

- A. \$750
- B. \$1,250.
- C. \$1,500.

The correct answer is **B**.

The conversion value of a bond is determined by the current market price of the shares into which the bond can be converted. The formula to calculate the conversion value is:

$$\text{Conversion ratio} = \frac{\text{Par value of the bond}}{\text{Conversion price}} = \frac{1,000}{40} = 25$$

Conversion value is the market value of the shares that would be received upon conversion. A bond with a conversion ratio of 25 shares, when the current market price of a common share is \$50, would have a conversion value of \$1,250.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 2: Fixed Income Cash Flows and Types. LOS (a): Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.***

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### **Learning Module 3: Fixed Income Issuance and Trading**

Q.841 In which of the following bond issuing mechanisms does an investment bank *most likely* have the highest risk?

- A. Auction.
- B. Best effort offering.
- C. Underwritten offering.

The correct answer is **C**.

In the case of an underwritten offering, the investment bank guarantees the sale of the bonds issued at the offering price and, thus, assumes a higher risk in comparison to the best effort offering and the auction. The bank is obliged to buy any portion of the bond that is not successfully taken up by investors.

**A is incorrect.** In an auction, the public will be invited to place(price) bids. In the US, the winning bids will receive the same coupon rate and pay the same price for the bonds. In Canada and Germany, multiple price auctions exist. One bond issue will therefore generate multiple prices and coupon rates. In either of these arrangements, the risk of undersubscription is generally lower than under an underwritten offering.

**B is incorrect.** In a best-effort offering, the investment bank acts as an agent that tries its best to sell the bonds. As compared to an underwriting offering, the investment bank does not bear any risk in a best-effort offering (i.e., the risk of undersubscription).

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (c): Compare primary and secondary fixed-income markets to equity Markets.**

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Q.842 The time frame for the settlement of corporate bonds is *most likely*:

- A. T+1 days.
- B. T+3 days.
- C. T+6 days.

The correct answer is **B**.

The standard settlement period for corporate bonds is typically T+3 days. This means that the transaction is settled three business days after the trade date. The T+3 settlement cycle has been a longstanding practice in the securities industry, providing a buffer period for the parties involved to complete all necessary processes, including verification, paperwork, and the actual transfer of securities and payment. This period allows for the efficient and orderly settlement of transactions, reducing the risk of default by either party.

**A is incorrect.** While T+1 settlement periods are more common for government securities, reflecting their highly liquid and less complex nature, corporate bonds typically involve more detailed verification and processing, necessitating a longer settlement period.

**C is incorrect.** Proposing a T+6 days settlement period for corporate bonds significantly exceeds the standard practice. While longer settlement periods might be necessary under exceptional circumstances, such as international transactions involving multiple time zones or specific types of securities with unique requirements, T+3 days remains the norm for corporate bonds.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (c): Compare primary and secondary fixed-income markets to equity Markets.**

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Q.2478 If an investment bank sells bonds on a commission basis, this is *most likely* an example of a/an:

- A. syndicate offering.
- B. best efforts offering.
- C. underwritten offering.

The correct answer is **B**.

In a best efforts offering, the investment banks sell the bonds on a commission basis. It is an offering of a security using an investment bank in which the investment bank, as agent for the issuer, promises to use its best efforts to sell the offering but does not guarantee that a specific amount will be sold.

**A is incorrect.** In a syndicated offering, several investment banks and broker-dealers form a “syndicate” to underwrite and distribute new security to the public jointly.

**C is incorrect.** In an underwriting offering, the bank bears all the risk. In Layman’s language, the bank buys all the bonds from the issuer and then sells them to the investing public. The underwriter takes the risk of buying the newly issued bonds from the issuer, and then reselling them to investors or to dealers who then sell them to investors.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (c): Compare primary and secondary fixed-income markets to equity Markets.***

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Q.2482 Institutions that have variable rate sources of funds will *most likely* prefer:

- A. floating rate bonds.
- B. investment grade bonds.
- C. money market securities.

The correct answer is **A**.

Institutions that have variable rate sources of funds will prefer floating rate bonds which would give them a chance to capitalize and make the most of decreases in the reference rate. If the reference rate decreases, the institution would pay a lower coupon rate compared to an otherwise comparable institution that pays a fixed rate.

Floating rate notes (FRNs) are bonds that have a variable coupon, equal to a money market reference rate, like LIBOR or federal funds rate, plus a quoted spread (also known as quoted margin). The spread is a rate that remains constant. It is set when the bond is issued and does not change afterward.

**B is incorrect.** An investment-grade bond is a bond classification used to denote bonds that carry a relatively low credit risk compared to other bonds.

**C is incorrect.** Money market securities are fixed-income securities with maturities at issuance of one year or less.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (c): Compare primary and secondary fixed-income markets to equity Markets.***

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Q.2484 A feature of on-the-run bonds is *most likely* that:

- A. it is the most recent traded security and has a coupon rate closest to the current market discount rate for that maturity.
- B. it is the least traded security and has a coupon rate closest to the current market discount rate for that maturity.
- C. it is the most traded security and has a coupon rate furthest from the current market discount rate for that maturity.

The correct answer is **A**.

On-the-run bonds are the most recently issued U.S. Treasury bonds or notes of a particular maturity. They are characterized by being the most actively traded securities in the bond market. The coupon rate of on-the-run bonds is typically closest to the current market discount rate for that maturity, which implies that these bonds are priced close to their par value. This feature makes on-the-run bonds highly liquid and an accurate reflection of the current interest rate environment.

**B is incorrect.** This option inaccurately describes on-the-run bonds as being the least traded securities, which contradicts their defining characteristic of high liquidity and active trading. The high trading volume enhances their liquidity, making them more, not less, traded compared to off-the-run bonds.

**C is incorrect.** In reality, the coupon rate of on-the-run bonds is set close to the prevailing market rates at the time of issuance. This alignment with current market rates is what typically allows these bonds to be priced near par value. Bonds with coupon rates significantly divergent from the market rates are more likely to experience greater price volatility and are not characteristic of on-the-run bonds.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (c): Compare primary and secondary fixed-income markets to equity Markets.***

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Q.2485 Which of the following statements is/are *most likely* accurate?

Statement I. Non-sovereign bonds usually trade at a higher yield and lower price than sovereign bonds with similar characteristics because their credit risk is perceived to be higher than that of sovereign bonds.

Statement II. Bonds issued by states, provinces, counties, and sometimes by entities created to fund and provide services such as for the construction of hospitals, airports, and other municipal services are called Agency bonds.

- A. Both statements are correct.
- B. Both statements are incorrect.
- C. Only one statement is correct.

The correct answer is **C**.

**Statement I is correct.** Credit ratings for non-sovereign bonds vary widely because of the differences in credit and collateral quality. Because default rates of non-sovereign bonds are historically low, they very often receive high credit ratings. However, non-sovereign bonds usually trade at a higher yield and lower price than sovereign bonds with similar characteristics because they are perceived to carry more credit risk compared to sovereigns.

The additional yield depends on the credit quality, the liquidity of the bond issue, and the implicit or explicit level of guarantee or funding commitment from the national government. The additional yield is the lowest for non-sovereign bonds that have high credit quality, are liquid, and are guaranteed by the national government.

**Statement II is incorrect.** It describes non-sovereign bonds, not agency bonds. Agency bonds are comprised of (1) bonds issued or guaranteed by U.S. federal government agencies; and (2) bonds issued by government-sponsored enterprises (GSEs).

The national government does not guarantee non-sovereign bonds despite their low default rates and relatively high credit ratings. They are issued by Provinces, regions, states, and cities to finance schools, hospitals, highways, bridges, etc.

***CFA Level I, Fixed Income, Learning Module 15: Credit Analysis for Government Issuers, LOS 15a: explain special considerations when evaluating the credit of sovereign and non-sovereign government debt issuers and issues.***

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Q.2490 Which of the following is *least likely* a classification of secondary markets?

- A. Organized exchanges
- B. Over the counter (OTC) markets
- C. Aftermarkets

The correct answer is **C**.

Secondary markets are “aftermarkets” where existing securities are traded among investors. Aftermarkets is not a classification of secondary markets, but a term used to refer to secondary markets.

**A is incorrect.** Organized exchanges is one of the two main classifications of secondary markets. This is where buyers and sellers transact according to exchange rules.

**B is incorrect.** Over the counter (OTC) markets is the other main classification of secondary markets. This is where buy and sell orders are matched via a broker-dealer network.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (c): Compare primary and secondary fixed-income markets to equity Markets.***

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Q.2494 The repo margin is *most likely* increased by the following factors except:

- A. a longer repo term.
- B. a higher credit quality of the borrower.
- C. a low demand of the collateral security.

The correct answer is **B**.

A higher credit quality of the borrower: This statement is false. If the credit quality of the borrower is higher, this means the borrower is less likely to default on their obligations. Therefore, the repo margin, which is essentially a form of risk protection, wouldn't need to be as high.

**A is incorrect.** The longer the term of the repo, the more credit risk and market risk the lender is exposed to, which would necessitate a higher repo margin.

**C is incorrect** If the demand for the collateral is low, it might be harder for the lender to sell it in the event of a default. Therefore, to protect against this risk, the repo margin would likely be higher.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (c): Compare primary and secondary fixed-income markets to equity Markets.**

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Q.3884 Which of the following issues is *most likely* classified as a domestic bond?

- A. A French company issues Euro-denominated bonds in Germany.
- B. A U.S. company issues U.S. dollar-denominated bonds in Canada.
- C. A Swedish company incorporated in Japan issues Yen-denominated bonds in Japan.

The correct answer is **C**.

This scenario fits the definition of a domestic bond perfectly, as the issuer is considered a local entity in Japan due to its incorporation there, and the bond is issued in the local currency, which is Yen.

**A is incorrect.** This option describes a situation where a French company issues Euro-denominated bonds in Germany. Although the bond is issued in a currency that is widely used within the issuer's and investor's region (Eurozone), the fact that the issuer is a French company operating in Germany does not meet the criteria for a domestic bond. Instead, this scenario is more characteristic of a Eurobond.

**B is incorrect.** This option involves a U.S. company issuing U.S. dollar-denominated bonds in Canada. Despite the bond being denominated in the issuer's home currency (U.S. dollars), the issuance takes place in a foreign country (Canada). This scenario fits the description of a foreign bond, specifically a Yankee bond, which is a U.S. dollar-denominated bond issued by a foreign entity in the U.S. market.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (c): Compare primary and secondary fixed-income markets to equity Markets.**

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Q.3888 The settlement date for which of the following bonds *most likely* occurs the day following the transaction date?

- A. Eurobonds.
- B. Corporate bonds.
- C. Quasi-government bonds.

The correct answer is **C**.

The settlement date for quasi-government bonds most likely occurs the day following the transaction date, known as T+1 in financial terminology. This quick settlement period is characteristic of government and quasi-government securities, facilitating faster transactions and reducing the risk associated with changes in market conditions between the transaction and the settlement dates.

**A is incorrect.** Eurobonds typically have a settlement date of T+2, meaning two business days after the transaction date. This longer settlement period compared to quasi-government bonds allows for the international nature of Eurobonds transactions, which may require additional time for processing due to different time zones, currencies, and regulatory practices.

**B is incorrect.** Corporate bonds generally have a settlement date of T+3, which is three business days after the transaction date. This settlement period is longer than that of quasi-government bonds and reflects the additional risk and due diligence associated with corporate debt securities. The T+3 settlement allows for thorough verification of transaction details and the financial status of the corporate issuer, ensuring that all parties have adequate time to fulfill their obligations.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (a): Describe fixed-income market segments and their issuer and investor Participants.**

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Q.4419 The yield difference between a corporate bond and a comparable sovereign bond is *most likely* a measure of:

- A. Credit risk.
- B. Maturity risk.
- C. Liquidity risk.

The correct answer is **A**.

The yield difference, often referred to as the credit spread, between a corporate bond and a sovereign bond with similar maturity is primarily a reflection of credit risk. Credit risk refers to the risk that the market value of a contract or a specific instrument is reduced based on the actions of the counterparty. Because sovereign bonds, particularly those issued by stable governments, are generally considered to be almost free of default risk, the higher yield on corporate bonds compensates investors for the higher risk of potential default by the corporate bond issuer.

**B is incorrect.** Maturity risk, also known as interest rate risk, is associated with the length of time until a bond's maturity. It is not directly measured by the yield spread between a corporate bond and a comparable sovereign bond, as this spread is more reflective of credit risk than the potential impact of interest rate changes over time.

**C is incorrect.** While liquidity risk does affect a bond's yield, with less liquid bonds typically offering higher yields to compensate investors for the difficulty they might face when trying to sell the bond, it is not the primary measure that the yield spread between a corporate and a sovereign bond indicates. The key differential factor that this spread is pointing towards is the credit quality and the associated default risk of the corporate bond in comparison to the sovereign bond.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed-Income Issuance and Trading. LOS 3a: describe fixed-income market segments and their issuer and investor participants.**

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Q.4437 Which of the following *best* describes fixed-income securities that are segmented by a maturity duration of less than one year?

- A. Long-term
- B. Short-term
- C. Intermediate-term

The correct answer is **B**.

Fixed-income securities that are segmented by a maturity duration of less than one year are best described as short-term. These securities are particularly appealing to investors who prioritize liquidity and wish to minimize their exposure to risk. The shorter maturity period means that the principal investment is returned within a year, reducing the time during which the investment could be affected by adverse interest rate movements or other market risks.

**A is incorrect.** Long-term securities are characterized by a maturity duration that exceeds 10 years. These securities, such as long-term bonds, are typically issued by entities that require capital for extended periods. Investors in long-term securities are exposed to greater risk, including interest rate risk, credit risk, and inflation risk, over the duration of their investment.

**C is incorrect.** Intermediate-term securities have a maturity duration that falls between 1 to 10 years. This category serves as a middle ground between short-term and long-term securities, offering investors a compromise between the lower risk associated with short-term investments and the higher yields offered by long-term investments. Intermediate-term securities can include corporate bonds, government notes, and some types of asset-backed securities.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (a): Describe fixed-income market segments and their issuer and investor Participants.**

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Q.4438 Which issuer type in the fixed-income market is *most likely* to be perceived as having the lowest credit risk, especially from developed markets?

- A. Corporations
- B. Private institutions
- C. Sovereign Governments

The correct answer is **C**.

Sovereign Governments, especially those from developed markets, are typically perceived as having the lowest credit risk in the fixed-income market. This perception is largely due to several key factors that differentiate sovereign governments from other types of issuers.

Firstly, sovereign governments have the authority to levy taxes, which provides a steady and predictable stream of revenue to meet their debt obligations.

Additionally, they possess the unique capability to print more money to fulfill their debt obligations, further lowering their perceived credit risk.

Also, sovereign governments often have larger and more diversified economies compared to corporations or private institutions, which can help absorb economic shocks and maintain financial stability.

**A is incorrect.** Corporations, while significant issuers in the fixed-income market, generally carry a higher credit risk compared to sovereign governments. This increased risk stems from the fact that corporations do not have the same financial levers as governments, such as the ability to levy taxes or print money. Furthermore, corporations are more susceptible to market competition and economic downturns, which can adversely affect their financial health and ability to meet debt obligations.

**B is incorrect.** Private institutions may issue bonds as part of their financing strategy, but their credit risk is not uniformly low. Like corporations, the credit risk associated with bonds issued by private institutions depends on their specific financial health, operational performance, and the sector in which they operate. Unlike sovereign governments, private institutions do not have the authority to levy taxes or other sovereign financial mechanisms to ensure debt repayment.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (a): Describe fixed-income market segments and their issuer and investor Participants.**

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Q.4439 Which of the following characteristics *best* distinguishes fixed-income indexes from equity indexes?

- A. Fixed-income indexes typically have fewer constituents than equity indexes.
- B. Fixed-income indexes have a lower turnover rate compared to equity indexes.
- C. Fixed-income indexes often have a larger number of constituents due to multiple securities from a single issuer.

The correct answer is **C**.

Fixed-income indexes, such as those tracking bonds, often include a larger number of constituents. This is primarily because a single issuer in the fixed-income market, such as a government or corporation, can issue multiple securities with different characteristics, including varying maturities, coupon rates, and terms. As a result, fixed-income indexes need to account for this diversity by including a wide array of securities to accurately reflect the market's performance.

**A is incorrect.** While equity indexes can also include a significant number of constituents, fixed-income indexes are more likely to have a larger number due to the nature of the fixed-income market. In this market, a single issuer can have many different types of bonds outstanding at any given time, each with its own set of characteristics.

**B is incorrect.** Turnover rate refers to the frequency with which securities are added or removed from an index. In reality, fixed-income indexes can exhibit higher turnover rates than equity indexes. This higher turnover is due to the nature of fixed-income securities, where bonds are regularly reaching maturity and being replaced by new issues. Additionally, credit rating changes can lead to the inclusion or exclusion of bonds from an index more frequently than the changes in equity indexes.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (b): Describe types of fixed-income indexes.**

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Q.4440 Which of the following bond markets are debut issuers, such as new corporate entities formed post-merger or acquisition, *most likely* to issue their bonds?

- A. Primary bond markets.
- B. Tertiary bond markets.
- C. Secondary bond markets.

The correct answer is **A**.

Debut issuers, such as new corporate entities formed post-merger or acquisition, are most likely to issue their bonds in the primary bond markets. The primary bond market is where new issues of securities are first offered to the public, providing a crucial platform for issuers to raise capital. This market serves as the initial sale point for bonds, where issuers directly sell new bonds to investors, often with the assistance of underwriting firms.

**B is incorrect.** The term "tertiary bond market" does not exist within the standard financial terminology. The primary and secondary bond markets are the two main classifications in the bond market, with the primary market focused on the issuance of new bonds and the secondary market concerned with the trading of existing bonds among investors.

**C is incorrect.** The secondary bond market is where existing bonds are traded among investors after their initial issuance in the primary market. This market does not involve the direct sale of new bonds by the issuers but rather the trading of bonds between investors. For debut issuers looking to raise capital through bond issuance, the secondary market is not the venue for this activity.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (c): Compare primary and secondary fixed-income markets to equity Markets.**

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Q.4442 Which of the following securities in the fixed-income space is *most likely* to be traded at prices significantly below their par value due to expected non-receipt of all promised payments?

- A. Distressed Debt.
- B. Recently issued corporate bonds.
- C. On-the-run developed market sovereign bonds.

The correct answer is **A**.

Distressed debt securities are typically issued by companies facing significant financial difficulties, including the potential for bankruptcy. These securities are traded at prices significantly below their par value due to the high risk associated with the issuer's inability to meet its financial obligations. Investors in distressed debt are exposed to the risk of not receiving all promised payments, which is reflected in the discounted trading prices of these securities.

**B is incorrect.** Recently issued corporate bonds are typically considered investment-grade securities and are issued by companies with strong creditworthiness. These bonds often have lower default risk compared to distressed debt. While it's possible for the prices of recently issued corporate bonds to fall below par value due to changes in market conditions or company-specific factors, it's less common for them to trade significantly below par value solely due to expected non-receipt of all promised payments.

**C is incorrect.** On-the-run developed market sovereign bonds are typically considered to be among the safest investments, as they are backed by governments with stable financial systems. These bonds are highly liquid and are generally expected to meet all promised payments, hence they trade close to or at their par value.

**CFA Level I, Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (c): Compare primary and secondary fixed-income markets to equity Markets.**

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Q.4443 Which of the following statements *best* compares equity and fixed-income markets?

- A. Equity markets have lower liquidity than most fixed-income market segments.
- B. Equity markets and fixed-income markets both primarily operate over the counter.
- C. Just as companies can have IPOs in equity markets, issuers can debut in the bond market.

The correct answer is **C**.

Just as companies can have an initial public offering (IPO) in the equity market, issuers can approach the bond market for the first time to raise capital through a primary bond offering. This process in the bond market is analogous to an IPO in the equity market, where a company sells shares to the public for the first time. In the bond market, the initial offering is a way for entities to raise funds by issuing debt securities to investors.

**A is incorrect.** The assertion that equity markets have lower liquidity than most fixed-income market segments does not hold universally. Liquidity, the ease with which an asset can be bought or sold in the market without affecting its price, varies widely across different segments of both markets. While certain segments of the fixed-income market, like government bonds, are known for their high liquidity, others, such as corporate bonds or high-yield bonds, may exhibit lower liquidity.

**B is incorrect.** Fixed-income markets, particularly for bonds, do indeed have a significant portion of their activities conducted OTC, where transactions occur directly between parties without the use of a centralized exchange. This OTC nature can affect the visibility and liquidity of certain fixed-income securities. On the other hand, equity markets are predominantly organized through centralized exchanges, such as the New York Stock Exchange (NYSE) or the NASDAQ.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (c): Compare primary and secondary fixed-income markets to equity Markets.**

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Q.4444 In the context of fixed-income indexes, what does a high turnover *most likely* result from?

- A. The consistent performance of bonds over time.
- B. The finite maturity of bonds and frequent introduction of new issuances.
- C. The changes in the bond market landscape, such as shifts in credit quality.

The correct answer is **B**.

High turnover in fixed-income indexes is primarily a result of the finite maturity of bonds and the frequent introduction of new issuances. This characteristic of the bond market ensures that indexes must regularly update their constituents to reflect the current market. As bonds reach maturity, they are removed from the index, and new issuances are added to maintain the index's relevance and accuracy in representing the market. This process of constant updating due to the bonds' finite maturity periods leads to high turnover rates within fixed-income indexes.

**A is incorrect.** The consistent performance of bonds over time does not directly lead to high turnover in fixed-income indexes. While consistent performance might affect the valuation of bonds within the index, it does not necessitate the frequent addition or removal of bonds. High turnover is more directly influenced by the structural aspects of the bond market, such as the expiration and issuance of bonds, rather than their performance.

**C is incorrect.** Changes in the bond market landscape, such as shifts in credit quality, can indeed influence the composition of fixed-income indexes. However, these changes do not inherently result in high turnover. While significant market shifts may lead to adjustments in the index to better reflect current conditions, such as removing bonds that no longer meet credit quality criteria, these adjustments are not as frequent or systematic as those caused by the finite maturity of bonds and the introduction of new issuances.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (b): Describe types of fixed-income indexes.**

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Q.4452 Which of the following measures is *most likely* a crucial indicator of liquidity in secondary fixed-income markets?

- A. Bid-offer spread.
- B. Total volume traded.
- C. Frequency of bond issuance.

The correct answer is **A**.

The bid-offer spread is indicative of liquidity in the secondary fixed-income markets. A narrow spread typically signifies that security can be bought or sold quickly without causing a significant impact on its price, which is characteristic of a liquid market. Conversely, a wide bid-offer spread suggests a less liquid market, as the seller may have to accept a lower price or the buyer may have to pay a higher price to execute a trade. This spread is thus a real-time reflection of the ease with which a security can be traded in the market.

**B is incorrect.** Total volume traded does indicate activity levels but does not necessarily reflect the ease with which securities can be bought and sold at or near the current market prices, which is a more direct measure of liquidity.

**C is incorrect.** The frequency of bond issuance pertains to the primary market activities and does not provide immediate information regarding the current liquidity in the secondary markets, where existing securities are traded among investors.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (c): Compare primary and secondary fixed-income markets to equity Markets.**

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Q.4455 Which fixed-income issuance process is *most likely* to involve selling bonds to a select group of investors, often when the bond size is small, or the issuer is less known?

- A. Private Placement
- B. Best-Efforts Offering
- C. Underwritten Bond Offering

The correct answer is **A**.

Private Placement is the process most likely to involve selling bonds to a select group of investors, especially when the bond size is small or the issuer is less known. This method allows issuers to sell securities directly to a small group of institutional or accredited investors. Private placements are typically less regulated than public offerings, making them an attractive option for smaller companies or those seeking to avoid the complexities and costs associated with a public offering.

**B is incorrect.** In an underwritten bond offering, an investment bank or a syndicate of banks commits to buying the entire issue of bonds from the issuer and then resells them to the general market. This process involves a broader distribution of bonds and is typically used by well-known issuers seeking to raise significant amounts of capital. The underwriters assume the risk of selling the bonds, which contrasts with the targeted, less risky approach of private placements.

**C is incorrect.** Best-Efforts Offering is a method where the underwriter agrees to sell as much of the bond offering as possible but does not guarantee the sale of the entire issue. The underwriter returns any unsold bonds to the issuer without assuming financial responsibility for the unsold portion. It represents a less committed arrangement between the issuer and the underwriter, where the risk of unsold bonds remains with the issuer.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (a): Describe fixed-income market segments and their issuer and investor Participants.**

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Q.4456 For a bond to be included in the Bloomberg Barclays MSCI Euro Corporate Sustainable SRI Index, which of the following is the *most likely* minimum MSCI ESG rating, it must have?

- A. A
- B. AA
- C. BBB

The correct answer is **C**.

For a bond to be included in the Bloomberg Barclays MSCI Euro Corporate Sustainable SRI Index, it must have a minimum MSCI ESG rating of BBB. This requirement ensures that only bonds issued by companies with a certain level of commitment to environmental, social, and governance (ESG) criteria are considered for inclusion. The MSCI ESG rating is a comprehensive measure that evaluates a company's resilience to long-term, industry material ESG risks.

**A is incorrect.** While an A rating is higher than the minimum requirement and indicates a strong commitment to managing ESG risks relative to industry peers, the question specifically asks for the minimum rating necessary for inclusion. Therefore, while bonds with an A rating certainly qualify for inclusion, stating A as the minimum requirement would be inaccurate.

**B is incorrect.** An AA rating is one of the higher ESG ratings a company can achieve, indicating that the company is a leader in managing ESG risks compared to its industry peers. However, suggesting AA as the minimum requirement for inclusion in the index would exclude a significant number of bonds from companies that are still effectively managing their ESG risks but have not achieved such a high rating.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (b): Describe types of fixed-income indexes.**

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Q.4457 Which of the following *most likely* describes an environment where the majority of trading happens directly between buyers and sellers rather than on a centralized exchange?

- A. IPO Market.
- B. Primary Market.
- C. Over-the-counter (OTC) Market.

The correct answer is **C**.

The Over-The-Counter (OTC) Market is characterized by trading that occurs directly between buyers and sellers without the use of a centralized exchange. This decentralized nature of the OTC market allows for a wide variety of securities to be traded, including stocks, bonds, and derivatives that may not meet the listing requirements of formal exchanges. The OTC market is facilitated by dealer networks that provide liquidity and pricing for securities.

**A is incorrect.** The IPO (Initial Public Offering) market refers specifically to the process through which a private company offers its shares to the public for the first time. This is a one-time event for each company going public and occurs in the primary market. The IPO process is a way for companies to raise capital by selling shares to public investors.

**B is incorrect.** The primary market is where new securities are issued and sold for the first time. This includes IPOs, as well as the issuance of new bonds or other securities. Transactions in the primary market involve the original issuer of the security and the initial buyers. While the primary market is essential for raising new capital, it does not describe the ongoing trading environment where securities are bought and sold after their initial issuance.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 3: Fixed Income Issuance and Trading. LOS (c): Compare primary and secondary fixed-income markets to equity Markets.**

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## **Learning Module 4: Fixed Income Market for Corporate Issuers**

Q.64 Which of these bonds is *most likely* to have a higher yield?

- A. Junk bond.
- B. Government bond.
- C. Investment-grade bond.

The correct answer is **A**.

Junk bonds are more speculative and carry more risk, thus, have to pay a higher yield for investors to be interested in them.

**B is incorrect.** They are backed by the full faith and credit of the government that issues them. As a result, they typically offer lower yields compared to riskier types of bonds.

**C is incorrect.** Investment-grade bonds are issued by companies with high credit ratings, indicating a low risk of default.

***CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (c): Contrast the long-term funding of investment-grade versus high-yield corporate issuers.***

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Q.65 All things being equal, which of these is *most likely* to have a higher yield?

- A. 2-year bond.
- B. 5-year bond.
- C. 10-year bond.

The correct answer is **C**.

All things being equal, investors take more interest rate risk for a longer maturity bond and, thus, will want a higher yield.

**A is incorrect.** A 2-year bond is less likely to have a higher yield than a 10-year bond, all else being equal. As a result, investors typically demand a lower yield for holding a bond with a shorter maturity.

**B is incorrect.** A 5-year bond is also less likely to have a higher yield than a 10-year bond, all else being equal. While a 5-year bond has more interest rate risk than a 2-year bond, it still has less interest rate risk than a 10-year bond.

***CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (c): Contrast the long-term funding of investment-grade versus high-yield corporate issuers.***

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Q.844 Which of the following is *most likely* a form of bridge financing?

- A. Bilateral loan.
- B. Accounts payable.
- C. Commercial Paper.

The correct answer is **C**.

Bridge financing is the Interim financing that provides funds until permanent financing can be arranged. Commercial paper is a form of bridge financing that provides funds for meeting short-term liquidity requirements until permanent financing can be arranged.

**A is incorrect.** A bilateral loan is a loan from a single lender to a single borrower. Companies routinely use bilateral loans from their banks, and these bank loans are governed by bank loan documents. Bank loans are the primary source of debt financing in countries where bond markets are under-developed.

**B is incorrect.** Accounts payable are amounts that a business owes to its vendors for goods and services that were purchased from them, but which have not yet been paid.

***CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (a): Compare short-term funding alternatives available to corporations and financial institutions.***

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Q.845 Which of the following is *most likely* accurate with respect to U.S. commercial paper and Euro commercial paper?

- A. Both can be sold to another party.
- B. In both, the settlement time is T+2.
- C. Both are discount-based securities that do not bear any interest.

The correct answer is **A**.

Both the US commercial paper and Euro commercial paper can be sold to another party.

**B is incorrect.** U.S. commercial paper settles after T + 0 days (i.e., on the trade date) but Euro commercial paper settles after T + 2 days (2 days after the trade date).

**C is incorrect .** U.S. commercial paper is always issued at a discount, but Euro commercial paper can be issued either as interest-bearing instruments or as discount instruments.

***CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (a): Compare short-term funding alternatives available to corporations and financial institutions.***

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Q.847 Which of the following *most likely* plays a role in determining the repo margin?

- A. The quality of the collateral.
- B. The length of the repurchase agreement.
- C. The quality of collateral and length of the repurchase agreement.

The correct answer is **C**.

A repo margin is the difference between the market value of the security used as collateral and the value of the loan. Also called *haircut*.

The level of margin is a function of the following factors:

- The length of the repurchase agreement
- The quality of the collateral
- The credit quality of the counterparty
- The supply and demand conditions of the collateral

**A is incorrect.** While the quality of the collateral is a critical factor in determining the repo margin, considering it in isolation overlooks the importance of the length of the repurchase agreement. The term of the agreement significantly impacts the risk profile of the transaction and, consequently, the size of the haircut.

**B is incorrect.** Similarly, focusing only on the length of the repurchase agreement while ignoring the quality of the collateral does not provide a full picture of the factors that influence the repo margin.

**CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (b): Describe repurchase agreements (repos), their uses, and their benefits and risks.**

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Q.850 Which of the following classes of commercial paper requires registration with the SEC in the United States?

- A. Securities with an original maturity in excess of 1 year.
- B. Securities with an original maturity in excess of 180 days.
- C. Securities with an original maturity in excess of 270 days.

The correct answer is **C**.

In the United States, securities with original maturities in excess of 270 days have to be registered with the Securities and Exchange Commission (SEC). To avoid the time and expense associated with a SEC registration, issuers of US commercial paper rarely offer maturities longer than 270 days.

**A is incorrect.** Securities with an original maturity in excess of 1 year are not the specific threshold for SEC registration requirements in the context of commercial paper.

**B is incorrect.** Securities with an original maturity in excess of 180 days do not meet the specific criteria for SEC registration in the context of commercial paper. Although securities with maturities longer than 180 days are less common in the commercial paper market, the critical threshold for SEC registration is set at maturities exceeding 270 days.

***CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (a): Compare short-term funding alternatives available to corporations and financial institutions.***

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Q.2486 The repo rate is increased by all the following factors, except:

- A. A longer repo term.
- B. A lower credit quality of the borrower.
- C. Lower interest rates for alternative sources of funds.

The correct answer is **C**.

Lower interest rates for alternative sources of funds lead to lower repo rates. If the rate of interest on funds from alternative sources decreases, there will be an increase in the supply of credit which will reduce the demand for funds on the repo market. Lower demand for credit will translate to a lower repo rate.

**A and B are incorrect.** A longer repo term and lower credit quality of the borrower increase default risk and credit risk, respectively, leading to a higher repo rate.

***CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (b): Describe repurchase agreements (repos), their uses, and their benefits and risks.***

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Q.2487 Which of the following is *most likely* correct?

- A. Firms use commercial paper as a permanent source of funds.
- B. For larger creditworthy corporations, funding costs can be reduced by issuing short-term debt securities referred to as commercial paper.
- C. Commercial paper has yields less than short-term sovereign debt because commercial paper has, on average, less credit risk and less liquidity.

The correct answer is **B**.

For larger, more creditworthy corporations, funding costs can be reduced by issuing short-term debt securities referred to as commercial paper. For these firms, the interest cost of commercial paper is less than the interest cost on a bank loan.

**A is incorrect.** Firms use commercial paper as a source of working capital. It's a temporary source of funds prior to issuing longer-term debt.

**C is incorrect.** Commercial paper yields more than short-term sovereign debt because it has, on average, more credit risk, and less liquidity.

***CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (a): Compare short-term funding alternatives available to corporations and financial institutions.***

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Q.2489 The risk that a company will not be able to sell new commercial paper to replace maturing paper is *most likely* known as:

- A. Credit risk.
- B. Default risk.
- C. Rollover risk.

The correct answer is **C**.

Commercial paper is a rolling form of debt where new issues generally fund the retirement (and settlement) of old issues. While that happens, the main risk is that the issuer will not be able to issue new commercial paper, possibly because of a general decline in the availability of credit on the market or a deterioration of the issuer's creditworthiness. This is called rollover risk.

**A is incorrect.** Credit risk is the risk of loss arising from a borrower's inability to repay the principal and/or make interest payments as agreed.

**B is incorrect.** Default risk arises when a borrower cannot make complete and timely payments to the lender.

***CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (a): Compare short-term funding alternatives available to corporations and financial institutions.***

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Q.2492 Which of these is NOT a feature of negotiable certificates of deposit?

- A. They can be sold before maturity.
- B. They trade in domestic bond markets only.
- C. They typically have maturities of one year or less.

The correct answer is **B**.

Negotiable certificates of deposit can be sold before maturity. They typically have maturities of one year or less and are traded in domestic bond markets as well as in the Eurobond market.

**A is incorrect.** The ability to sell negotiable CDs before maturity is one of their defining features. This liquidity is particularly attractive to investors who may need access to their funds before the CD matures or who wish to take advantage of movements in interest rates.

**C is incorrect.** It is true that negotiable CDs typically have maturities of one year or less. This short-term nature is one of their characteristics, making them suitable for investors looking for investment opportunities with a relatively quick return.

***CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (a): Compare short-term funding alternatives available to corporations and financial institutions.***

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Q.4458 Which of the following *best* describes a provisional credit arrangement where there's no obligation for the bank to lend the specified amount and is useful for immediate liquidity needs?

- A. Uncommitted Lines of Credit.
- B. Regular (Committed) Lines of Credit.
- C. Revolvers (Revolving Credit Agreements).

The correct answer is **A**.

Uncommitted Lines of Credit are provisional credit arrangements where there's no obligation for the bank to lend the specified amount. They are beneficial for immediate liquidity needs and are cost-efficient.

**B is incorrect.** Regular (Committed) Lines of credit involve a formal contractual obligation by the bank to provide the funds up to the agreed limit.

**C is incorrect.** Revolvers are long-term credit arrangements that can span several years and may come with specific covenants.

***CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (a): Compare short-term funding alternatives available to corporations and financial institutions.***

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Q.4459 Which of the following is *most likely* a form of external, security-based financing predominantly issued by large, high-credit corporations and generally matures in under three months?

- A. Secured Loans.
- B. Commercial Paper (CP).
- C. Eurocommercial Papers (ECPs).

The correct answer is **B**.

Commercial Paper (CP) is predominantly issued by large, high-credit corporations and is a short-term, unsecured note that generally matures in under three months.

**A is incorrect.** Secured Loans demand collateral and are not typically short-term, unsecured notes.

**C is incorrect.** Eurocommercial Papers (ECPs) are similar to CPs but are issued internationally and generally involve smaller transaction sizes.

***CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (a): Compare short-term funding alternatives available to corporations and financial institutions.***

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Q.4460 When considering the short-term funding sources for financial institutions, which option is closest to a non-transactional deposit that may have defined terms?

- A. Saving Deposits.
- B. Demand Deposits.
- C. Unsecured Loans in the Interbank Market.

The correct answer is **A**.

Saving Deposits are typically non-transactional accounts that may come with defined terms such as minimum balances or limited withdrawal capabilities. They can offer interest to the depositor and often have specific conditions regarding the notice period for withdrawal, making them a more stable source of funds for financial institutions.

**B is incorrect.** Demand Deposits are accounts that allow depositors to withdraw funds without advance notice, and they can be used for transactions such as payments and transfers. They are highly liquid and do not have defined terms concerning maturity or interest in many cases.

**C is incorrect.** Unsecured Loans in the Interbank Market refer to loans between banks for short-term needs, which do not have collateral backing and are not considered deposits. These are typically used for very short-term financing, often overnight, and not structured as deposits with defined terms.

***CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (a): Compare short-term funding alternatives available to corporations and financial institutions.***

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Q.4461 A financial institution has decided to obtain a short-term loan that's collateralized by a US Treasury note, which involves a sale of a security and ends with its repurchase. This is *most likely* described as:

- A. A General CP
- B. A Repurchase Agreement (Repo)
- C. An Asset-Backed Commercial Paper (ABCP)

The correct answer is **B**.

A Repurchase Agreement, commonly known as a repo, is a form of short-term borrowing for dealers in government securities. In the case of a repo, a dealer sells government securities to investors, usually on an overnight basis, and buys them back the following day at a slightly higher price. The difference in price represents the interest on the loan. The security serves as collateral, which protects the lender in case the borrower does not repurchase the securities.

**A is incorrect:** Commercial Paper (CP) is an unsecured form of short-term debt issued by corporations without any collateral backing, hence it does not match the description of a secured borrowing backed by US Treasury notes.

**C is incorrect:** Asset-Backed Commercial Paper (ABCP) is a form of commercial paper that is collateralized by other financial assets, not specifically by a repurchase agreement involving US Treasury notes.

**CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (b): Describe repurchase agreements (repos), their uses, and their benefits and risks.**

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Q.4462 Which of the following *best* describes a "fallen angel" in the bond universe?

- A. A high-yield bond upgraded to an investment-grade bond.
- B. An investment-grade bond that has always maintained its status.
- C. An investment-grade bond that has been downgraded to high-yield status.

The correct answer is **C**.

A "fallen angel" refers to a bond that was once considered investment-grade but has been downgraded to high-yield status due to a deterioration in the issuer's credit quality. This change reflects a perceived higher risk of default by the issuer and affects the bond's pricing, yield, and investment mandates of the funds holding it.

**A is incorrect.** A bond that has always maintained its investment-grade status doesn't fit the definition of a "fallen angel."

**B is incorrect.** A bond upgraded from high-yield to investment-grade isn't referred to as a "fallen angel."

***CFA Level I, Fixed Income, Learning Module 4: Fixed Income Market for Corporate Issuers. LOS (c): Contrast the long-term funding of investment-grade versus high-yield corporate issuers.***

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## **Learning Module 5: Fixed Income Market for Government Issuers**

Q.63 Which of these following statements regarding bond issuance is/are inaccurate?

- I. Municipal bonds often return the lower tax-free rate as opposed to the market rate.
- II. 'Developed bond markets' is an example of a bond classification by geography.
- III. The interbank funds market trades mostly long-term loans.

A. Municipal bonds often return the lower tax-free rate as opposed to the market rate.

B. Developed bond markets' is an example of a bond classification by geography.

C. The interbank funds market trades mostly long-term loans.

The correct answer is **C**.

Most interbank loans are for maturities of one week or less, the majority being overnight.

**A is incorrect.** Municipal bonds provide investors with interest that is exempt from federal and state taxes. As such, the rate of interest on such bonds is generally lower than the market rate earned on otherwise taxable bonds.

**B is incorrect.** Based on the geographical location, we have domestic bond markets, foreign bond markets, and the Eurobond market. But they can also be classified further as either developed bond markets (which are well established) or emerging bond markets (which are in an earlier stage of development).

**CFA Level I, Fixed Income, Learning Module 5: Fixed Income Market for Government Issuers. LOS (b): Contrast the issuance and trading of government and corporate fixed-income instruments.**

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Q.67 A particularly risk-averse American investor wants your opinion on the bond market. All things being equal, which of these bonds would you *most likely* recommend a buy?

- A. Euro bonds.
- B. Domestic bonds.
- C. Emerging market bonds.

The correct answer is **B**.

A risk-averse investor is an investor who prefers lower returns with known risks to higher returns with unknown risks. A particularly risk-averse American investor will prefer a domestic bond that will give him no currency rate risk since domestic bonds are issued and traded in the currency of the market they are traded.

**A is incorrect.** Eurobonds will expose the investor to currency rate risk since they are issued in a currency not native to the country they are traded. Eurobonds are also riskier since they are unsecured and less regulated. In particular, they do not fall under the jurisdiction of any one country or regulatory body.

**C is incorrect.** Emerging market bonds have a lower credit quality than those of developed markets; they offer high returns but then pose a higher default risk, a characteristic that is best suited for a risk-taker, not a risk-averse investor.

***CFA Level I, Fixed Income, Learning Module 5: Fixed Income Market for Government Issuers. LOS (b): Contrast the issuance and trading of government and corporate fixed-income instruments.***

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Q.843 Bonds issued by the World Bank are *most likely* classified as:

- A. Supranational bonds.
- B. Non-sovereign bonds.
- C. Quasi-government bonds.

The correct answer is **A**.

The World Bank is a supranational agency (An organization formed by a group of countries) and bonds issued by such agencies are called supranational bonds.

**B is incorrect.** Non-sovereign bonds are bonds issued by governments below the national level, for example, bonds issued by counties.

**C is incorrect.** Quasi-government bonds are bonds issued by quasi-government organizations. Quasi-government organizations are organizations established to perform some functions for the government.

***CFA Level I, Fixed Income, Learning Module 5: Fixed Income Market for Government Issuers. LOS (a): Describe funding choices by sovereign and non-sovereign governments, quasi-government entities, and supranational agencies.***

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Q.2212 Which of the following institutions has debt that is *most likely* backed by the full faith and credit of the U.S. Government?

- A. Federal National Mortgage Association (Fannie Mae).
- B. Federal Home Loan Mortgage Association (Freddie Mac).
- C. Government National Mortgage Association (Ginnie Mae).

The correct answer is **C**.

Ginnie Mae securities are issued and guaranteed by the Government National Mortgage Association (GNMA) and are considered to be backed by the full faith and credit of the U.S. government with respect to timely payment of interest and repayment of principal. The Government National Mortgage Association (GNMA) is a federally related institution because it is part of the US Department of Housing and Urban Development.

**A is incorrect.** Securities issued by Federal National Mortgage Association (Fannie Mae) a quasi-government entity, do not carry the full faith and credit of the US government.

**B is incorrect.** Federal Home Loan Mortgage Corporation (Freddie Mac) is a quasi-government entity whose securities do not carry full faith and credit of the US government.

***CFA Level I, Fixed Income, Learning Module 5: Fixed-Income Markets for Government Issuers, LOS (a) Describe funding choices by sovereign and non-sovereign governments, quasi-government entities, and supranational agencies.***

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Q.2479 Inflation-linked bonds are *most likely* issued primarily by:

- A. Corporates with high and low credit quality.
- B. Municipalities and corporations of low credit quality.
- C. Governments and corporations of high credit quality.

The correct answer is **C**.

Inflation-linked bonds are issued primarily by governments but also by some corporations of high credit quality. The financial stability enjoyed by the government and top corporations implies that they are in a position to offset inflation by increasing the principal amount without succumbing to the associated financial cost. The same cannot be said about corporations and municipalities with unstable financials and low creditworthiness.

Inflation-linked bonds (ILBs) are fixed-income securities whose principal value is periodically adjusted according to the rate of inflation.

**A is incorrect.** While it is true that corporations, regardless of their credit quality, can issue bonds, the issuance of inflation-linked bonds is typically not favored by corporates with low credit quality.

**B is incorrect.** Municipalities and corporations of low credit quality are less likely to issue inflation-linked bonds for similar reasons mentioned above. Municipalities, although they can issue debt, may not have the financial flexibility or the need to issue ILBs, as their funding requirements and investor base can differ significantly from those of sovereign governments.

***CFA Level I, Fixed Income, Learning Module 5: Fixed Income Market for Government Issuers. LOS (a): Describe funding choices by sovereign and non-sovereign governments, quasi-government entities, and supranational agencies.***

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Q.2480 Is the following statement correct?

"Tax-exempt bonds are sold with lower yields than taxable bonds of similar risk and maturity."

- A. Correct.
- B. Incorrect, because tax-exempt bonds are sold with higher yields than taxable bonds.
- C. Incorrect, because tax-exempt bonds are sold with the same yields as taxable bonds.

The correct answer is **A**.

The coupon rate (and yield) on a tax-exempt municipal bond is typically lower than that on an otherwise similar taxable bond to reflect the implied income tax rate. Investors are willing to accept a lower coupon rate on a tax-exempt municipal bond compared with an otherwise similar taxable bond because the income received from municipal bonds is not taxable. To attract taxable investors, bonds that are subject to income taxes must offer higher yields than those that are tax exempt.

**B is incorrect.** This option incorrectly suggests that tax-exempt bonds are sold with higher yields than taxable bonds.

**C is incorrect.** Suggesting that tax-exempt bonds are sold with the same yields as taxable bonds disregards the impact of taxation on investment returns. The primary appeal of tax-exempt bonds is their tax advantage, which allows them to be issued with lower yields while still offering competitive after-tax returns to investors.

**CFA Level I, Fixed Income, Learning Module 5: Fixed Income Market for Government Issuers. LOS (b): Contrast the issuance and trading of government and corporate fixed-income instruments.**

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Q.2496 Bonds issued by multilateral agencies are *most likely* called:

- A. Supranational bonds.
- B. Quasi-governmental bonds.
- C. Non-sovereign government bonds.

The correct answer is **A**.

Supranational bonds are issued by supranational agencies, also known as multilateral agencies. Supranational bonds are issued by international organizations, often multinational or quasi-government organizations, with the purpose of promoting economic development. Examples include the World Bank and the Asian Development Bank. Similar to semi-government bonds, these often have a higher yield than government bonds.

**B is incorrect.** Quasi-government bonds are issued by quasi-government organizations established by the national governments like Fannie Mae (Federal Mortgage Association), Freddie Mac in the US, and Hydro-Quebec in Canada.

**C is incorrect.** Non-sovereign bonds are issued by provinces, regions, states and cities to finance schools, hospitals, highways, bridges, etc.

***CFA Level I, Fixed Income, Learning Module 5: Fixed Income Market for Government Issuers. LOS (a): Describe funding choices by sovereign and non-sovereign governments, quasi-government entities, and supranational agencies.***

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Q.2523 Which of the following statements is/are *most likely* correct?

Statement 1: For fixed-coupon bonds, on-the-run government bond yields for the same or nearest maturity are frequently used as benchmarks.

Statement 2: The benchmark remains fixed during a bond's life.

- A. Both statements are correct.
- B. Statement II is correct, whereas statement I is incorrect.
- C. Statement I is correct, whereas statement II is incorrect.

The correct answer is **C**.

**Statement 1 is correct.** For fixed-coupon bonds, on-the-run government bond yields for the same or nearest maturity are frequently used as benchmarks.

**Statement 2 is incorrect.** The benchmark may change during a bond's life.

**CFA Level I, Fixed Income, Learning Module 5: Fixed Income Market for Government Issuers. LOS (a): Describe funding choices by sovereign and non-sovereign governments, quasi-government entities, and supranational agencies.**

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Q.4463 Which of the following *best* describes the primary advantage national or sovereign government issuers have over private sector issuers in terms of debt repayment?

- A. They can sell their assets for repayment.
- B. They rely on revenues from government-owned enterprises only.
- C. They derive tax cash flows from economic activities within their jurisdiction.

The correct answer is **C**.

Sovereign governments have the sovereign authority to derive tax cash flows from economic activities within their jurisdiction for debt repayment.

**A is incorrect.** Both private and public sectors can utilize asset sales for repayment, but it isn't their primary advantage.

**B is incorrect.** While revenues from government-owned enterprises might be a source, it's not the only one.

**CFA Level I, Fixed Income, Learning Module 5: Fixed Income Market for Government Issuers. LOS (b): Contrast the issuance and trading of government and corporate fixed-income instruments.**

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Q.4464 Which of the following is *most likely* a feature of revenue bonds issued by local and regional government authorities?

- A. They are used to finance the general objectives of the region.
- B. They are backed by the commitments of multiple national governments.
- C. Their repayment is often tied to user fees from specific projects they finance.

The correct answer is **C**.

Revenue bonds issued by local and regional government authorities are often tied to user fees from specific projects they finance.

**A is incorrect.** General objectives are usually financed by General Obligation bonds.

**B is incorrect.** Backing by multiple national governments is a feature of supranational agencies.

***CFA Level I, Fixed Income, Learning Module 15: Credit Analysis for Government Issuers, LOS 15a: explain special considerations when evaluating the credit of sovereign and non-sovereign government debt issuers and issues.***

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## **Learning Module 6: Fixed Income Bond Valuations: Prices and Yields**

Q.68 A 10-year bond was issued at par with an 8% coupon rate per \$1000 par value, paid yearly. If the required rate of return is now 9.5%, the present value of this bond 5 years later is *closest to*;

- A. \$867.81
- B. \$905.82
- C. \$942.40

The correct answer is **C**.

Using the financial calculator:

N=5; I=9.5%; PMT=80; FV=1,000;

CPT -> PV = -942.40

The answer choices given on this particular question can help us solve it without any calculations. The bond was issued at par (1,000)

The current required rate of return (9.5%) is higher than the coupon rate of 8%. This implies that the bond is trading at a discount (a value less than 1,000), and that value is answer choice A.

**A is incorrect.** It assumes semi-annual compounding.

**B is incorrect.** It assumes a 10-year period, but we need the price of the bond after 5 years.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.**

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Q.854 James Kirsten purchased Bond A, which has the following characteristics:

- Coupon payment per period: 7%
- No. of periods to maturity: 4 years
- Market discount rate per period: 10.5%

The fair price of this bond (100 in par value) is *closest to*:

- A. 89.02
- B. 90.08
- C. 111.86

The correct answer is **A**.

$$\text{Fair price} = \left[ \frac{7}{1.105^1} + \frac{7}{1.105^2} + \frac{7}{1.105^3} + \frac{107}{1.105^4} \right] = 89.02$$

We can also use the financial calculator to solve this problem.  
N = 4; PMT = 7; I/Y = 10.5; FV = 100; CPT => PV = 89.02

**B is incorrect.** Assumes semi-annual compounding:

N = 8; PMT = 3.5; I = 5.25; FV = 100; CPT => PV = 90.08

**C is incorrect.** Alternates the yield maturity and coupon rate:

N = 8; PMT = 10.5; I/Y = 7; FV = 100; CPT => PV = 111.86

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.**

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Q.855 If the coupon rate of a bond is 5% and the market discount rate is 3%, then the bond is priced at:

- A. At par value.
- B. A premium above par value.
- C. A discount below par value.

The correct answer is **B**.

When the coupon rate is greater than the market discount rate, the bond is priced at a premium above par value.

**A is incorrect.** When the coupon rate is equal to the market discount rate, the bond is priced at par.

**C is incorrect.** When the coupon rate is less than the market discount rate, the bond is priced at a discount below par level.

***CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.***

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Q.857 An investor who owns a bond with an 11% coupon rate that pays interests semi-annually and matures in 4 years is considering its sale if the required rate of return is 15%. The price of the bond per 100 of par value is *closest to*:

- A. 88.29
- B. 88.58.
- C. 112.67.

The correct answer is **A**.

Using the financial calculator:  $N = 8$ ;  $I/Y = 7.5$ ;  $PMT = 5.5$ ;  $FV = 100$ ;  $CPT \rightarrow PV = -88.29$

**B is incorrect.** It assumes annual compounding, yet the question requires semi-annual compounding:

$N = 4$ ;  $I/Y = 15$ ;  $PMT = 11$ ;  $FV = 100$ ;  $CPT \rightarrow PV = -88.58$

**C is incorrect.** It alternates coupon rate with the required rate of return:

$N = 8$ ;  $I/Y = 5.5$ ;  $PMT = 7.5$ ;  $FV = 100$ ;  $CPT \rightarrow PV = 112.67$

***CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.***

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Q.858 Suzanne Jennings purchased Bond A with a coupon payment per period of 4% for 4 years at a price of \$106. The bond is *most likely* trading at:

- A. Par value.
- B. A premium.
- C. A discount.

The correct answer is **B**.

When the coupon rate is greater than the market discount rate, the bond is priced at a premium above par value.

The market discount rate is calculated as:

$N = 4$ ;  $PV = -106$ ;  $PMT = 4$ ;  $FV = 100$ ;

CPT  $\rightarrow I/Y = 2.41\% < 4\% = 2.24\%$

**A is incorrect.** A par value bond refers to when the coupon rate is equal to the market discount rate.

**C is incorrect.** When the bond's coupon rate is less than the market discount rate, the bond is said to be at a discount below par value.

***CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.***

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Q.860 A 3.125% government bond is priced for settlement on April 12, 2016. The bond makes quarterly coupon payments on June 30th, September 30th, December 31st, and March 31st. The bond's accrued interests per 100 of par value at settlement is *closest to*:

- A. 0.026
- B. 0.103.
- C. 0.781

The correct answer is **B**.

Government bonds have 365 days, therefore:

$$\frac{365}{4} = 91.25 \text{ days}$$

$$\text{Accrued interest} = \left( \frac{12}{91.25 \text{ days}} \right) \times \left( \frac{3.125}{4} \right) = 0.1027$$

Note: Another way to do the calculation is:

$$AI = \frac{t}{T} \times PMT$$

, where  $\frac{t}{T}$  is the fraction of the coupon period that has passed since the last payment, and PMT the coupon payment for the period. Thus,

$$\text{Accrued interest} = \left( \frac{12}{365} \right) \times (0.03125) = 0.1027$$

**A is incorrect.** It assumes the calculation as follows;

$$\frac{12}{365} \times \frac{3.125}{4} = 0.026$$

**C is incorrect.** It assumes the 3.125% government bond divided by the quarterly payments.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.**

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Q.2143 Assume that a city issues a \$5 million bond to build a new arena. The bond pays 8% semiannual interest and will mature in 10 years. If current interest rates are 9%, then the present value of the bond and the estimated value of the bond seven years from today are *closest to*:

A. Present value: \$4,674,802  
Value in seven years: \$4,931,276.

B. Present value: \$4,674,802  
Value in seven years: \$4,871,053

C. Present value: \$5,339,758  
Value in seven years: \$4,871,053.

The correct answer is **B**.

Present value using the financial calculator:

$FV = 5,000,000$ ;  $N = 20$ ;  $PMT = 0.04 \times 5,000,000 = 200,000$ ;  $I/Y = 4.5$ ;  $CPT \Rightarrow PV = -4,674,802$

Value in seven years using the financial calculator:

$FV = 5,000,000$ ;  $N = 6$ ;  $PMT = 0.04 \times 5,000,000 = 200,000$ ;  $I/Y = 4.5$ ;  $CPT \Rightarrow PV = -4,871,053$

**A is incorrect.** It suggests a value in seven years that is higher than the calculated value based on the given interest rates and time periods. This does not align with the principles of bond valuation and the effects of interest rates on bond prices.

**C is incorrect.** It suggests a present value that is higher than the face value of the bond, which is not possible given that the market interest rate is higher than the coupon rate, indicating the bond should sell at a discount.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.**

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Q.2481 A bond's price and returns are *most likely* determined by

- A. The interest rates in the bond's currency.
- B. The reference rate to which the bond is indexed.
- C. The interest rates of the home currency in the market where the bond is issued.

The correct answer is **A**.

A bond's price and returns are determined by the interest rates in the bond's currency. The price of a bond goes up and down depending on the value of the income provided by its coupon payments relative to broader interest rates. If prevailing interest rates increase above the bond's coupon rate, the bond becomes less attractive. In this situation, the bond price drops to compensate for the less attractive yield. Conversely, if the prevailing interest rate drops below the bond's coupon rate, the price of the bond goes up as it becomes more attractive.

**B is incorrect.** While it is true that for some specific types of bonds, such as floating-rate bonds, the coupon payments may be directly tied to a reference rate, the overall price and returns of a bond are still influenced by the broader interest rates in the bond's currency.

**C is incorrect.** The bond's cash flows are valued in its currency, and changes in the interest rates of that currency directly affect the discount rate used to calculate the present value of those cash flows.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.**

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Q.2497 Consider a 5-period zero-coupon bond with a par value of \$1,000 and a discount rate of 3% per period. The value of this bond is **closest to**:

A. \$744.10

B. \$862.61.

C. \$1,159.27.

The correct answer is **B**.

With a discount rate of 3% per period, a 5-period zero-coupon bond with a par value of \$1,000 has a value of:

$$PV = \frac{1,000}{1.03^5} = 862.61$$

Using the financial calculator:

N=5; I/Y=3; PMT=0 (since it's a zero-coupon bond); FV=1000; CPT PV = -862.61

**A is incorrect.** It assumes the semi-annual compounding:

$$PV = \frac{1,000}{1.015^{10}} = \$744.10$$

**C is incorrect.** It calculates the accumulation value of the par value;

$$PV = \$1,000 \times 1.03^5 = \$1,159.27$$

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.**

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Q.2498 The present value of a newly issued 10-year, \$1,000 par value security, that will pay \$60 every six months with an annual YTM of 8%, is *closest to*:

- A. \$803.64
- B. \$865.80
- C. \$1,271.81.

The correct answer is **C**.

Using the financial calculator:

$N = 20$ ;  $PMT = 60$ ;  $FV = 1,000$ ;  $I/Y = 4$ ;  $CPT \Rightarrow PV = -1,271.81$

**A is incorrect.** It assumes the annual yield to maturity ;

$N = 20$ ;  $PMT = 60$ ;  $FV = 1,000$ ;  $I/Y = 8$ ;  $CPT \Rightarrow PV = -803.64$

**B is incorrect.** It assumes the calculation as follows;

$N = 10$ ;  $PMT = 60$ ;  $FV = 1,000$ ;  $I/Y = 8$ ;  $CPT \Rightarrow PV = -865.80$

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.**

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Q.2499 Is the following statement correct?

When bond yields decrease, the present value of a bond's payments, its market value, increases.

A. The statement is correct.

B. The statement is incorrect. When bond yields decrease, the present value of a bond's payments, its market value, decreases.

C. The statement is incorrect. When bond yields decrease, the present value of a bond's payments, its market value, remains unaffected.

The correct answer is **A**.

The given statement is correct. Bond prices are inversely correlated with bond yields. When bond yields decrease, the present value of a bond's payments, its market value, increases. Similarly, when bond yields increase, the present value of a bond's payments decreases.

Let's assume that a bond is currently trading at \$98. Assume that the current market interest rate is 5%, and determine the new prices when within one year, the bond yields (1) go up and (2) go down by 100 basis points.

Case 1: Yield goes up. PV of the bond =  $\frac{98}{(1+(0.05+0.01))^1} = 92.45$

Case 2: Yield goes down. PV of the bond =  $\frac{98}{(1+(0.05-0.01))^1} = 94.23$

As seen above, the present value of the bond is lower when the yield goes up, and higher when the yield goes down. Bond yields are inversely correlated with interest rates.

**B and C is incorrect.** They contradict option A given the explanation above.

***CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.***

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Q.2500 Is the following statement correct? If not, why?

"A 2% decrease in yield-to-maturity increases the bond's value by less than 2% as increase in yield decreases the bond's value."

A. The statement is correct.

B. The statement is incorrect because a 2% decrease in yield-to-maturity increases the bond's value by more than a 2% increase in yield decreases the bond's value.

C. The statement is incorrect because a 2% decrease in yield-to-maturity increases the bond's value equally as a 2% increase in yield decreases the bond's value.

The correct answer is **B**.

The convexity effect states that percentage changes in bond prices are not symmetric. The percentage change seen when the market discount rate goes down is greater than when the market discount rate goes up.

**A is incorrect.** A 2% decrease in yield-to-maturity increases the bond's value by more than a 2% increase in yield decreases bond's value. It illustrates that the bond's price-yield relationship is convex.

**C is incorrect.** The relationship between yield-to-maturity and market discount rate is not linear.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.**

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Q.2502 Which of the following statements is/are correct?

**Statement I.** If a bond's coupon rate is greater than its YTM, its price will be at a premium to par value.

**Statement II.** The percentage decrease in value when the YTM increases by a given amount is smaller than the increase in value when the YTM decreases by the same amount.

- A. Both statements are correct.
- B. Both statements are incorrect.
- C. Only one statement is correct.

The correct answer is **A**.

Both statements are correct. If a bond's coupon rate is greater than its YTM, its price will be at a premium to par value. If a bond's coupon rate is less than its YTM, its price will be at a discount to par value. The percentage decrease in value when the YTM increases by a given amount is smaller than the increase in value when the YTM decreases by the same amount (the price-yield relationship is convex).

**B is incorrect.** For the same reason as option A; it inaccurately suggests that both statements are incorrect, overlooking the established principles of bond valuation and the convex price-yield relationship.

**C is incorrect.** It suggests that only one statement is correct, whereas both statements accurately reflect fundamental concepts in bond pricing and the behavior of bond prices in response to changes in YTM.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.**

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Q.2503 Taking into consideration all factors held constant, the price of a bond with a lower coupon rate is *most likely*:

- A. More sensitive to a change in yield than the price of a bond with a higher coupon rate.
- B. Less sensitive to a change in yield than is the price of a bond with a higher coupon rate.
- C. Equally sensitive to a change in yield than is the price of a bond with a higher coupon rate.

The correct answer is **A**.

Other things equal, the price of a bond with a lower coupon rate is more sensitive to a change in yield than is the price of a bond with a higher coupon rate.

**B is incorrect.** When the prevailing market rate of interest is higher than the coupon rate, e.g., a 7% interest rate and a bond coupon rate of just 5%, the price of the bond tends to drop on the open market because investors don't want to purchase a bond at face value and receive a 5% yield when they could source other investments that yield 7%.

**C is incorrect.** If a coupon is higher than the prevailing interest rate, the bond's price rises; if the coupon is lower, the bond's price falls.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.**

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Q.2504 The *most appropriate* meaning of "Constant-yield price trajectory" is;

- A. A constant YTM with as time passes.
- B. A constant value of the bond as time passes.
- C. A convergence of the bond's value to par at maturity with a constant YTM.

The correct answer is **C**.

The convergence of bond value to par at maturity is known as the constant-yield price trajectory because it shows how the bond's price would change as time passes if its yield-to-maturity remained constant.

**A is incorrect.** A constant YTM exists where Macaulay and modified durations depend on the day-count basis used to obtain the yield-to-maturity.

**B is incorrect.** The value of a bond can never be constant.

***CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.***

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Q.2508 The flat price of a bond can be calculated as:

- A. Dirty price - Clean price.
- B. Accrued interest - Clean price.
- C. Invoice price - Accrued interest.

The correct answer is **C**.

Recall that:

$$\text{Flat price} = \text{Full price} - \text{Accrued interest}$$

Another name for 'flat price' is 'quoted price' or 'clean price' moreover, the other name for 'full price' is the 'invoice price' or 'dirty price.'

**A is incorrect.** Another name for 'full price' is the 'invoice price' or 'dirty price.'

**B is incorrect.** The clean price of the bond is the offered price of the bond, excluding the accrued interest.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.**

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Q.2509 Robert Phelps is estimating the value of a non-traded 4% annual-pay, BB-rated bond that has five years remaining until maturity. He has obtained the following yields-to-maturities (YTM) on similar corporate bonds:

BB-rated, 4-year annual-pay, 5% coupon bond: YTM = 4.738%

BB-rated, 6-year annual-pay, 4% coupon bond: YTM = 5.628%

BB-rated, 6-year annual-pay, 6% coupon bond: YTM = 5.635%.

Using the linear interpolation method, the discount rate that should be used to value the non-traded bond is *closest to*:

A. 4.738%

B. 5.185%

C. 5.632%

The correct answer is **B**.

We are interested in the YTM of a 5-year annual-pay, 4% coupon bond: We have the YTM of comparable 4-year and 6-year bonds. To obtain the discount rate used to price that bond, we will have to interpolate the YTM of these (4-year and 6-year) bonds. How do we go about that?

Discount rate for the non-traded bond = YTM of lower term bond +  $\frac{(\text{time to maturity of non-traded bond} - \text{time to maturity of lower term bond})}{(\text{time to maturity of higher term bond} - \text{time to maturity of lower term bond})} \times (\text{YTM of higher term bond} - \text{YTM of lower term bond})$

Thus,

$$\text{Average YTM of higher term bonds} = \frac{(5.628\% + 5.635\%)}{2} = 5.632\%$$

Average YTM of lower term bonds = 4.738% (there's a single 4-year bond)

Discount rate for the 5-year bond, therefore

$$= 4.738\% + \left[ \frac{(5 - 4)}{(6 - 4)} \right] \times [5.632\% - 4.738\%] = 5.185\%$$

**A is incorrect.** It indicates the average YTM of lower term bonds.

**C is incorrect.** It indicates the average of YTM of higher term bonds.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.**

Q.2514 The option-adjusted yield will *most likely* be:

- A. Lower than the yield-to-maturity for a callable bond because callable bonds have lower yields to compensate bondholders for the issuer's call option.
- B. Higher than the yield-to-maturity for a callable bond because callable bonds have higher yields to compensate bondholders for the issuer's call option.
- C. Higher than the yield-to-maturity for a callable bond because callable bonds have lower yields to compensate bondholders for the issuer's call option.

The correct answer is **B**.

The option-adjusted yield (OAS) is a measure of the yield of a bond that accounts for the value of any embedded options, such as a call option, which allows the issuer to redeem the bond before its maturity date. The OAS takes into account the probability that the bond will be called and adjusts the yield accordingly.

A callable bond has an embedded call option that gives the issuer the right to redeem the bond before its maturity date. To compensate bondholders for this option, callable bonds typically offer a higher yield-to-maturity (YTM) compared to non-callable bonds.

**A is incorrect.** It suggests that the option-adjusted yield would be lower than the yield-to-maturity (YTM) for a callable bond due to lower yields offered to compensate bondholders for the call option. This interpretation misunderstands the relationship between callable bonds and their yields.

**C is incorrect.** It confuses the rationale behind the yield differences. The key misunderstanding here is the role of the option-adjusted yield, which is to adjust the bond's yield to reflect the value and risk of embedded options, not to simply increase the yield to compensate for lower yields offered by callable bonds.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (b): Identify the relationships among a bond's price, coupon rate, maturity, and yield-to-maturity.**

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Q.3748 A 180-day bankers acceptance (BA) is quoted at a discount rate of 3.56% for a 360-day year. The bond equivalent yield is *closest* to:

- A. 3.62%.
- B. 3.66%.
- C. 3.68%.

The correct answer is **C**.

The price (present value) of a BA is calculated using the formula:

$$PV = FV \times \left(1 - \frac{\text{Days}}{\text{Year}} \times \text{DR}\right)$$

Where,

PV = principal amount (the price of the money market)

FV = redemption value of the money market instrument at maturity (including the interest)

Days = number the days between the settlement and maturity periods

Year = number of days in a year

DR = discount rate (usually stated as an annual percentage rate)

So in this case,

$$PV = 100 \times \left(1 - \frac{180}{360} \times 0.0356\right) = 98.22$$

The bond equivalent rate, also called the add-on rate (AOR), is calculated as:

$$\begin{aligned} \text{AOR} &= \left(\frac{\text{Year}}{\text{Days}}\right) \times \left(\frac{\text{FV}-\text{PV}}{\text{PV}}\right) \\ &= \left(\frac{365}{180}\right) \times \left(\frac{100 - 98.22}{98.22}\right) = 0.03675 = 3.675\% \end{aligned}$$

**A is incorrect.** A yield of 3.62% does not accurately reflect the conversion of the discount rate to a bond equivalent yield considering the effects of compounding over a 360-day year.

**B is incorrect.** A yield of 3.66% is closer to the correct answer but still does not accurately capture the effect of the discount rate being annualized on a 360-day basis and then adjusted for a 180-day period.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (a): Calculate a bond's price given a yield-to-maturity on or between coupon dates.**

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Q.3749 A 91-day US T-bill has a face value of \$100 million, and it is quoted at a 3% discount rate for a 360-day year. The price of the T-bill is *closest* to:

- A. \$96.52 million.
- B. \$97.95 million.
- C. \$99.24 million.

The correct answer is **C**.

The price of the T-bill is given by:

$$PV = FV \times \left(1 - \frac{\text{Days}}{\text{Year}} \times \text{DR}\right)$$

Where

PV = principal amount (the price of the money mar)

FV = redemption value of the money market instrument at maturity (including the interest)

Days = number the days between the settlement and maturity periods

Year = number of days in a year

DR = discount rate (usually stated as an annual percentage rate)

So that in this case,

$$PV = 100 \times \left(1 - \frac{91}{360} \times 0.03\right) = \$99.24 \text{ million}$$

**A is incorrect.** It suggests a price of \$96.52 million, which would imply a much higher discount rate or a longer time to maturity than what is given.

**B is incorrect.** It indicates a price of \$97.95 million, which, while closer to the correct answer than option A, still does not correctly apply the given discount rate and time to maturity.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (a): Calculate a bond's price given a yield-to-maturity on or between coupon dates.**

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Q.3750 A 91-day US T-bill is priced at \$295 million with a face value of \$300 million for a 360-day year. The quoted discount rate of the T-bill is *closest* to:

- A. 6.5%.
- B. 6.6%
- C. 6.7%.

The correct answer is **B**.

$$DR = \left( \frac{\text{Year}}{\text{Days}} \right) \times \left( \frac{FV - PV}{FV} \right)$$

Where

PV = principal amount (the price of the money mar)

FV = redemption value of the money market instrument at maturity (including the interest)

Days = number the days between the settlement and maturity periods

Year = number of days in a year

DR = discount rate (usually stated as an annual percentage rate)

So that in this case,

$$DR = \left( \frac{360}{91} \right) \times \left( \frac{300 - 295}{300} \right) = 0.06593 \approx 6.6\%$$

**A is incorrect.** A discount rate of 6.5% does not accurately reflect the calculation based on the given values of face value, purchase price, and the specific days until maturity.

**C is incorrect.** A discount rate of 6.7% overshoots the correct calculation based on the provided values.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (a): Calculate a bond's price given a yield-to-maturity on or between coupon dates.**

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Q.3751 A pension fund pays a banker's acceptance (BA) with a quoted add-on rate of 5% for a 365-day year. The BA has an initial principal of CAD 100 million and a redemption value of CAD 103 million. The number the days between the settlement and the maturity period is *closest* to:

- A. 150 days.

B. 219 days.

C. 240 days.

The correct answer is **B**.

The pricing formula for the money market instruments quoted on add-on rates is given by:

$$PV = \frac{FV}{\left(1 + \frac{\text{Days}}{\text{Year}} \times \text{AOR}\right)}$$

Where

PV = principal amount (the price of the money mar)

FV = redemption value of the money market instrument at maturity (including the interest)

Days = number the days between the settlement and maturity periods

Year = number of days in a year

AOR = add-on rate (usually stated as an annual percentage rate)

So in our case,

$$\begin{aligned} 100 &= \frac{103}{\left(1 + \frac{\text{Days}}{365} \times 0.05\right)} \\ \Rightarrow \text{Days} &= \left[\frac{103}{100} - 1\right] \times \frac{365}{0.05} = 219 \end{aligned}$$

**A is incorrect.** Accepting the sell order without informing the client about the recent change in the firm's recommendation overlooks the importance of transparency and fair dealing in professional conduct.

**C is incorrect.** It is contrary to the firm's recommendation undermines the principle of acting in the client's best interest. Investment professionals are expected to provide objective advice and support to their clients, respecting their right to make their own investment decisions.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (a): Calculate a bond's price given a yield-to-maturity on or between coupon dates.**

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Q.3752 An investor invested in a 90-day commercial paper quoted at a discount rate of 5% for a

360-day year with a redemption value of \$200. The bond equivalent yield is *closest* to:

A. 4.15%.

B. 5.06%.

C. 5.13%.

The correct answer is **C**.

The price (present value) of a BA is calculated using the formula:

$$PV = FV \times (1 - \frac{\text{Days}}{\text{Year}} \times DR)$$

Where,

PV = principal amount (the price of the money market)

FV = redemption value of the money market instrument at maturity (including the interest)

Days = number the days between the settlement and maturity periods

Year = number of days in a year

DR = discount rate (usually stated as an annual percentage rate)

So in this case,

$$PV = 200 \times (1 - \frac{90}{360} \times 0.05) = 197.50$$

The bond equivalent rate, also called the add-on rate (AOR), is calculated as:

$$\begin{aligned} \text{AOR} &= \left( \frac{\text{Year}}{\text{Days}} \right) \times \left( \frac{\text{FV}-\text{PV}}{\text{PV}} \right) \\ &= \left( \frac{365}{90} \right) \times \left( \frac{200 - 197.50}{197.50} \right) = 0.0513 \approx 5.13\% \end{aligned}$$

**A is incorrect.** It equates the indicative discount rate to the bond equivalent yield.

**B is incorrect.** It assumes the indicative 360 day year instead of the correct 365 day year for calculation the bond equivalent yield as follows;

$$PV = FV \times (1 - \frac{\text{Days}}{\text{Year}} \times DR)$$

$$\text{AOR} = \frac{\text{Year}}{\text{Days}} \times \frac{\text{FV}-\text{PV}}{\text{PV}} = \frac{360}{90} \times \frac{200 - 197.50}{197.50} = 5.063\%$$

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (a): Calculate a bond's price given a yield-to-maturity on or between coupon dates.**

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Q.4418 Which of the following *most likely* defines a zero-coupon bond? A bond that pays:

- A. Fixed periodic interest payments.
- B. Variable interest determined by a market reference rate.
- C. Interest as part of a single payment with the principal at maturity.

The correct answer is **C**.

Zero-coupon bonds do not make periodic interest payments, which are commonly known as coupon payments. Instead, they are mostly issued at a discount to par value and pay no interest until maturity. At maturity, the bondholder receives a single payment that includes both the principal and the accumulated interest. The difference between the purchase price of the bond and its par value at maturity represents the bondholder's earnings, which is why zero-coupon bonds are considered a type of deep-discount bond.

**A is incorrect.** This answer describes a fixed-coupon bond. A fixed-coupon bond pays a set amount of interest to investors at regular intervals, typically semi-annually or annually, until the bond's maturity date. The interest rate is determined when the bond is issued and remains the same throughout the life of the bond.

**B is incorrect.** This answer describes a floating-rate note (FRN), which is a bond that has a variable interest rate. The coupon rate of a floating-rate note is typically reset periodically, based on a reference interest rate or index such as LIBOR or the federal funds rate.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (a): Calculate a bond's price given a yield-to-maturity on or between coupon dates.**

---

Q.4420 Which of the following *best* describes a bond's yield-to-maturity (YTM)?

- A. The bond's annual coupon divided by its price.
- B. The yield obtained by plotting the bond's maturity against its coupon rate.
- C. The internal rate of return calculated using the bond's price and its expected cash flows to maturity.

The correct answer is **C**.

Yield-to-maturity (YTM) is the internal rate of return (IRR) for a bond, which includes all expected cash flows from the present until the bond's maturity date, discounted at the same rate that equates the present value of these cash flows to the bond's current market price. YTM is a comprehensive return measure because it includes not only the bond's coupon payments but also the gain or loss that occurs when the bond is redeemed at maturity, which may be at a premium or discount to its face value.

**A is incorrect.** The description given in choice A refers to the current yield of a bond, which is calculated by dividing the annual coupon payments by the bond's current market price. Unlike YTM, the current yield does not take into account the capital gain or loss that the investor will realize if the bond is held to maturity, nor does it account for the time value of money.

**B is incorrect.** The yield obtained by plotting the bond's maturity against its coupon rate on a graph is related to the construction of a yield curve, which shows the relationship between yields and maturities for a set of similar bonds at a point in time. The yield curve does not provide a specific yield-to-maturity for an individual bond.

**CFA Level I, Fixed Income, Learning Module 6: Fixed Income Bond Valuations: Prices and Yields. LOS (a): Calculate a bond's price given a yield-to-maturity on or between coupon dates.**

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## **Learning Module 7: Yield and Yield Spread Measures for Fixed Rate Bonds**

Q.862 Which of the following is *most likely* correct regarding true and street convention yield? The true yield is:

- A. Always equal to the street convention yield.
- B. Never less than the street convention yield.
- C. Never higher than the street convention yield.

The correct answer is **C**.

The true yield-to-maturity is calculated using the actual calendar of weekends and bank holidays, which delays the time to pay.

Whenever the payment day falls on a weekend or holiday; payment is pushed to the next business day after the holiday or weekend. As a result, the true yield is always lower than the street convention yield. However, the difference between the true and street convention yield is always very small, perhaps 0.01% or less.

**A is incorrect.** The true yield is not always equal to the street convention yield. It can be equal if the payment date does not fall on a weekend or holiday. The true yield will be lower than the street convention yield when the payment date falls on a weekend or a holiday.

**B is incorrect.** The street convention yield does not include weekends and holidays. It assumes that payments are made on scheduled dates.

Therefore, the street convention yield value can never be less than the true yield.

**CFA Level I, Fixed Income, Learning Module 7: Yield and Yield Spread Measures for Fixed-Rate Bonds, LOS (a): Calculate annual yield on a bond for varying compounding periods in a year.**

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Q.864 Which of the following analysis is *most likely* used for segregating the yield-to-maturity into 'benchmark' and 'spread'?

- A. The break-even analysis.
- B. The yield-to-maturity analysis.
- C. The fixed-income security analysis.

The correct answer is **B**.

Typically, the benchmark rate is the yield-to-maturity on a government bond having the same, or close to the same, time-to-maturity. The spread is the difference between the yield-to-maturity on the new bond and the benchmark rate.

**A is incorrect.** Break-even analysis tells you how many units of a product must be sold to cover the fixed and variable production costs.

**C is incorrect.** Fixed income analysis is the process of determining the value of debt security based on an assessment of its risk profile, e.g., interest rate risk, risk of the issuer fails to repay the debt, market supply and demand for the security, call provisions, and macroeconomic considerations affecting its value.

***CFA Level I, Fixed Income, Learning Module 7: Yield and Yield Spread Measures for Fixed-Rate Bonds, LOS (b): Compare, calculate, and interpret yield and yield spread measures for fixed-rate bonds.***

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Q.2053 A 4-year semiannual corporate bond with a 3.5% coupon is priced at 104.12. This bond's modified duration and convexity are 3.75 and 45, respectively. The bond's credit spread narrows by 75 bps due to credit upgrade. The estimated return impact without convexity adjustment is *closest to*:

- A. -2.81%.
- B. 2.81%.
- C. 2.95%.

The correct answer is **B**.

$$\begin{aligned}\% \Delta \text{Full price of a bond} &= (-\text{Annual Modified Duration} \times \Delta \text{Yield}) \\ &+ \left(\frac{1}{2} \times \text{Annual Convexity} \times (\Delta \text{Yield})^2\right)\end{aligned}$$

Return impact =  $-(\text{Modified duration}) \times \text{Change in spread} = -3.75 \times (-0.75\%) = 0.0281$  or 2.81%

Note: The bond's credit spread narrowed by 0.75%. Therefore, we have to include a negative sign before the credit spread.

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP)***

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Q.2501 For a 5-year, annual pay 7% bond that is priced at \$1,020.78, the YTM is *closest to*:

A. 3.25%.

B. 6.50%.

C. 6.70%.

The correct answer is **B**.

We can calculate the YTM (discount rate) that satisfies this equality as:

$N = 5$ ;  $PMT = 70$ ;  $FV = 1,000$ ;  $PV = -1,020.78$ ;  $CPT \Rightarrow I/Y = 6.5\%$

Note: To avoid getting "Error", do not leave out the minus sign before The PV value.

**A is incorrect.** It represents the semi-annual yield to maturity.

**C is incorrect.** It assumes 10 periods (assumes semi-annual payments):

$N = 10$ ;  $PMT = 70$ ;  $FV = 1,000$ ;  $PV = -1,020.78$ ;  $CPT \Rightarrow I/Y = 6.70\%$

***CFA Level I, Fixed Income, Learning Module 7: Yield and Yield Spread Measures for Fixed-Rate Bonds, LOS (b): Compare, calculate, and interpret yield and yield spread measures for fixed-rate bonds.***

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Q.2510 Consider a semi-annual-pay bond (periodicity of two) with an 8% YTM. The effective yield of this bond is *closest to*:

- A. 4.00%
- B. 8.16%
- C. 16.64%

The correct answer is **B**.

Effective yield is the yearly rate of return at a periodic rate of interest.

$$\text{Effective Yield} = \left(1 + \frac{i}{n}\right)^n - 1$$

Where  $i$  is the stated interest rate and  $n$  is the number of payments received in a year. A semiannual-pay bond (periodicity of two) with an 8% YTM has a yield of 4% every six months and an effective yield of  $1.04^2 - 1 = 8.16\%$

**A is incorrect.** It leaves out the power of 2;

$$\text{EY} = \left[1 + \frac{0.08}{2}\right] - 1 = 0.04 \text{ or } 4.00\%$$

**C is incorrect.** It assumes the following calculation;

$$\text{EY} = [1 + 0.08]^2 - 1 = 0.1664 \text{ or } 16.64\%$$

**CFA Level I, Fixed Income, Learning Module 7: Yield and Yield Spread Measures for Fixed-Rate Bonds, LOS (b): Compare, calculate, and interpret yield and yield spread measures for fixed-rate bonds.**

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Q.2511 Bond yields calculated using the stated coupon payment dates are referred to as:

- A. True yields.
- B. Effective yields.
- C. Street conventional yields.

The correct answer is **C**.

Bond yields calculated using the stated coupon payment dates are referred to as following the street convention. Because some coupon dates will fall on weekends and holidays, coupon payments will actually be made the next business day. The yield calculated using these actual coupon payment dates is referred to as the true yield. Effective yield is the return on a bond whose interests or coupon payments are reinvested at the same rate by the bondholder.

**A is incorrect.** The true yield-to-maturity is the internal rate of return on the cash flows using the actual calendar of weekends and bank holidays. The true yield is never higher than the street convention yield because weekends and holidays delay the time to pay.

**B is incorrect.** The effective yield is the return on a bond with interest payments (or coupons) reinvested at the same rate by the bondholder. Effective yield is the total yield an investor receives.

***CFA Level I, Fixed Income, Learning Module 7: Yield and Yield Spread Measures for Fixed-Rate Bonds, LOS (b): Compare, calculate, and interpret yield and yield spread measures for fixed-rate bonds.***

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Q.2512 A major drawback of the current yield is that:

- A. It considers only one source of return.
- B. It does not consider the time an investor has held an investment.
- C. It might not accurately represent an investment's true risk premium.

The correct answer is **A**.

The current yield is simple to calculate but offers limited information. This measure looks at just one source of return: a bond's annual interest income. It does not consider capital gains/losses or reinvestment income.

**B is incorrect.** It represents a limitation of holding period return.

**C is incorrect.** It represents a limitation of NPV.

**CFA Level I, Fixed Income, Learning Module 7: Yield and Yield Spread Measures for Fixed-Rate Bonds, LOS (b): Compare, calculate, and interpret yield and yield spread measures for fixed-rate bonds.**

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Q.2513 Is the following statement correct?

"A bond's true yield takes a discount or premium into account by assuming that any discount or premium declines evenly over the remaining years to maturity."

- A. Correct.
- B. Incorrect, because a bond's simple yield takes a discount or premium into account by assuming that any discount or premium declines evenly over the remaining years to maturity.
- C. Incorrect, because a bond's true yield takes a discount or premium into account by assuming that any discount or premium declines proportionately over the remaining years to maturity.

The correct answer is **B**.

A bond's simple yield takes a discount or premium into account by assuming that any discount or premium declines evenly over the remaining years to maturity.

**CFA Level I, Fixed Income, Learning Module 7: Yield and Yield Spread Measures for Fixed-Rate Bonds, LOS (b): Compare, calculate, and interpret yield and yield spread measures for fixed-rate bonds.**

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Q.2521 If we calculate an Option-Adjusted Spread (OAS) for a callable bond:

- A. It will be equal to the bond's Z-spread.
- B. It will be higher than the bond's Z-spread.
- C. It will be lower than the bond's Z-spread.

The correct answer is **C**.

If we calculate an OAS for a callable bond, it will be lower than the bond's Z-spread. The difference is the extra yield required to compensate bondholders for the call option. (Callable bonds have a higher yield because investors need extra compensation for reinvestment risk as the bonds can be called back by the issuer if interest rates fall.)

**A is incorrect.** The Z spread cannot be equal to the OAS for a callable bond as the formula for calculating OAS requires the deduction of Option value (in basis points per year) from the Z spread.

**B is incorrect.** From the formula,  $OAS = Z\text{-spread} - \text{Option value (in basis points per year)}$ , the OAS cannot be higher than the Z spread.

***CFA Level I, Fixed Income, Learning Module 7: Yield and Yield Spread Measures for Fixed-Rate Bonds, LOS (b): Compare, calculate, and interpret yield and yield spread measures for fixed-rate bonds.***

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Q.2524 A 5-year corporate bond has a yield of 6.75% and its benchmark, the 5-year Treasury note, has a yield of 3.25%. Calculate the corporate bond's benchmark spread.

- A. 325 bps
- B. 350 bps
- C. 1000 bps

The correct answer is **B**.

If a 5-year corporate bond has a yield of 6.75% and its benchmark, the 5-year Treasury note, has a yield of 3.25%, the corporate bond has a benchmark spread of  $6.75\% - 3.25\% = 3.5\% = 350$  basis points (1 basis point =  $1/10,000$  or 0.01%)

**Note:** A benchmark spread is simply the yield difference between two bonds.

**A is incorrect.** It assumes that the Treasury note yield of 3.25% ( =325 bps) is equal to the benchmark spread.

**C is incorrect.** It calculates the benchmark spread as  $6.75\% + 3.25\% = 10\%$  ( =1000bps).

**CFA Level I, Fixed Income, Learning Module 7: Yield and Yield Spread Measures for Fixed-Rate Bonds, LOS (b): Compare, calculate, and interpret yield and yield spread measures for fixed-rate bonds.**

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Q.2526 An alternative to using government bond yields as benchmarks is to use rates for interest rate swaps in the same currency and with the same tenor as a bond. Yield spreads so obtained are called:

- A. G-spreads.
- B. I-spreads.
- C. Z-spreads.

The correct answer is **B**.

An alternative to using government bond yields as benchmarks is to use rates for interest rate swaps in the same currency and with the same tenor as a bond. Yield spreads relative to swap rates are known as interpolated spreads or I-spreads.

**A is incorrect.** G-spread is the yield difference between a corporate bond and a government bond, for example, a treasury bond.

**C is incorrect.** Z-Spread is a constant yield spread that, when added to yield at each point on the spot rate Treasury curve, makes the price of a bond equal to the present value of its cashflows.

***CFA Level I, Fixed Income, Learning Module 7: Yield and Yield Spread Measures for Fixed-Rate Bonds, LOS (b): Compare, calculate, and interpret yield and yield spread measures for fixed-rate bonds.***

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Q.3883 Which of the following would *most likely* be an example of the I-spread (interpolated spread)?

- A. The difference between the yield on a bond and the LIBOR.
- B. The difference between the yield on a Treasury bond and the yield on a corporate bond of the same maturity.
- C. The constant spread that makes the price of a security equal to the present value of its cash flows when added to the yield at each point on the spot rate Treasury curve.

The correct answer is **A**.

The I-spread stands for interpolated spread. It represents the difference between the yield on a bond and the swap rate (the interest rate applicable to the fixed leg in the floating-for-fixed interest rate swap, say, LIBOR). A higher I-spread means that a bond has higher credit risk.

**B is incorrect.** The difference between the yield on Treasury Bonds and the yield on corporate bonds of same maturity is the G-spread (Government-spread).

**C is incorrect.** The constant spread that makes the price of a security equal to the present value of its cash flows when added to the yield at each point on the spot rate Treasury curve is the Zero-volatility spread (Z-spread).

**CFA Level I, Fixed Income, Learning Module 7: Yield and Yield Spread Measures for Fixed-Rate Bonds, LOS (b): Compare, calculate, and interpret yield and yield spread measures for fixed-rate bonds.**

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Q.3885 A four-year, 6% semi-annual coupon payment corporate bond is priced at 110 per 100 of par value. Its yield to maturity is 7.87%, quoted on a semi-annual basis. The annual rate of the bond that can be used for direct comparison with otherwise comparable bonds that make quarterly coupon payments is *closest to*:

A. 6.00%.

B. 7.79%.

C. 7.87%.

The correct answer is **B**.

$$\begin{aligned} \left(1 + \left(\frac{0.0787}{2}\right)\right)^2 &= \left(1 + \frac{\text{APR}_4}{4}\right)^4 \\ \text{APR}_4 &= [(1.0802)^{\frac{1}{4}} - 1] \times 4 \\ &= 7.794\% \end{aligned}$$

**A is incorrect.** It assumes the semi-annual coupon payment rate as the annual rate of the bond.

**C is incorrect.** It assumes the YTM as the annual rate of the bond.

**CFA Level I, Fixed Income, Learning Module 7: Yield and Yield Spread Measures for Fixed-Rate Bonds, LOS (a): Calculate annual yield on a bond for varying compounding periods in a year.**

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## **Learning Module 8: Yield and Yield Spread Measures for Floating Rate Instruments**

Q.204 A Treasury Bill (T-Bill) with a par value of USD 1,000,000 and 200 days until maturity is selling for USD 990,000. Its bank discount yield is *closest to*:

A. 0.54%

B. 1.80%

C. 1.82%.

The correct answer is **B**.

The following formula determines the bank discount yield;

$$PV = FV \times \left[ 1 - \frac{\text{Days}}{\text{Year}} \times DY \right]$$

Where; PV = Current selling price of the T-Bill. FV = Par value of the T-Bill. DY = Discount yield. Therefore;

$$990,000 = 1,000,000 \times \left[ 1 - \frac{200}{360} \times DY \right] \Rightarrow DY = 1.8\%$$

**A is incorrect.** Divides the number of days with days to maturity as follows:

$$1,000,000 \times \left[ 1 - \frac{360}{200} \times DY \right] = 990,000 \Rightarrow DY = 0.54\%$$

**C is incorrect.** It assumes a 365-day year:

$$990,000 = 1,000,000 \times \left[ 1 - \frac{200}{365} \times DY \right] \Rightarrow DY = 1.82\%$$

**CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (a): Calculate and interpret yield spread measures for floating-rate instruments.**

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Q.207 A Treasury bill with a face value of \$10,000 and 150 days until maturity is selling for \$9,650. The T-bill's money market yield is *closest to*;

A. 8.40%

B. 8.65%

C. 8.70%

The correct answer is **A**.

The money market yield is calculated as:

$$DR = \frac{\text{Year}}{\text{Days}} \times \left( \frac{\text{FV}-\text{PV}}{\text{FV}} \right) = \frac{360}{150} \times \left( \frac{10,000-9650}{10,000} \right) = 8.40\%$$

**B is incorrect.** It assumes the 365-day year.

**C is incorrect.** It calculates the add-on rate instead of discount rate.

***CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.***

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Q.212 A \$10,000 par value T-Bill is selling for \$9,850. There are 150 days until maturity. The bank discount yield is *closest to*:

A. 3.60%

B. 3.56%

C. 3.65%

The correct answer is **A**.

$$PV = FV \times \left[ 1 - \frac{\text{Days}}{\text{Year}} \times DY \right]$$

So that:

$$9,850 = 10,000 \times \left[ 1 - \frac{150}{360} \times DY \right] \Rightarrow DY = 3.60\%$$

**B is incorrect.** It assumes annual compounding:

$$10000[1 - DY]^{\frac{150}{360}} = 9850 \Rightarrow DY = 3.56\%$$

**C is incorrect.** Assumes 365-day year:

$$9,850 = 10,000 \times \left[ 1 - \frac{150}{365} \times DY \right] \Rightarrow DY = 3.65\%$$

**CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.**

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Q.853 The redemption yield is the rate of return based on certain assumptions. Which of the following is *least likely* an assumption for calculating the redemption yield?

- A. The investor holds the bond to maturity.
- B. The investor is able to reinvest coupon payments at a different yield.
- C. The issuer makes all of the coupon and principal payments in full on scheduled dates.

The correct answer is **B**.

Reinvestment of coupon payments at the exact yield is a characteristic of the internal rate of return. Hence, it is the least likely option.

**A is incorrect.** Bond maturity is critical in the calculation of the present value given a discount rate.

**C is incorrect.** The bond issuer always makes all of the coupon and principal payments in full and on scheduled dates.

**CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.**

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Q.863 A frequently used benchmark for floating-rate notes is the:

- A. LIBOR.
- B. I-spread.
- C. G-spread.

The correct answer is **A**.

The reason for its most frequent use is its nature (i.e., a composite interbank rate). Also, it is not a risk-free rate.

**B is incorrect.** I-spread is the difference between the yield on a bond and the swap rate.

**C is incorrect.** G-spread is the difference between the yield on treasury and corporate bonds of the same maturity.

**CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.**

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Q.2515 Which type of debt instrument typically has a more stable market value?

- A. Fixed-rate debt instruments.
- B. Floating-rate debt instruments.
- C. Both fixed-rate debt and floating-rate debt instruments.

The correct answer is **B**.

Fixed-rate debt values are more volatile compared to those of floating-rate notes of similar maturities. Fixed-rate debts are sensitive to interest rate changes, leading to fluctuations in their market value. On the other hand, floating-rate notes adjust their coupon payments with the reference rate, making their values more stable.

**A is incorrect.** Fixed-rate debts are sensitive to interest rate changes, leading to fluctuations in their market value.

**C is incorrect.** Both fixed-rate and floating-rate debt instruments do not have equally stable values. Floating-rate debt instruments are more stable because their coupon payments adjust with interest rate changes.

***CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS 8a: Calculate and interpret yield spread measures for floating-rate instruments.***

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Q.2516 If the discount margin is greater than the quoted margin, the floating rate note (FRN) will trade at:

- A. Par.
- B. A premium.
- C. A discount.

The correct answer is **C**.

If the discount margin is greater than the quoted margin, the FRN will trade at a discount.

**A is incorrect.** The FRN will trade at par if the discount margin equals the quoted margin.

**B is incorrect.** The FRN will trade at a premium if the discount margin is less than the quoted margin.

***CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (a): Calculate and interpret yield spread measures for floating-rate instruments.***

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Q.2517 A \$1,000 90-day T-bill is priced with an annualized discount of 1.2%. The annualized add-on yield based on a 365-day year is *closest to*:

- A. 1.22%
- B. 1.25%
- C. 1.50%

The correct answer is **A**.

We will first determine the current price of the treasury bill (PV).

$$PV = FV \times \left(1 - \frac{\text{Days}}{\text{Year}} \times \text{DR}\right)$$

Where

PV- Principal Amount (The price of the treasury bill).

FV = Face value of the treasury bond at maturity.

DR = Discount Rate.

Days = number of days between the settlement and maturity periods.

Year = number of days in a year.

$$PV = 1,000 \times \left(1 - \frac{90}{360} \times 0.012\right) = 997$$

Then we determine the AOR using the AOR formula. Note that we've been asked to use a 365-day year.

$$\text{AOR} = \frac{FV - PV}{PV} \times \frac{\text{Year}}{\text{Days}} = \frac{1,000 - 997}{997} \times \frac{365}{90} = 0.012203 \text{ or } 1.2203\%$$

***CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (a): Calculate and interpret yield spread measures for floating-rate instruments.***

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Q.2518 If a \$1 million negotiable Certificate of Deposit (CD) with 120 days to maturity is quoted with an add-on yield of 1.4% based on a 365-day year, then the payment at maturity for this CD is *closest to*:

A. \$1,004,500

B. \$1,004,603

C. \$1,001,400

The correct answer is **B**.

We need to calculate the FV using the add-on-rate formulae.

$$PV = \frac{FV}{\left(1 + \frac{\text{Days}}{\text{Year}} \times \text{AOR}\right)}$$

Therefore,

$$FV = PV \times \left(1 + \frac{\text{Days}}{\text{Year}} \times \text{AOR}\right) = 1,000,000 \times \left(1 + \frac{120}{365} \times 0.014\right) = 1,004,602.74 \approx 1,004,603$$

**A and C are incorrect.** The correct answer is \$ 1,004,603 as shown in the calculation above.

***CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (a): Calculate and interpret yield spread measures for floating-rate instruments.***

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Q.2677 A USD 1,000 face value T-bill is paying a Bank Discount Yield of 2.6%. The amount of the discount if the bill is maturing in 180 days is *closest to*:

- A. USD 13
- B. USD 26
- C. USD 52

The correct answer is **A**.

The bank discount yield is calculated as follows;

$$\text{BDY} = \frac{\text{Discount}}{\text{Face value}} \times \frac{360}{\text{Time to maturity}}$$

Therefore;

$$\text{Discount} = \frac{\text{BDY} \times \text{Face value} \times \text{Time to maturity}}{360} = \frac{0.026 \times 1,000 \times 180}{360} = \$13$$

**B is incorrect.** It assumes the following calculation;

$$\text{Discount} = \frac{2.6}{100} \times 1,000 = \$26$$

**C is incorrect.** It assumes the following calculations;

$$\text{Discount} = \$26 \times \frac{360}{180} = \$52$$

***CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (a): Calculate and interpret yield spread measures for floating-rate instruments.***

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Q.2679 Which of the following return measures ignore(s) the effect of compound interest in calculating the yield to maturity?

- I. Money Market Yield
- II. Bank Discount Yield
- III. Bond Equivalent Yield

- A. I only

B. I & II only

C. I, II & III

The correct answer is **C**.

The Bank Discount Yield (BDY), the Bond Equivalent Yield (BEY), and the Money Market Yield (MMY) all ignore the compounding effect,  $(1 + i)^n$  where  $i$  is the interest rate and  $n$  the time, in the calculation of the YTM. For example, if the semiannual YTM is 3.75%, the bond equivalent yield is simply  $3.75\% \times 2 = 7.5\%$ .

Note: Formula for:

$$\text{Money Market Yield} = \text{HPY} \times \frac{360}{t}$$

, where HPY is the Holding Period Yield and  $t$  the time to maturity. HPY is obtained using the formulae

$$\text{HPY} = \frac{P_1 - P_0 + D_1}{P_0}$$

, where  $P_0$  is the beginning price,  $P_1$  the ending price and  $D_1$  the cash distributions.

$$\text{Bank Discount Yield} = r_{\text{BD}} = \frac{D}{F} \times \frac{360}{t}$$

, where  $D$  is the discount,  $F$  is the face value and  $t$  the time to maturity.

$$\text{Bond Equivalent Yield} = \frac{F - P}{P} \times \frac{365}{t}$$

, where  $F$  is the face value,  $P$  the purchase price and  $t$  the time to maturity of the bonds.

Bond equivalent yield, when given a semi-annual yield is simply  $2 \times \text{Semi annual Yield}$

***CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.***

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Q.3416 A \$100 face-value T-Bill is currently trading for \$95.78. If the residual maturity of the T-Bill is 90 days, then its bank discount yield is *closest* to:

- A. 4.22%.
- B. 4.41%.
- C. 16.88%.

The correct answer is **C**.

$$\begin{aligned}\text{Bank Discount Yield (BDY)} &= \frac{(\text{Face value} - \text{Price})}{\text{Face value}} \times \frac{360}{\text{Days to maturity}} \\ &= \frac{(100 - 95.78)}{100} \times \frac{360}{90} = 0.1688 \text{ or } 16.88\%\end{aligned}$$

**A is incorrect.** It assumes the following calculation for BDY;

$$\text{BDY} = \frac{(100 - 95.78)}{100} \times 100\% = 4.22\%$$

**B is incorrect.** It assumes the following calculation for BDY;

$$\text{BDY} = \frac{(100 - 95.78)}{95.78} \times 100\% = 4.406\%$$

**CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.**

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Q.3417 A T-Bill is currently trading at a price of \$98.30 and has a residual maturity of 70 days. Assuming a face value of \$100, and 365-day year, the effective annual yield is *closest* to:

A. 1.73%

B. 8.74%.

C. 9.35%.

The correct answer is **C**.

We need to calculate holding period yield:

$$\text{HPY} = \frac{(100 - 98.30)}{98.30} = 1.729\%$$

So that,

$$\text{Effective Annual Yield (EAY)} = (1 + \text{HPY})^{\frac{365}{t}} - 1 = (1 + 0.01729)^{\frac{365}{70}} - 1 = 0.0935 \text{ or } 9.350\%$$

**A is incorrect.** It relates to the value of HPY as calculated above.

**B is incorrect.** The figure relates to the value of Bank Discount Yield as calculated below;

$$\text{Bank Discount Yield (BDY)} = \frac{(\text{Face value} - \text{Price})}{\text{Face value}} \times \frac{360}{t} = \frac{(100 - 98.30)}{100} \times \frac{360}{70} = 0.08743 \text{ or } 8.743\%$$

**CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.**

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Q.3418 A T-Bill is currently trading at \$97.35 and has a residual maturity of 70 days. Assuming a face value of \$100, the money market yield for this T-Bill is *closest* to:

- A. 2.72%
- B. 13.63%.
- C. 14%.

The correct answer is **C**.

Money market instruments are instruments that have a maturity of less than 1 year. Therefore, the return must be translated into 360 days since money market instruments have a year that is considered to be 360 days.

1. First, calculate the holding period yield:

$$\text{HPY} = \frac{(100 - 97.35)}{(97.35)} = 2.72\%$$

2. Then, translate the yield into a money market yield:

$$\text{MMY} = \frac{360}{70} \times 2.72 = 14\%$$

**A is incorrect.** It relates to the HPY rate as calculated above.

**B is incorrect.** It relates to the value of the Bank Discount Yield as follows;

$$\text{BDY} = \frac{(100 - 97.35)}{100} \times \frac{360}{70} = 0.13629 \text{ or } 13.629\%$$

**CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.**

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Q.3419 For a 360-day year, the bond equivalent yield of a 120-day banker's acceptance quoted at a discount rate of 3.75% is *closest* to:

- A. 1.266
- B. 3.75%
- C. 3.85%

The correct answer is **C**.

We need first to find the present value of the banker's acceptance calculated as:

$$PV = FV \times (1 - \frac{\text{Days}}{\text{Year}} \times \text{DR})$$

Where

PV = present value or price of the money market instrument

FV = future value paid at maturity, or face value of the money market instrument

Days = number of days between settlement and maturity

Year = number of days in the year

DR = discount rate stated as an annual percentage rate

Thus, in this case we have:

$$PV = 100 \times (1 - \frac{120}{360} \times 0.0375) = 98.75$$

The bond equivalent rate is also called the add-on rate (AOR) which is given by (all variables are as defined above):

$$(\frac{365}{120} \times) (\frac{100 - PV}{PV}) = (\frac{365}{120} \times) (\frac{100 - 98.75}{98.75}) = 0.03850 \approx 3.85\%$$

**Note:** We are using a 360-day year for the PV and a 365-day year for the AOR.

**A is incorrect.** It indicates the HPY as follows;

$$\text{HPY} = \frac{(100 - 98.75)}{98.75} = 1.266\%$$

**B is incorrect.** It indicates the BDY as follows;

$$\text{BDY} = \frac{(100 - 98.75)}{100} \times \frac{360}{120} = 3.75\%$$

**CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.**

Q.3420 The money market yield of a T-Bill with a residual maturity of 90 days is 9.80%. Assuming a face value of \$100, the price of the T-Bill is *closest* to:

- A. \$96.61.
- B. \$98.61.
- C. \$97.61.

The correct answer is **C**.

$$\text{Money market yield} = \text{HPY} \times \left( \frac{360}{\text{Days to maturity}} \right)$$

where;

$$\begin{aligned} \text{HPY} &= \text{MMY} \times \frac{t}{360} = 9.8 \\ \Rightarrow \text{HPY} &= \frac{\text{Discount}}{\text{Price}} = \frac{\text{FV}}{\text{Price}} - 1 \end{aligned}$$

Making the price the subject:

$$\text{Price} = \frac{\text{FV}}{1 + \text{HPY}} = \frac{100}{1 + 0.0245} = \$97.609$$

**A and B are incorrect.** The correct answer is \$97.61 as calculated above.

***CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.***

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Q.3421 The bank discount yield of a T-Bill with a residual maturity of 110 days is equal to 2.30%. Assuming a face value of \$100, the price of the T-Bill is *closest* to:

A. \$98.30.

B. \$99.30.

C. \$97.30.

The correct answer is **B**.

$$\begin{aligned}\text{Bank Discount Yield} &= \frac{\text{Discount}}{\text{FV}} \times \frac{360}{t} \\ &= \text{Discount} = \text{BDY} \times \frac{t}{360} \times \text{FV} = 2.30\% \times \frac{110}{360} \times 100 = 0.70 \\ \therefore \text{Price} &= \text{FV} - \text{Discount} = 100 - 0.70 = \$99.30\end{aligned}$$

**A and C are incorrect.** The correct answer is \$99.30 as calculated above.

***CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.***

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Q.3422 A T-Bill with a residual maturity of 100 days has an effective annual yield of 4.45%. Assuming a face value of \$100, the price of the T-Bill is *closest* to:

A. \$98.81.

B. \$100.

C. \$97.81.

The correct answer is **A**.

$$\text{Effective Annual Yield} = (1 + \text{HPY})^{\frac{365}{t}} - 1$$

Where

$$\text{HPY} = (1 + 4.45\%)^{\frac{100}{365}} - 1 = 1.20\%$$

So that:

$$\text{Price} = \frac{\text{FV}}{1 + \text{HPY}} = \frac{100}{1 + 0.012} = \$98.814$$

**B is incorrect.** This is the future value.

**C is incorrect.** The correct answer is \$98.814 as shown in the calculation above.

***CFA Level I, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.***

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Q.3423 If a bond with a residual maturity of 4 months has a holding period return of 2.60%, then the semiannual bond equivalent yield is *closest* to:

A. 7.99%.

B. 7.85%.

C. 8.00%.

The correct answer is **B**.

The bond equivalent yield is twice the semi-annual discount rate. The HPY is indicated for 4 months. The best method to solve this problem is converting the HPY into an annual rate:

Since 4 months \* 3 = 12 months,

$$1 + \text{Annual rate} = (1 + \text{HPY})^3$$

$$\text{Annual rate} = (1 + 2.60\%)^3 - 1 = 8.00\%$$

Once we have the annual rate, we must convert the rate into a semi-annual rate.

$$1 + \text{Annual rate} = (1 + \text{Semi-annual rate})^2$$

$$\text{Semi-annual rate} = (1 + \text{Annual rate})^{0.5} - 1$$

$$= (1 + 8\%)^{0.5} - 1 = 3.92\%$$

$$\text{Bond equivalent yield} = 2 * 3.92\% = 7.85\%$$

**A and C are incorrect.** 8.00% is the annual rate.

***CFA Level 1, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.***

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Q.3424 If a bond with a residual maturity of 3 months has a bond equivalent yield of 9.20%, then the holding period yield of the bond is *closest* to:

A. 9.41%.

B. 2.0%.

C. 2.3%.

The correct answer is **C**.

Step I - Find the semi-annual yield:

$$\text{Semi-annual yield} = \text{BEY}/2 = 9.20\%/2 = 4.60\%$$

Step II - Compute the annual yield from the semi-annual yield:

$$\text{Annual yield} = (1 + \text{Semi-annual yield})^2 - 1$$

$$= (1 + 4.60\%)^2 - 1 = 9.41\%$$

Step III - Compute the holding period yield:

$$1 + \text{Annual yield} = (1 + \text{HPY})^{(12/\text{Residual maturity})}$$

$$1 + 9.41\% = (1 + \text{HPY})^{(12/3)}$$

$$1 + \text{HPY} = (1 + 9.41\%)^{(3/12)}$$

$$1 + \text{HPY} = 1.023$$

$$\text{HPY} = 1.023 - 1 = 0.023 = 2.3\%$$

**A and B are incorrect.** The correct answer is 2.3% as calculated above.

***CFA Level 1, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.***

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Q.3745 A US pension fund pays a 180-day banker's acceptance (BA) with a quoted add-on rate of 5% for a 365-day year. The BA has an initial principal of \$ 100 million. The redemption value of the BA is *closest* to:

A. \$102.47 million.

B. \$102.50 million.

C. \$106.75 million.

The correct answer is **A**.

The pricing formula for the money market instruments quoted on add-on rates is given by:

$$PV = \frac{FV}{\left(1 + \frac{\text{Days}}{\text{Year}} \times \text{AOR}\right)}$$

Where

PV = Principal amount (the price of the money mar)

FV = redemption value of the money market instrument at maturity (including the interest)

Days = number the days between the settlement and maturity periods

Year = number of days in a year

AOR = add-on rate (usually stated as an annual percentage rate)

So in our case,

$$\begin{aligned} \$100 \text{ million} &= \frac{FV}{\left(1 + \frac{180}{365} \times 0.05\right)} \\ &\Rightarrow FV = \$100 \times 1.024658 = \$102.47 \text{ million} \end{aligned}$$

***CFA Level 1, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.***

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Q.3746 A Canadian pension fund pays a 120-day banker's acceptance (BA) with a quoted add-on rate of 4.5% for a 365-day year. The BA has a redemption value of CAD 10.68 million and is priced at CAD 10.4 million. The applicable add-on rate is *closest* to:

A. 8.08%.

B. 8.19%.

C. 7.05%.

The correct answer is **B**.

The add-on rate can be calculated as:

$$\text{AOR} = \left( \frac{\text{Year}}{\text{Days}} \right) \times \left( \frac{\text{FV}-\text{PV}}{\text{PV}} \right)$$

PV = principal amount (the price of the money mar)

FV = redemption value of the money market instrument at maturity (including the interest)

Days = number the days between the settlement and maturity periods

Year = number of days in a year

AOR = add-on rate (usually stated as an annual percentage rate)

So in our case,

$$\text{AOR} = \left( \frac{365}{120} \right) \times \left( \frac{10.68 - 10.4}{10.4} \right) = 8.19\%$$

**A and C are incorrect.** The correct answer is 8.19% as shown in the calculation above.

***CFA Level 1, Fixed Income, Learning Module 8: Yield and Yield Spread Measures for Floating-Rate Instruments, LOS (b): Calculate and interpret yield measures for money market instruments.***

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## **Learning Module 9: The Term Structure of Interest Rates: Spot, Par and Forward Curves**

Q.856 A 3-year bond offers a 7% coupon rate with interests paid annually. Assuming the following sequence of spot rates, the price of the bond is *closest to*:

Time to Maturity (Years)	Spot Rate (%)
1	4
2	5
3	5.5

A. 98.24

B. 104.05

C. 104.20

The correct answer is **C**.

The price of the bond is calculated using the general formula for calculating a bond price given the sequence of spot rates as follows;

$$PV = \frac{PMT}{(1 + Z_1)^1} + \frac{PMT}{(1 + Z_2)^2} + \frac{PMT + FV}{(1 + Z_3)^3}$$

$$\Rightarrow \text{price} = \frac{7}{(1 + 0.04)^1} + \frac{7}{(1 + 0.05)^2} + \frac{107}{(1 + 0.055)^3} = 104.20$$

Tip: In an exam situation; this calculation can be easily done as one calculation by using brackets at each step.

$$(7/(1.04^1)) + (7/(1.05^2)) + (107/(1.055^3)) = 104.20$$

**A is incorrect.** It excludes the coupon payment in the last year:

$$PV = \frac{7}{1.04^1} + \frac{7}{1.05^2} + \frac{100}{1.055^3} = 98.24$$

**B is incorrect.** It uses the three-year spot rate only.

$$\text{price} = \frac{7}{(1 + 0.055)^1} + \frac{7}{(1 + 0.055)^2} + \frac{107}{(1 + 0.055)^3} = 104.05$$

**CFA Level I, Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS (a): Define spot rates and the spot curve, and calculate the price of a bond using spot rates.**

Q.2505 An analyst has gathered the following estimated series of spot rates for a developing country:

Period (Years)	Spot rate (%)
0.5	2
1	3
1.5	3.55
2	4
2.5	4.5
3	5
3.5	5.45

Given that the information is accurate, the value of a 3-year, 5% annual coupon paying bond with a face value of \$1,000 is *closest to*:

- A. \$907.03
- B. \$1,001.80
- C. \$1,041.82.

The correct answer is **B**.

The valuation of a bond involves discounting its future cash flows (coupon payments and the face value at maturity) back to the present using the appropriate spot rates for each period. In this case, the bond pays a 5% annual coupon on a face value of \$1,000 for 3 years. Therefore, the bond will pay \$50 (5% of \$1,000) annually. The present value (PV) of these cash flows can be calculated using the given spot rates for each period as follows:

$$PV = \frac{50}{1.03^1} + \frac{50}{1.04^2} + \frac{1,050}{1.05^3} = 48.54 + 46.23 + 907.03 = \$1,001.80$$

**A is incorrect.** It only considers the present value of the bond's final payment (the face value plus the final coupon payment), which is \$907.03. This calculation neglects the present value of the coupon payments received in the first and second years, which are crucial components of the bond's total present value.

$$PV = \frac{1,050}{1.05^3} = \$907.03$$

**C is incorrect.** It misapplies the spot rates, suggesting a calculation method that does not correspond to the correct application of spot rates for a bond's cash flows.

$$PV = \frac{50}{1.02^1} + \frac{50}{1.03^2} + \frac{1,050}{1.0355^3} = 49.02 + 47.13 + 945.67 = \$1,041.82$$

***CFA Level I, Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS (a): Define spot rates and the spot curve, and calculate the price of a bond using spot rates.***

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Q.2525 If the current 1-year spot rate is 3%, the 1-year forward rate one year from today ( $f_{1,1}$ ) is 4%, the 1-year forward rate two years from today ( $f_{2,1}$ ) is 5%, then the 3-year spot rate is *closest to*:

- A. 3.997%.
- B. 12%.
- C. 12.5%.

The correct answer is **A**.

To calculate the 3-year spot rate, we need to understand how spot rates and forward rates interact within the context of the yield curve. Spot rates represent the yield of a zero-coupon bond (a bond that does not pay interest but is sold at a discount to its face value), while forward rates represent the expected future interest rates between specific periods. The relationship between spot rates and forward rates can be used to derive the yield for a specific period in the future. In this case, we are given the current 1-year spot rate, the 1-year forward rate one year from today, and the 1-year forward rate two years from today. Using these rates, we can calculate the 3-year spot rate using the formula for the geometric mean of the spot and forward rates:

$$\text{3-year spot rate} = \sqrt[3]{(1 + \text{1-year spot rate}) \times (1 + f_{1,1}) \times (1 + f_{2,1})} - 1$$

Substituting the given values:

$$\text{3-year spot rate} = \sqrt[3]{1.03 \times 1.04 \times 1.05} - 1 = 0.03397 \text{ or } 3.997\%$$

**B is incorrect.** It suggests a simple sum of the rates, which is not how spot rates are calculated. Spot and forward rates must be compounded, not summed, to reflect the time value of money accurately.

**C is incorrect.** It misinterprets the calculation method for the 3-year spot rate and results from the following calculation;

$$[1.03 \times 1.04 \times 1.05] - 1 = 0.125 \text{ or } 12.5\%$$

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**CFA Level I, Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS (a): Define par and forward rates, and calculate par rates, forward rates from spot rates, spot rates from forward rates, and the price of a bond using forward rates**

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Q.4754 The U.S. Treasury is evaluating issuing a new six-year bond with annual coupon payments. To estimate the pricing implications, you need to calculate the implied one-year forward rate starting in five years. Given the following annual spot rates:

- 5-year spot rate: 2.8%
- 6-year spot rate: 3.0%

The implied one-year forward rate starting in five years is *closest to*:

- A. 4.01%
- B. 5.00%
- C. 3.24%

The correct answer is **A**.

Using the formula for forward rates:

$$((1 + Z_A)^A \times (1 + \text{IFR}_{A,B-A})^{B-A} = (1 + Z_B)^B$$

Where:

- $Z_A = 2.8\%$  (5-year spot rate)
- $Z_B = 3.0\%$  (6-year spot rate)
- $\text{IFR}_{5,1}$  = implied one-year forward rate from year 5 to year 6

Therefore,

$$\begin{aligned} (1.028)^5 \times (1 + \text{IFR}_{5,1})^1 &= (1 + 0.030)^6 \\ \text{IFR}_{5,1} &= \frac{(1 + 0.030)^6}{(1 + 0.028)^5} - 1 \\ &= 0.04006 \approx 4.01\% \end{aligned}$$

**CFA Level I, Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS 7b: Define par and forward rates, and calculate par rates, forward rates from spot rates, spot rates from forward rates, and the price of a bond using forward rates.**

Q.4755 An analyst is examining the yield curve of default-risk-free zero-coupon bonds. She refers to a graphical representation, which plots the yield-to-maturity against various maturities. This curve is *most likely* known as the:

- A. spot curve.
- B. forward curve.
- C. par curve.

The correct answer is **A**.

The spot curve, or 'zero' curve, or 'strip' curve plots the yield-to-maturity of default-risk-free zero-coupon bonds against their maturities is commonly. It represents the pure yield of bonds that pay no intermediate coupons and are thus a fundamental tool for determining the time value of money for various terms.

**B is incorrect.** The forward curve represents anticipated future interest rates between different time periods, derived from current spot rates, but does not directly show yields of zero-coupon bonds.

**C is incorrect.** The par curve shows the coupon rates of bonds priced at par across different maturities. Unlike the spot curve, it reflects the yields of coupon-bearing bonds that would make them trade at their face value.

**CFA Level I, Topic 7-Fixed Income , Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS (a): Define spot rates and the spot curve, and calculate the price of a bond using spot rates.**

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Q.4756 Pius is reviewing the current economic conditions and notices that the yield curve of fixed income securities is becoming less steep, with yields on long-term bonds approaching those on short-term bonds. Which of the following is *most likely* the reason for this change in the yield curve?

- A. Market participants anticipate an increase in inflation rates.
- B. Market participants expect a decrease in inflation.
- C. Market participants forecast a rapid increase in short-term interest rates.

The correct answer is **B**.

A flattening yield curve, where long-term yields are approaching short-term yields, often occurs when market participants anticipate a decrease in future inflation rates. This expectation reduces the demand for higher yields on longer-term bonds, leading to a convergence of long and short-term yields.

**A is incorrect.** An increase in expected inflation would typically steepen the yield curve, not flatten it, as investors would demand higher yields for longer maturities to compensate for the expected decrease in purchasing power.

**C is incorrect.** While an increase in short-term interest rates could influence the shape of the yield curve, it typically leads to a steepening effect if long-term rates do not rise as quickly. The described scenario of a flattening yield curve does not align with expectations of rapidly increasing short-term rates alone unless accompanied by similar or lesser adjustments in long-term rates.

**CFA Level I, Topic 7-Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS (a): Define spot rates and the spot curve, and calculate the price of a bond using spot rates.**

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Q.4757 An analyst observes a downward-sloping term structure in the current bond market. Based on this observation, which of the following relationships between par rates, spot rates, and forward rates is *most likely* correct?

- A. Par rates are greater than spot rates and forward rates are lower than spot rates.
- B. Par rates are lower than spot rates and forward rates are greater than spot rates.
- C. Par rates and forward rates are equal to spot rates.

The correct answer is **A**.

In a downward-sloping term structure, the typical relationship observed is that par rates exceed spot rates, reflecting higher long-term borrowing costs relative to immediate borrowing costs. Similarly, forward rates are lower than spot rates, indicating expectations of decreasing rates in the future.

**B is incorrect.** It describes the conditions typical of an upward-sloping term structure, not a downward-sloping one.

**C is incorrect.** It does not typically occur in standard market conditions and does not reflect the relationships that emerge in either upward or downward-sloping term structures.

**CFA Level I, Topic 7-Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS (a): Define spot rates and the spot curve, and calculate the price of a bond using spot rates.**

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Q.4758 A change in the underlying spot rates for bond maturities will *most likely* cause:

- A. a decrease in the corresponding par rates.
- B. an increase in the volatility of bond prices.
- C. a decrease in the liquidity of the bond market

The correct answer is **B**.

Changes in spot rates impact bond prices. As spot rates fluctuate, bond prices become more volatile. Longer-maturity bonds are particularly sensitive to rate changes.

**A is incorrect.** When spot rates change, par rates (also known as coupon rates) are not directly affected. Par rates are fixed at issuance and remain constant throughout the bond's life. However, the par rates for new bond issuances can vary based on the current interest rate environment, as they reflect the coupon rate at which a new bond would be issued at par.

**C is incorrect.** Spot rate changes do not necessarily affect bond market liquidity. Liquidity depends on factors like trading volume, market participants, and overall economic conditions.

***CFA Level I, Topic 7-Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS 7a: Define spot rates and the spot curve, and calculate the price of a bond using spot rates.***

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Q.4759 Consider the term structure of spot rates for government bonds as follows:

- 1-Year Spot Rate: 2.00%
- 2-Year Spot Rate: 1.75%
- 3-Year Spot Rate: 1.50%
- 4-Year Spot Rate: 1.25%

Assume the bond pays annual coupons and has a face value of \$100. The price of a 0.90% coupon, four-year government bond is *closest to*:

- A. \$97.15
- B. \$98.62
- C. \$99.45

The correct answer is **B**.

$$PV = \frac{PMT}{(1 + Z_1)^1} + \frac{PMT}{(1 + Z_2)^2} + \cdots + \frac{PMT + FV}{(1 + Z_N)^N}$$

Recall that,

$$\text{Coupon Payment (PMT)} = \text{Face Value} \times \text{Coupon Rate}$$

Plugging in the numbers:

$$\text{Coupon Payment} = \$100 \times 0.90\% = \$100 \times 0.009 = \$0.90$$

Therefore;

$$\begin{aligned} PV &= \frac{0.90}{(1 + 2.00\%)^1} + \frac{0.90}{(1 + 1.75\%)^2} + \frac{0.90}{(1 + 1.50\%)^3} + \frac{0.90 + 100}{(1 + 1.25\%)^4} \\ &= \$98.62115 \end{aligned}$$

***CFA Level I, Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS 7a: Define spot rates and the spot curve, and calculate the price of a bond using spot rates.***

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Q.4760 A forward rate of 3y1y indicates:

- A. Denotes the current borrowing cost for a four-year loan period.
- B. Guarantees the return on rolling over a two-year investment into a subsequent one-year term.
- C. The expected one-year interest rate three years from now, reflecting market forecasts for future rates.

The correct answer is **C**.

The 3y1y forward rate is an indicator of what the market expects the one-year interest rate to be, beginning three years from the present. It reflects a collective forecast based on current economic conditions and expectations about future rates.

**A is incorrect:** It confuses forward rates with spot rates. Spot rates represent the interest rates for immediate borrowing over a fixed period, not expectations of future rates.

**B is incorrect:** Forward rates are predictive and do not offer guaranteed returns; they reflect expectations and are not binding.

***CFA Level I, Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS 7b: define par and forward rates, and calculate par rates, forward rates from spot rates, spot rates from forward rates, and the price of a bond using forward rates.***

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Q.4761 Which one of the following *best* describes a spot curve of government bonds?

- A. Upward sloping.
- B. Downward sloping.
- C. Approximates flat line across all maturities due to generally stable short-term interest rate expectations.

The correct answer is **A**.

Typically, a spot curve slopes upward, suggesting that longer-term government bonds yield more than shorter-term bonds, but it may flatten as times to maturity extend.

**B is incorrect:** It describes an inverted yield curve, which is not a typical characteristic of spot curves. While spot curves can invert, they are not in their constant state.

**C is incorrect:** It describes a flat yield curve, which does not capture the dynamic nature of spot curves that can slope upward or become inverted based on market conditions and expectations.

**CFA Level I, Topic 7-Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS 7c: compare the spot curve, par curve, and forward curve.**

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Q.4762 In a normal interest rate environment where the yield curve is upward-sloping, how do forward rates typically compare to their corresponding spot rates?

- A. Forward rates are below spot rates.
- B. Forward rates are above spot rates.
- C. Forward rates are equal to spot rates.

The correct answer is **B**.

An environment with an upward-sloping yield curve, forward rates are typically higher than spot rates. This reflects market expectations of higher future interest rates, often due to anticipated economic growth and inflation.

**A is incorrect:** This describes an environment where the yield curve is inverted, indicating a downward-sloping maturity structure of interest rates. In such conditions, the spot rates start higher and decrease for longer maturities, reflecting a pessimistic outlook on the economy's future, such as anticipating a slowdown or recession. Consequently, forward rates are set below the current spot rates as the market expects even lower rates in the future.

**C is incorrect:** This describes an environment where the yield curve is flat, indicating a constant maturity structure of interest rates. In such scenarios, spot rates remain consistent across different maturities, reflecting market expectations that future interest rates will remain stable. Therefore, in a flat term structure environment, forward rates naturally align with spot rates, as there are no anticipated changes in interest rates over time.

**CFA Level I, Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS7c: compare the spot curve, par curve, and forward curve.**

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Q.4763 Which of the following statements *accurately* describes the nature of spot and forward rates in the context of interest rate investments?

- A. Forward rates are today's rates for immediate funding, similar to spot rates but generally higher due to risk premiums.
- B. Spot rates are for immediate borrowing or investing, while forward rates are for future-dated transactions.
- C. Spot rates apply to long-term borrowing agreements, whereas forward rates are used for short-term financial planning.

The correct answer is **B**.

Spot rates reflect the current borrowing and investing rates for funds that are transacted immediately or very soon, covering the specified tenor. Forward rates, in contrast, are used for agreements to borrow or invest starting on a future date, also for a specified tenor.

**A is incorrect.** Forward rates do not apply to immediate funding but to future financial commitments and are not necessarily higher than spot rates; they reflect expectations of future interest rates rather than current conditions.

**C is incorrect.** Spot rates are not exclusively for long-term agreements but apply to immediate or near-immediate transactions for any tenor. Forward rates are used for future agreements, not necessarily short-term, and can cover any length of time as specified in the contract.

***CFA Level I, Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS 7b: define par and forward rates, and calculate par rates, forward rates from spot rates, spot rates from forward rates, and the price of a bond using forward rates.***

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Q.4764 Which of the following *best* describes why forward rates would be positive while spot rates are negative in an environment with an upward-sloping yield curve?

- A. This is likely a result of calculation errors in the financial models used.
- B. Positive forward rates indicate market expectations that spot rates will rise.
- C. The central bank sets forward rates to be positive as a deliberate strategy to counteract the negative spot rates and boost economic confidence.

The correct answer is **B**.

Forward rates are influenced by market expectations about the future trajectory of interest rates. An upward-sloping yield curve, suggests that investors expect future spot rates to increase, potentially moving from negative to positive.

**A is incorrect:** Positive forward rates in a setting of negative spot rates are not necessarily indicative of calculation errors. Instead, they reflect rational market anticipations based on the current and expected future economic conditions.

**C is incorrect:** While central banks influence overall monetary conditions, forward rates are determined by market conditions and investor expectations, not directly set by central banks.

***CFA Level I, Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS (c): compare the spot curve, par curve, and forward curve.***

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Q.4765 An investor is comparing two bond investment strategies. The first involves purchasing a five-year zero-coupon bond. The second strategy consists of buying a four-year bond and planning to reinvest the proceeds into a one-year bond upon maturity. This decision centers around the "4y1y" implied forward rate, which denotes the rate required for both investment strategies to yield equivalent returns. The current "4y1y" implied forward rate is 1.8%. If the investor anticipates that the one-year yield after four years will rise to 2.3%, which option should the investor select to potentially maximize returns?

- A. Choose the five-year zero-coupon bond because it secures a fixed return now, which is safer than betting on uncertain future rates.
- B. Invest in the four-year bond and reinvest the proceeds at the anticipated higher rate, as it might offer better returns than the current implied forward rate.
- C. Both strategies are equally viable since the expected future yield difference is too small to impact the investment decision significantly.

The correct answer is **B**.

The investor expects the future one-year yield after four years to be 2.3%, which is higher than the "4y1y" implied forward rate of 1.8%. Investing in the four-year bond and then reinvesting the proceeds at the higher expected future rate can potentially yield greater returns than simply holding a five-year zero-coupon bond, where the yield is fixed and lower than the expected future rate.

**A is incorrect.** This choice might seem safe because it locks in a return with less risk related to future rate changes. However, it is incorrect in the context of maximizing returns, which is the investor's goal. Given the expected increase in rates, choosing a strategy that benefit from higher future rates would be more advantageous.

**C is incorrect.** This option incorrectly assumes that the difference in the forward rate and the expected future rate is negligible. However, the forward rate and the expected future rate do differ significantly (1.8% vs. 2.3%), which can impact total returns over the investment horizon. This difference can be meaningful in bond investment decisions, especially in a low-rate environment where even small differences in interest rates can lead to substantial differences in compounded returns over time.

**CFA Level I, Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS b: define par and forward rates, and calculate par rates, forward rates from spot rates, spot rates from forward rates, and the price of a bond using forward rates.**

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Q.4766 An investor is evaluating two potential strategies for a five-year investment horizon:

- Acquiring a four-year government bond with a current annual spot rate of 3.5%, followed by reinvesting the proceeds in a one-year bond at the expected future rate

after four years

- Investing in a five-year government bond that yields an annual spot rate of 4.5%.

Given this information, which of the following strategies should the investor select?

- A. Purchase the five-year government bond with a steady rate.
- B. Invest in the four-year bond and reinvest the proceeds at the anticipated higher rate after four years.
- C. Both strategies will yield approximately the same returns because the effective yield of reinvesting the four-year bond's proceeds is likely to compensate for the lower initial rate when compared to the steady 4.5% offered by the five-year bond.

The correct answer is **B**.

To make an informed decision, the investor calculates the implied one-year forward rate that will be applicable after four years, using the following formula:

$$(1 + Z_A)^A \times (1 + \text{IFR}_{A,B-A})^{B-A} = (1 + Z_B)^B$$

Where:

$Z_A$  = short-term spot rate, with tenor A

$Z_B$  = longer-term spot rate, with tenor B.

$\text{IFR}_{A,B-A}$  = implied forward rate, for a security, begins at  $t = A$  and matures at  $t = B$  (tenor  $B - A$ ).

In this case,

$A=4$

$B=5$

$Z_A = 3.5\%$

$Z_B = 4.5\%$

$\text{IFR}_{4,1} = ?$

Therefore,

$$\begin{aligned}(1 + 0.035)^4 \times (1 + \text{IFR}_{4,1}) &= (1 + 0.045)^5 \\ 1.035^4 (1 + \text{IFR}_{4,1}) &= 1.045^5 \\ 1.147523 (1 + \text{IFR}_{4,1}) &= 1.246182 \\ \text{IFR}_{4,1} &= 1.085976 - 1 = 0.085976 \approx 8.6\%\end{aligned}$$

Therefore, the future one-year rate expected after four years is 8.6%. The strategy of buying the four-year bond at 3.5% and reinvesting at a higher future rate will likely yield increased returns compared to a constant 4.5% over five years. This choice leverages the anticipated increase in rates to potentially enhance returns beyond what the five-year bond can offer.

**A is incorrect.** The continuous rate of 4.5% for five years is lower than the potential gains from reinvesting at an expected higher rate after the initial four-year bond maturity.

**C is incorrect.** It assumes without justification that the reinvestment rate after four years will be high enough to offset the initial lower rate compared to the five-year bond's constant 4.5%..

***CFA Level I, Topic 7-Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS 7b: Define par and forward rates, and calculate par rates, forward rates from spot rates, spot rates from forward rates, and the price of a bond using forward rates.***

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Q.4767 Consider the following annual effective spot rates for government bonds:

Term	Spot Rate
1-Year	3.00%
2-Year	3.50%
3-Year	4.00%

The par rate for a three-year government bond assuming annual payments and compounding is *closest to*:

- A. 2.974%
- B. 3.451%
- C. 3.974%

The correct answer is **C**.

To find the par rate, use the equation where the present value of the bond's cash flows equals its face value, typically assumed to be \$100. The cash flows include the annual coupon payments (PMT) and the face value returned at maturity:

$$100 = \frac{\text{PMT}}{(1 + Z_1)^1} + \frac{\text{PMT}}{(1 + Z_2)^2} + \dots + \frac{\text{PMT} + 100}{(1 + Z_N)^N}$$

Where:

$Z_1, Z_2, \dots, Z_N$  are the spot rates for the 1-year, 2-year, and 3-year terms respectively.

Plugging in the spot rates:

$$\begin{aligned} 100 &= \frac{\text{PMT}}{(1.0300)^1} + \frac{\text{PMT}}{(1.0350)^2} + \frac{\text{PMT} + 100}{(1 + 0.0400)^3} \\ 100 &= \frac{\text{PMT}}{1.0300} + \frac{\text{PMT}}{1.071225} + \frac{(\text{PMT} + 100)}{1.124864} \\ \text{PMT} &= 3.973776 \approx 3.974\% \end{aligned}$$

***CFA Level I, Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS 7b: define par and forward rates, and calculate par rates, forward rates from spot rates, spot rates from forward rates, and the price of a bond using forward rates.***

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Q.4768 An investment analyst needs to estimate the implied three-year spot rate using the forward rate curve for one-year segments given in the following table:

Time Period	Forward Rate
0y1y	1.75%
1y1y	2.45%
2y1y	3.10%

Assume all rates are annualized and are effective yearly rates. The three-year implied spot rate is *closest to*:

- A. 2.43%
- B. 2.55%
- C. 2.70%

The correct answer is **A**.

Using the formula:

$$(1 + z_{0y1y}) \times (1 + z_{1y1y}) \times (1 + z_{2y1y}) = (1 + z_3)^3$$

Then,

$$\begin{aligned} 1.0175 \times 1.0245 \times 1.0310 &= (1 + z_3)^3 \\ 1.074744 &= (1 + z_3)^3 \\ 1.074744^{\frac{1}{3}} - 1 &= z_3 \\ \Rightarrow z_3 &= 0.024318 \approx 2.43\% \end{aligned}$$

**CFA Level I, Topic 7 - Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS 7b: define par and forward rates and calculate par rates, forward rates from spot rates, spot rates from forward rates, and the price of a bond using forward rates.**

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Q.4769 An analyst is examining the yields-to-maturity of a three-year and a six-year zero-coupon bond, which are 3.20% and 3.90%, respectively. The yields are quoted on a semi-annual bond basis. The analyst is interested in determining the "3y3y" implied forward rate. The annualized "3y3y" implied forward rate is *closest to*:

- A. 2.30%
- B. 4.10%
- C. 4.60%

The correct answer is **C**.

The general formula for implied forward rate is given as

$$(1 + Z_A)^A \times (1 + \text{IFR}_{A,B-A})^{B-A} = (1 + Z_B)^B$$

Where:

A = 6 periods (since 3 years  $\times$  2 semi-annual periods per year)

B = 12 periods (since 6 years  $\times$  2 semi-annual periods per year)

B – A = 6 periods (duration of the forward period in semi-annual terms)

$z_6 = \frac{0.0320}{2} = 0.016$  (Semi-annual yield for the three-year bond)

$z_{12} = \frac{0.0390}{2} = 0.0195$  (Semi-annual yield for the six-year bond)

Substitute the given yields into the formula:

$$\begin{aligned} (1 + 0.016)^6 \times (1 + \text{IFR}_{6,6})^6 &= (1 + 0.0195)^{12} \\ 1.099923(1 + \text{IFR}_{6,6})^6 &= 1.260802 \\ (1 + \text{IFR}_{6,6})^6 &= \frac{1.260802}{1.099923} = 1.146264 \\ (1 + \text{IFR}_{6,6}) &= 1.146264^{\frac{1}{6}} = 1.023012 \\ \text{IFR}_{6,6} &= 0.023012 \approx 2.30\% \end{aligned}$$

The "3y6y" implies forward rate is approximately 2.30% on a semi-annual basis. Annualized, the "3y6y" implied forward yield is  $2.30\% \times 2 = 4.6\%$ .

**CFA Level I, Fixed Income, Learning Module 9: The Term Structure of Interest Rates: Spot, Par, and Forward Curves. LOS (b): define par and forward rates, and calculate par rates, forward rates from spot rates, spot rates from forward rates, and the price of a bond using forward rates.**

## **Learning Module 10: Interest Rate Risk and Return**

Q.90 The coupon reinvestment risk dominates the market price risk when:

- A. The Macaulay duration is lower than the investment horizon.
- B. The Macaulay duration is higher than the investment horizon.
- C. The Macaulay duration is the same as the investment horizon.

The correct answer is **A**.

When the Macaulay duration of a bond is lower than the investment horizon, it implies that the weighted average time until the bond's cash flows are received is shorter than the period over which the investor plans to hold the bond. In such scenarios, the investor will have to reinvest the coupon payments received before the investment horizon is reached. The risk associated with this reinvestment is known as coupon reinvestment risk. This risk arises because the future interest rates at which these coupons can be reinvested may be lower than the original yield of the bond, potentially leading to a lower overall return than expected.

**B is incorrect.** If the Macaulay duration is higher than the investment horizon, it indicates that the investor is more exposed to market price risk. Market price risk is the risk that the bond's market price will decline due to rising interest rates. In such cases, if the investor needs to sell the bond before the investment horizon, they may face losses due to a decrease in the bond's market value. This scenario emphasizes the dominance of market price risk over coupon reinvestment risk when the Macaulay duration exceeds the investment horizon.

**C is incorrect.** When the Macaulay duration and the investment horizon are equal, it ideally balances the exposure to both coupon reinvestment risk and market price risk. This balance means that the effects of interest rate changes on the bond's price and the reinvestment rates tend to offset each other to some extent.

Note: Coupon reinvestment risk is the risk that an investor will be unable to reinvest cash flows at a rate equal to their current return (the investor may be forced to reinvest at a lower rate), whereas market price risk is the risk of lower bond prices due to lower market interest rates.

***CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (b): describe the relationships among a bond's holding period return, its Macaulay duration, and the investment horizon***

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Q.91 A bond investor has an investment horizon of 9 years. He recently calculated that the Macaulay duration of his portfolio is 11 years. The duration gap is *closest to*?

- A. -2.
- B. 0.8182.
- C. 2.

The correct answer is **C**.

The duration gap is the difference between the Macaulay duration of a bond and the investment horizon.

$$\begin{aligned}\text{Duration gap} &= \text{Macaulay duration} - \text{Investment horizon} \\ &= 11 - 9 = 2\end{aligned}$$

***CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (b) Describe the relationships among a bond's holding period return, its Macaulay duration, and the investment horizon; LOS (c): define, calculate, and interpret Macaulay duration***

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Q.968 Which of the following statements is *most likely* accurate for premium and par bonds?

- A. Macaulay Duration is always equal to  $\frac{(1+r)}{r}$ , where r is the yield to maturity.
- B. Macaulay Duration is always less than  $\frac{(1+r)}{r}$ , where r is the yield to maturity.
- C. Macaulay Duration is always greater than  $\frac{(1+r)}{r}$ , where r is the yield to maturity.

The correct answer is **B**.

For premium and par bonds, the Macaulay Duration is always less than  $\frac{(1+r)}{r}$ .

Macaulay duration is given by:

$$\text{MacDur} = \left[ \frac{1+r}{r} - \frac{1+r + [N \times (c-r)]}{c \times [(1+r)^N - 1] + r} - \frac{t}{T} \right]$$

Where:

r=yield to maturity

c=coupon rate

$\frac{t}{T}$  = the fraction of the coupon period that has gone by since the last payment

When the coupon rate is greater than the market discount rate, the bond is priced at a premium above par value. When the coupon rate is equal to the market discount rate, the bond is priced at par value. This means that for premium and par bonds, the coupon rate is greater than or equal to yield-to-maturity (r).

The numerator of the second expression in braces is always positive because c-r is positive. The denominator of the second expression in braces is always positive. Second expression as a whole is always positive.

Therefore, macaulay duration is less than  $\frac{(1+r)}{r}$  because the second expression in braces is positive. MacDuration approaches  $\frac{(1+r)}{r}$  as time passes.

***CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (b) Describe the relationships among a bond's holding period return, its Macaulay duration, and the investment horizon; LOS (c): define, calculate, and interpret Macaulay duration***

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Q.2137 An investor purchases a fixed-rate bond at a discount. The bond does not default, and the reinvestment rate is equal to the bond's yield to maturity (YTM). If the investor holds the bond until maturity, which of the following statements is *most accurate*?

- A. The investor will earn a rate of return equal to the YTM at purchase only if the bond is purchased at a discount.
- B. The investor will earn a return higher than the YTM at purchase if the bond is held until maturity.
- C. The investor will earn a return equal to the YTM at purchase, regardless of whether the bond is purchased at a premium or a discount.

The correct answer is **C**.

The YTM is the internal rate of return earned on the bond if the bond is held until maturity and all coupon payments are reinvested at the YTM, regardless of whether the bond is purchased at a premium, discount, or at par.

**A is incorrect.** The YTM represents the return that an investor will earn if the bond is held until maturity and all coupons are reinvested at the YTM, regardless of whether the bond is purchased at a discount, premium, or par.

**B is incorrect.** It suggests that the investor will earn a return higher than the YTM, which contradicts the definition of YTM. The YTM is the expected rate of return, assuming the bond is held until maturity, and all coupons are reinvested at the YTM.

**CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (a): calculate and interpret the sources of return from investing in a fixed-rate bond**

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Q.2138 For a bond that was purchased at a premium, the YTM of the bond is *most likely*:

- A. Equal to the coupon rate.
- B. Less than the coupon rate.
- C. More than the coupon rate.

The correct answer is **B**.

For a bond purchased at a premium, the YTM is less than the coupon rate because both the amortization of the premium and the reduction in interest earned on reinvestment of its cash flows decrease the bond's return.

We can also consider the yield-price relationship of bonds to answer this question. The price of a bond is inversely related to its yield. Therefore, a bond with a higher price will have a lower yield and vice versa. Since bonds issued at a premium have been issued at a higher price (price above par), then it follows that such bonds will have a lower yield.

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Q.2140 Michael holds a bond whose YTM is 6%. However, the YTM of the bond increases to 6.5% before the first coupon date. The rate of return for the new investors on the bond will *most likely*:

- A. Remain unaffected at 6%.
- B. Decrease to less than 6%.
- C. Increase to more than 6%.

The correct answer is **C**.

When the yield to maturity (YTM) of a bond increases from 6% to 6.5% before the first coupon date, it means that the market interest rates have risen, causing the bond's price to fall. For new investors who purchase the bond at this lower price, the YTM of 6.5% reflects their rate of return if they hold the bond until maturity, assuming all coupons are reinvested at the same rate.

Since the YTM for new investors is 6.5%, which is higher than the original YTM of 6%, their rate of return will be more than 6%.

***CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (a): calculate and interpret the sources of return from investing in a fixed-rate bond***

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Q.2141 Investor X has an investment horizon of 3 years and has invested in a 4% coupon-paying bond with a YTM of 6%. Investor Y has an investment horizon of 10 years and has invested in a 5% coupon-paying bond with a YTM of 5%.

Which investor *most likely* faces higher market price risk compared to reinvestment risk?

- A. Investor X.
- B. Investor Y.
- C. Both investors have the same market and reinvestment risks.

The correct answer is **A**.

For investor X, since the bond's coupon rate is below its YTM, Investor X is exposed to **market price risk**. If interest rates rise, the bond's price will fall, leading to capital losses. With a shorter investment horizon, reinvestment risk is less relevant for Investor X.

For investment Y, the bond's coupon rate aligns with its YTM, reducing market price risk. If interest rates change, the bond's price impact will be less severe. With a longer investment horizon, reinvestment risk becomes more significant for Investor Y. The coupons received over 10 years need to be reinvested, and if rates decline, reinvesting at lower rates could lead to lower returns.

***CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (a): calculate and interpret the sources of return from investing in a fixed-rate bond***

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Q.2142 Which of the following statements about reinvestment risk is *least likely* accurate?

- A. A bond investor can eliminate reinvestment risk by holding a coupon bond until maturity.
- B. An investor concerned about reinvestment risk is most concerned about a decrease in interest rates.
- C. A bond's yield calculation assumes that the coupons and the investment cash flows can be reinvested at the yield to maturity.

The correct answer is **A**.

Even if a bond investor holds a coupon bond until maturity, they still face reinvestment risk. This is because the coupons received before maturity need to be reinvested, and there is uncertainty about the interest rate at which these coupons can be reinvested.

**B is accurate.** An investor concerned about reinvestment risk is indeed most concerned about a decrease in interest rates because lower interest rates would result in lower returns on reinvested coupon payments.

**C is accurate.** The yield to maturity (YTM) calculation does assume that the coupons and the investment cash flows can be reinvested at the YTM rate. If the actual reinvestment rate is lower than the YTM, the realized yield will be lower than the YTM.

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Q.2145 Which of the following statements about the Macaulay duration of a coupon bond is *most accurate*?

- A. Between coupon payment dates, the Macaulay duration of a coupon bond decreases over time and then increases sharply on the coupon payment date.
- B. Between coupon payment dates, the Macaulay duration of a coupon bond increases over time and then decreases sharply on the coupon payment date.
- C. Between coupon payment dates, the Macaulay duration of a coupon bond remains constant and does not change until the coupon payment date.

The correct answer is **B**.

For Macaulay duration, it typically follows an increasing trend followed by a sudden drop on each coupon payment date. In that:

**Between coupon payments:** As time passes, the Macaulay duration gradually increases. This is because the bond's remaining cash flows (coupons and principal) are weighted more heavily toward the distant future.

**On the coupon payment date:** The Macaulay duration experiences a sharp decrease. Why? Because the bondholder receives a coupon payment, which reduces the remaining time until the next coupon payment. Consequently, the weighted average time decreases.

**A is incorrect.** Macaulay duration does not exhibit such behavior. It remains relatively stable between coupon payment dates.

**C is incorrect.** Macaulay duration does change between coupon payment dates due to the evolving time-to-maturity and cash flow patterns.

***CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (b): describe the relationships among a bond's holding period return, its Macaulay duration, and the investment horizon***

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Q.2162 If an investor's investment horizon equals the bond's Macaulay duration, how will a parallel yield curve shift impact the investor's return before the first coupon payment?

- A. It will increase the investor's return.
- B. It will decrease the investor's return.
- C. It will have little effect on the investor's horizon return.

The correct answer is **C**.

When the investment horizon and the bond's Macaulay duration are matched, a parallel shift in the yield curve before the first coupon payment will not (or minimally) affect the investor's horizon return. When the investment horizon directly matches the Macaulay duration, the effect of a change in YTM on the sale price of a bond and the reinvestment income offset each other.

**A is incorrect.** This is because when the investment horizon matches the bond's Macaulay duration, a parallel shift in the yield curve does not typically result in an increased return.

**B is incorrect.** This is because when the holding period equals the bond's Macaulay duration, a parallel shift in the yield curve does not generally lead to a decreased return.

***CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (b): describe the relationships among a bond's holding period return, its Macaulay duration, and the investment horizon***

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Q.2163 The duration gap is *best* defined as:

- A. The difference between a bond's Macaulay duration and the bondholder's investment horizon.
- B. The difference between a bond's effective duration and the bondholder's investment horizon.
- C. The difference between a bond's modified duration and the bondholder's investment horizon.

The correct answer is **A**.

The difference between a bond's Macaulay duration and the bondholder's investment horizon is referred to as the duration gap. This measurement helps assess the sensitivity of the bond's price to interest rate changes in relation to the investor's holding period.

**B is incorrect.** The duration gap is not the difference between a bond's effective duration and the bondholder's investment horizon. Effective duration is used to measure interest rate sensitivity considering embedded options, but it does not define the duration gap.

**C is incorrect.** The duration gap is not the difference between a bond's modified duration and the bondholder's investment horizon. Modified duration measures price sensitivity to interest rate changes, but the duration gap specifically involves Macaulay duration in comparison to the investment horizon.

***CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (b): describe the relationships among a bond's holding period return, its Macaulay duration, and the investment horizon***

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Q.2164 A positive duration gap exposes the investor to:

- A. Market price risk from increasing interest rates.
- B. Reinvestment risk from decreasing interest rates.
- C. Both reinvestment risk and market price risk equally.

The correct answer is **A**.

A positive duration gap means the bond's Macaulay duration is greater than the investor's holding period. This situation exposes the investor primarily to market price risk from increasing interest rates, as the bond's price would decline more than the reinvestment income would offset.

**B is incorrect.** A positive duration gap does not primarily expose investors to reinvestment risk from decreasing interest rates. Reinvestment risk is more relevant when the investment horizon is longer than the bond's duration, i.e., an investor is exposed to reinvestment risk from decreasing interest rates when the Macaulay duration is less than the investment horizon.

**C is incorrect.** A positive duration gap does not expose the investor to both reinvestment risk and market price risk equally. The primary concern with a positive duration gap is market price risk due to rising interest rates.

***CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (b): describe the relationships among a bond's holding period return, its Macaulay duration, and the investment horizon***

---

Q.3881 A bond investor has an investment horizon of 6 years. He recently calculated that the Macaulay duration of his portfolio is 9. The duration gap is *closest* to?

A. 0.67.

B. 1.5.

C. 3.

The correct answer is **C**.

The difference between the Macaulay duration of a bond and investment horizon is called the duration gap.

$$\begin{aligned}\text{Duration gap} &= \text{Macaulay duration} - \text{Investment horizon} \\ &= 9 \text{ Years} - 6 \text{ Years} \\ &= 3 \text{ Years}\end{aligned}$$

***CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (c): define, calculate, and interpret Macaulay duration***

---

Q.4873 Three investors, Redwood Investors, Spruce Capital, and Pinecone Funds, each purchase a 6.25%, 20-year Argentine Eurobond at par value. The bond's Macaulay duration is 11.8 years. Redwood's investment horizon is 5 years, while Spruce and Pinecone have investment horizons of 11 and 20 years, respectively. Which of the following has the *least* sensitivity to interest rate changes?

- A. Redwood Investors.
- B. Spruce Capital.
- C. Pinecone Funds.

The correct answer is **B**.

Spruce Capital's investment horizon (11 years) is close to the bond's Macaulay duration (11.8 years). This alignment minimizes the duration gap, reducing sensitivity to interest rate changes. When the horizon matches or nearly matches the bond's duration, price changes due to rate shifts are offset by changes in reinvestment income, resulting in a more stable return profile.

**A is incorrect:** Redwood Investors' short investment horizon (5 years) creates a positive duration gap. Their bond's Macaulay duration (11.8 years) exceeds their holding period. As a result, they face market price risk. When interest rates rise, the bond's price falls more than the reinvestment income increases, leading to net losses. Conversely, when rates fall, the bond's price rises, but this effect is less significant than for an investor with a matching duration.

**C is incorrect.** Pinecone Funds' long investment horizon (20 years) creates a negative duration gap. Their bond's Macaulay duration (11.8 years) falls short of their holding period. This creates a duration gap that exposes them to reinvestment risk, making their returns more susceptible to changes in interest rates.

***CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (b): Describe the relationships among a bond's holding period return, its Macaulay duration, and the investment horizon.***

---

Q.4874 Alex, an investor, purchases a bond with a remaining maturity of 20 years and plans to hold it for 20 years. The bond's Macaulay duration is 12 years. Alex is primarily exposed to:

- A. Price risk.
- B. Reinvestment risk.
- C. Neither price risk nor reinvestment risk.

The correct answer is **B**.

Reinvestment risk is the risk that the coupons received over the investment horizon will be reinvested at lower interest rates. Given that Alex's holding period (20 years) exceeds the bond's Macaulay duration (12 years), Alex is primarily exposed to reinvestment risk.

**A is incorrect.** Price risk involves the potential for the bond's price to decrease if interest rates rise. Since Alex's holding period (20 years) is longer than the bond's Macaulay duration (12 years), price risk is not the primary concern.

**C is incorrect.** Alex is not free from interest rate risks. The difference between the bond's Macaulay duration and the holding period makes Alex primarily exposed to reinvestment risk.

***CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (a): calculate and interpret the sources of return from investing in a fixed-rate bond.***

---

Q.4875 Given the following scenarios with their associated interest rate risks.

Scenarios	Interest Rate Risks
Scenario 1 : Macaulay duration < investment horizon	Risk A : Price risk from rising interest rates
Scenario 2 : Macaulay duration > investment horizon	Risk B : Reinvestment risk from falling interest rates

Which of the following matches are *most likely* correct?

- A. Scenario 1, Risk A.
- B. Scenario 1, Risk B.
- C. Scenario 2, Both Risk A and B.

The correct answer is **B**.

When the Macaulay duration is less than the investment horizon, the investor is exposed to reinvestment risk from falling interest rates. When the Macaulay duration is greater than the investment horizon, the investor is exposed to price risk from rising interest rates.

**A is incorrect:** It incorrectly matches the scenarios to the risks. Macaulay duration less than the investment horizon corresponds to reinvestment risk from falling interest rates, not price risk from rising interest rates.

**C is incorrect:** It incorrectly matches the scenarios to the risks by attributing both scenarios to reinvestment risk from falling interest rates, which is incorrect.

**CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (b): describe the relationships among a bond's holding period return, its Macaulay duration, and the investment horizon.**

---

Q.4876 A buy-and-hold fixed-income investor, ignoring credit risk, is *primarily* exposed to which source of risk?

- A. Changes in bond prices before maturity.
- B. Variability in the reinvestment rate of coupon payments.
- C. Both changes in bond prices before maturity and variability in the reinvestment rate of coupon payments.

The correct answer is **B**.

The primary source of risk for a buy-and-hold investor is the variability in the reinvestment rate of coupon payments. Changes in interest rates affect the returns earned from reinvesting these coupon payments, leading to reinvestment risk.

**A is incorrect:** A buy-and-hold investor is not affected by changes in bond prices before maturity because they hold the bond until maturity and receive the par value.

**C is incorrect:** While reinvestment risk is a concern, changes in bond prices before maturity do not affect a buy-and-hold investor, as they do not plan to sell the bond before maturity. Thus, this option incorrectly includes an irrelevant source of risk.

**CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (a): calculate and interpret the sources of return from investing in a fixed-rate bond.**

---

Q.4877 James buys a bond with a face value of \$100 and plans to hold it for four years. The bond pays an annual coupon of \$5 and is currently priced at \$95. James expects to reinvest the coupons at an annual rate of 4%. James's annualized holding period return is *closest to*:

- A. 5.22%
- B. 5.47%
- C. 6.25%

The correct answer is **C**.

To calculate the holding period return (horizon yield), we use the formula:

$$r = \left( \frac{FV + F}{PV} \right)^{\frac{1}{T}} - 1$$

Where:

$r$  = Realized rate of return or Horizon Yield.

FV = Future value of the reinvested coupons.

F = Face value of the bond (\$1,00).

PV = Present value or the bond's current price (\$95).

T = Investment horizon (4 years).

**Step 1:** Let's calculate the future value of the reinvested coupons. The future value of an annuity (reinvested coupons) can be calculated using the future value of annuity formula:

$$FV = C \left( \frac{(1 + r)^n - 1}{r} \right)$$

Where:

- C is the annual coupon payment (\$5).
- $r$  is the reinvestment rate (0.04).
- $n$  is the number of years (4).

Therefore,

$$FV = 5 \left( \frac{(1 + 0.04)^4 - 1}{0.04} \right) = 21.33$$

**Using the BA II Plus calculator:**

- Press [2nd] [CLR TVM] to clear previous entries.
- Enter N=4: Press [4] [N]
- Enter I/Y=4: Press [4] [I/Y]
- Enter PMT=5: Press [5] [PMT]
- Compute FV: Press [CPT] [FV]

**Step 2:** Calculate the total future value of the bond and reinvested coupons.

$$\text{Total future value} = FV + F = 21.23 + 100 = \$121.23$$

**Step 3:** Apply the formula to find the annualized holding period return.

$$r = \left( \frac{121.33}{95} \right)^{\frac{1}{4}} - 1 = 0.062849 \approx 6.29\%$$

**Using the BA II Plus calculator:**

- Press [2nd] [CLR TVM] to clear previous entries.
- Enter N=4: Press [4] [N]
- Enter PV=-95: Press [95] [+/-] [PV] (negative because it's an outflow)
- Enter PMT=0: Press [0] [PMT]
- Enter FV =121.23: Press [121.23] [FV]
- Compute I/Y: Press [CPT] [I/Y]

***CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (b): describe the relationships among a bond's holding period return, its Macaulay duration, and the investment horizon; LOS (c): define, calculate, and interpret Macaulay duration.***

---

Q.4878 Leoning Corp issues a bond with four years remaining to maturity, a coupon of 1.5% paid annually, and a yield-to-maturity of 0.5%. The bond's face value is \$100. The bond's annualized Macaulay duration is *closest to*:

- A. 3.91 years.
- B. 4.85 years.
- C. 5.75 years.

The correct answer is **A**.

To calculate the annualized Macaulay duration, we use the given formula:

$$\text{MacDur} = \frac{\sum_{t=1}^N \left( \frac{t \times CF_t}{(1+r)^t} \right)}{\sum_{t=1}^N \left( \frac{CF_t}{(1+r)^t} \right)}$$

**Step 1:** Let's first calculate the annual coupon payment:

$$\text{Annual Coupon} = 1.5\% \times 100 = \$1.50$$

**Step 2:** Calculate the present value of each cash flow using the YTM of 0.5% (0.005 as a decimal):

$$PV(CF_t) = \frac{CF_t}{(1 + YTM)^t}$$

**Year 1:**  $PV(\$1.50) = \frac{1.50}{(1.005)^1} = \frac{1.50}{1.005} \approx 1.4925$

**Year 2:**  $PV(\$1.50) = \frac{1.50}{(1.005)^2} = \frac{1.50}{1.010025} \approx 1.4851$

**Year 3:**  $PV(\$1.50) = \frac{1.50}{(1.005)^3} = \frac{1.50}{1.015075} \approx 1.4778$

**Year 4 (including the face value of \$100):**

$PV(\$101.50) = \frac{101.50}{(1.005)^4} = \frac{101.50}{1.0202} = 99.49$

**Step 3:** Calculate the total present value of all cash flows (which should approximate the bond price).

$$\begin{aligned} \text{Bond Price} &\approx 1.4925 + 1.4851 + 1.4778 + 99.4951 \\ &\approx 103.9505 \end{aligned}$$

**Step 4:** Calculate the numerator of the Macaulay duration:

$$\begin{aligned} \text{Numerator} &= \sum_{t=1}^N \frac{t \times CF_t}{(1+r)^t} = \frac{1 \times 1.50}{1.005} + \frac{2 \times 1.50}{1.010} + \frac{3 \times 1.50}{1.015} + \frac{4 \times 101.50}{1.0201} \\ &= 1 \times 1.4925 + 2 \times 1.4851 + 3 \times 1.4778 + 4 \times 99.4951 \\ &\approx \$406.8765 \end{aligned}$$

**Step 5:** Calculate the denominator of the Macaulay duration:

$$\begin{aligned} \text{Denominator} &= \sum_{t=1}^N \frac{CF_t}{(1+r)^t} = 1.4925 + 1.4851 + 1.4778 + 99.4951 \\ &\approx 103.9505 \end{aligned}$$

**Step 6:** Calculate the Macaulay duration:

$$\text{MacDur} = \frac{406.8765}{103.9505} \approx 3.91 \text{ years}$$

**CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (b): describe the relationships among a bond's holding period return, its Macaulay duration, and the investment horizon; LOS (c): define, calculate, and interpret Macaulay duration.**

---

Q.4879 Greenwood Corporation issued a bond with three years remaining to maturity, a coupon of 2% paid annually, and a yield-to-maturity of 1%. Assume it is 60 days into the first coupon period on a 30/360 basis. The bond's annualized Macaulay duration is *closest to*:

A. 3.7421.

B. 3.7197.

C. 3.9337.

The correct answer is **B**.

First, let's determine the time to receipt for each cash flow:

$$\text{Time to first coupon} = \frac{360 - 60}{360} = \frac{300}{360} = 0.8333 \text{ years}$$

The subsequent coupon payments will be:

$$\text{Time to second coupon} = 1 + 0.8333 = 1.8333 \text{ years}$$

$$\text{Time to third coupon} = 2 + 0.8333 = 2.8333 \text{ years}$$

$$\text{Time to final payment} = 3 + 0.8333 = 3.8333 \text{ years}$$

Secondly, let's calculate the Present Value of each Cash flow. Given the yield-to-maturity (YTM) of 1% (0.01 as a decimal):

$$\text{PV}(\$2.00)_{t=0.8333} = \frac{2.00}{(1 + 0.01)^{0.8333}} = 1.9835$$

$$\text{PV}(\$2.00)_{t=1.8333} = \frac{2.00}{(1 + 0.01)^{1.8333}} = 1.9638$$

$$\text{PV}(\$2.00)_{t=2.8333} = \frac{2.00}{(1 + 0.01)^{2.8333}} = 1.9444$$

$$\text{PV}(\$102.00)_{t=3.8333} = \frac{102.00}{(1 + 0.01)^{3.8333}} = 98.1827$$

Therefore, the total present value of Cash Flows (Bond Price):

$$\text{Bond Price (PV)} \approx 1.9835 + 1.9638 + 1.9444 + 98.1827 = \$104.0744$$

Next, calculate the numerator of the Macaulay duration:

$$\begin{aligned} \text{Numerator} &= \sum_{t=1}^4 \frac{t \times CF_t}{(1 + r)^t} \\ &= (0.8333 \times 1.9835) + (1.8333 \times 1.9638) + (2.8333 \times 1.9444) + (3.8333 \times 98.1827) \\ &= \$387.1259 \end{aligned}$$

The denominator of Macaulay duration is equal to the total present value of cash flows, which is equal to \$104.0744.

Therefore,

$$\text{Macaulay Duration} = \frac{387.1259}{104.0744} \approx 3.7197 \text{ years}$$

**CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (b): describe the relationships among a bond's holding period return, its Macaulay duration, and the investment horizon; LOS (c): define, calculate, and interpret Macaulay duration.**

---

Q.4880 An investor purchases a bond with five years remaining until maturity, a 2% coupon paid semiannually, and a yield-to-maturity of 1.5%. The investor plans to hold the bond for four years. Regarding interest rate risk, what is the investor's primary concern?

- A. The bond's price declines if interest rates increase.
- B. The bond's price rises if interest rates decrease.
- C. Interest rate changes have a negligible effect on the bond's value.

The correct answer is **A**.

The investor is primarily concerned that the bond's price will decline if interest rates increase. The investor is exposed to price risk since the investment horizon (4 years) is shorter than the bond's maturity (5 years). An increase in interest rates would cause the bond's price to fall, negatively impacting the investor who plans to sell the bond before maturity.

**B is incorrect:** While a decrease in interest rates would cause the bond's price to rise, this scenario benefits the investor rather than posing a risk.

**C is incorrect:** Changes in interest rates will have a significant effect on the bond's value due to the mismatch between the investment horizon and the bond's maturity, so the concern is not negligible.

**CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (a): calculate and interpret the sources of return from investing in a fixed-rate bond.**

---

Q.4881 Bright Future Investments purchases a 12-year, 5.5% annual coupon bond with an investment horizon of 6 years. The Macaulay duration of the bond is 8.75 years. The duration gap at the time of purchase is *closest to*:

- A. 2.75
- B. 5.25
- C. 6.75

The correct answer is **A**.

The duration gap is calculated as the difference between the Macaulay duration of the bond and the investor's investment horizon.  $\text{Duration Gap} = \text{Macaulay Duration} - \text{Investment Horizon}$  Given:

- Macaulay Duration = 8.75 years
- Investment Horizon = 6 years

$$\text{Duration Gap} = 8.75 \text{ years} - 6 \text{ years} = 2.75 \text{ years}$$

***CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (b): describe the relationships among a bond's holding period return, its Macaulay duration, and the investment horizon.***

---

Q.4882 Which of the following *best* describes the impact of interest rate changes on reinvestment income and bond prices?

- A. An increase in interest rates will lead to higher reinvestment income but lower bond prices if sold prior to maturity.
- B. A decrease in interest rates will result in lower reinvestment income and lower bond prices if sold prior to maturity.
- C. An increase in interest rates will have no impact on reinvestment income but will lead to higher bond prices if sold prior to maturity.

The correct answer is **A**.

When interest rates increase, the reinvestment of coupon payments can be done at higher rates, leading to higher reinvestment income. However, the market price of existing fixed-rate bonds will decrease because new bonds are issued with higher coupon rates, making the existing bonds less attractive.

**B is incorrect.** A decrease in interest rates indeed results in lower reinvestment income. However, it incorrectly suggests that bond prices will decrease, whereas bond prices actually increase when interest rates fall, as existing bonds with higher coupon rates become more attractive.

**C is incorrect.** An increase in interest rates does impact reinvestment income, typically increasing it. Additionally, higher interest rates result in lower bond prices, not higher.

**CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (a): calculate and interpret the sources of return from investing in a fixed-rate bond.**

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Q.4883 A pension fund purchases a four-year, 4.5% annual coupon corporate bond priced at par for settlement on 1 January 2025. The bond matures on 1 January 2029. Immediately after the purchase of the bond, interest rates rise to 5.2%. The pension fund sells the bond after two years. The pension fund's total annualized return on the investment was *closest to*:

- A. 3.89%
- B. 4.50%
- C. 5.20%

The correct answer is **A**.

**Step 1:** Let's calculate the bond's price after two years using the formula:

$$\text{Bond Price} = \sum_{t=1}^n \left( \frac{C}{(1+r)^t} \right) + \frac{F}{(1+r)^n}$$

Where:

C = annual coupon payment (4.5% of par value, which is 4.5) F = par value of the bond (100) r = new yield to maturity (5.2% or 0.052) n = number of remaining years (2)

Therefore,

$$\text{Bond Price} = \frac{4.5}{(1+0.052)^1} + \frac{4.5}{(1+0.052)^2} + \frac{100}{(1+0.052)^2} = \$98.7021$$

**Step 2:** We'll then calculate the Future Values of the Coupons.

The future value (FV) of each coupon payment, including reinvestment, is calculated using the formula:

$$FV = PV \times (1+r)^n$$

Therefore,

$$FV = (4.5 \times (1+0.052)^1) + 4.5 \approx \$9.234$$

Thus, the total proceeds is  $98.7021 + 9.234 \approx \$107.9361$ .

**Step 3:** Let's as now calculate the annualized return given by the formula:

$$r = \left( \frac{FV}{PV} \right)^{\frac{1}{T}} - 1$$

Where:

- FV = Total proceeds (\$107.9361)
- PV = Initial investment (100)
- T = Holding period in years (2 years)

Therefore,

$$r = \left( \frac{107.9361}{100} \right)^{\frac{1}{2}} - 1 \approx 0.038923 \approx 3.89\%$$

**CFA Level I, Fixed Income, Learning Module 10: Interest Rate Risk and Return. LOS (a): calculate and interpret the sources of return from investing in a fixed-rate bond.**



## **Learning Module 11: Yield Based Bond Duration Measures and Properties**

Q.87 The price value of a basis point (PVBP) is a measure of:

- A. The change in price given a 1 basis point change in the YTM.
- B. The percentage change in price given a 1% change in the YTM.
- C. The percentage change in price given a 1 basis point change in the YTM.

The correct answer is **A**.

The price value of a basis point (PVBP) is another version of money duration, a measure of the change in price given a 1 basis point change in the YTM. It is calculated as:

$$\text{PVBP} = \frac{(\text{PV}_-) - (\text{PV}_+)}{2}$$

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP)***

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Q.89 Compared to a non-callable and non-puttable bond, the interest rate sensitivity of:

- A. Callable bonds is lower and puttable bonds is lower.
- B. Callable bonds is higher and puttable bonds is lower.
- C. Callable bonds is higher and puttable bonds is higher.

The correct answer is **A**.

Interest rate sensitivity of callable and puttable bonds is lower. Callable and puttable bonds are bonds with embedded options. All else being held equal, bonds with embedded options have a low sensitivity to interest rate changes. The price of a callable (puttable) bond is lower(higher) than that of a non-callable (non-puttable) bond by an amount equal to the embedded option. As interest rates rise (fall for puttable bonds), the price of the embedded call(put) option declines (increases), thereby decreasing the overall price decline (increase for puttable bonds), hence lowering interest rate sensitivity.

**CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP).**

---

Q.964 Which of the following *most likely* depicts the percentage price change for a bond given a change in its yield-to-maturity?

- A. Effective duration.
- B. Modified Duration.
- C. Macaulay Duration.

The correct answer is **B**.

Modified duration is calculated by dividing the Macaulay duration by  $(1 + \text{yield to maturity})$ , thereby indicating the percentage change in price due to a change in yields.

**A is incorrect.** Effective duration measures the sensitivity of a bond's price to a change in a benchmark yield curve.

**C is incorrect.** Macaulay duration computes the approximate amount of time a bond would have to be held for the market discount rate at purchase to be realized if there is a single change in interest rate.

**CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP)**

---

Q.965 You have been provided the following information on a bond:

Period	Cash Flow (USD Mn)
1	3.7
2	4.9
3	107

If the yield to maturity is 6%, and it is currently trading at \$95, the modified duration of the bond is *closest to*:

- A. 2.45 years.
- B. 2.60 years.
- C. 2.79 years.

The correct answer is **C**.

To calculate the modified duration of a bond, we first need to determine its Macaulay duration and then adjust it for the bond's yield to maturity (YTM). The Macaulay duration is the weighted average time until the bond's cash flows are received, and it is calculated using the present value of each cash flow.

$$\text{Macaulay Duration} = \frac{[1 \times \frac{3.7}{(1.06)^1}] + [2 \times \frac{4.9}{(1.06)^2}] + [3 \times \frac{107}{(1.06)^3}]}{95} = \frac{281.73}{95} = 2.96 \text{ years}$$

Recall that:

$$\text{Modified Duration} = \frac{\text{Macaulay Duration}}{(1 + \text{YTM})} = \frac{2.96}{1.06} = 2.79 \text{ years}$$

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBp)***

---

Q.966 If Modified Duration =  $\frac{\text{Macaulay Duration}}{(1 + \text{Yield})}$ , The value of the Approximate Modified Duration is closest to?

- A.  $\frac{\text{Approximate Macaulay Duration}}{(1 + \text{Yield})}$ .
- B. Approximate Macaulay Duration  $\times (1 + \text{Yield})$ .
- C.  $\frac{\text{Approximate Macaulay Duration} \times (1 - \text{Yield})}{(1 + \text{Yield})}$ .

The correct answer is **A**.

Just like the Modified Duration, the Approximate Modified Duration is calculated by dividing the Approximate Macaulay Duration by  $(1 + \text{Yield})$ . The approximate modified duration formula is:

$$\text{ApproxModDur} = \frac{\text{ApproxMacDur}}{(1 + r)}$$

**CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP)**

---

Q.973 The concept of duration *most likely* helps to understand the relationship between which of the following?

- A. Full price and interest rates.
- B. Full price and maturity period.
- C. Interest rate and maturity period.

The correct answer is **A**.

The concept of duration helps to understand the sensitivity of a bond's full price to a change in interest rates.

A bond's full price is the security of a bond with accrued interest. It is also called the invoice or dirty price.

**CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP)**

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Q.2030 The return impact or percentage change in bond prices for smaller spread changes can be approximated by:

- A. Return impact =  $-(\text{Modified duration}) \times \Delta \text{spread}$ .
- B. Return impact =  $-(\text{Modified duration}) \times \Delta \text{spread} + 1/2 \times \text{Convexity} \times (\Delta \text{spread})^2$ .
- C. Return impact =  $\text{Modified duration} \times \Delta \text{spread}$ .

The correct answer is **A**.

For smaller spread changes, Return impact =  $-(\text{Modified duration}) \times \Delta \text{spread}$   
Option B) is incorrect because it is for larger spread changes that Return impact =  $-(\text{Modified duration}) \times \Delta \text{spread} + 1/2 \times \text{Convexity} \times (\Delta \text{spread})^2$ . Larger spreads need a convexity adjustment because duration alone may not accurately estimate price changes due to the convex nature of the yield curve. **CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP)**

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Q.2146 In response to a 0.1% increase in YTM and a Modified Duration of 3.567, the price of the bond should:

- A. Fall by approximately 0.3567%.
- B. Fall by approximately 3.567%.
- C. Rise by approximately 3.567%.

The correct answer is **A**.

Approximate percentage change in bond price =  $-(\text{ModDur}) \times \text{YTM}$ .

Percentage change in bond price =  $-3.567 \times 0.1 \Rightarrow$  Fall in price by approx 0.3567%

**CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP)**

---

Q.2147 For a 10-year, 5% annual-pay bond with a face value of \$1,000, currently trading at par, the approximate modified duration based on a change in yield of 25 basis points is *closest to*:

- A. 3.9.
- B. 7.8.
- C. 15.6.

The correct answer is **B**.

The price of the bond at a yield of 5% + 0.25% is:

$$N = 10; I/Y = 5.25; FV = 1,000; PMT = 50; CPT \Rightarrow PV = -981$$

The price of the bond at a yield of 5% - 0.25% is:

$$N = 10; I/Y = 4.75\%; FV = 1,000; PMT = 50; CPT \Rightarrow PV = -1020.$$

$$\text{Approximate Modified Duration} = \frac{PV_- - PV_+}{2 \times \Delta \text{Yield} \times PV_0}$$

where  $PV_-$  is the price of the bond when yield decreases,  $PV_+$  is the price of the bond when yield increases, and  $PV_0$  is the base price before an increase/decrease in yield.

$$\text{The approximate modified duration} = \frac{(1,020 - 981)}{(2 \times 1000 \times 0.0025)} = 7.8$$

Therefore, the approximate change in price for a 1% change in YTM is 7.8%.

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBp)***

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Q.2149 While calculating duration, for which of the following bonds would an investor *most likely* use Modified Duration rather than Effective Duration?

- A. A callable bond.
- B. A convertible bond.
- C. An option-free bond.

The correct answer is **C**.

Effective duration considers a change in the benchmark yield curve, whereas modified duration considers a change in the yield to maturity of a bond. Bonds with embedded options lack a clearly defined Yield to Maturity, disqualifying yield-related statistics like Modified and Macaulay durations from being used to estimate the change. Embedded options are Contingency provisions that provide the issuer or the bondholders the right, but not the obligation, to take action. These options are not part of the security and cannot be traded separately. Examples of embedded options include callable, puttable, and convertible securities.

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP)***

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Q.2150 Which of the following statement is/are *most likely* incorrect?

- A. A bond or portfolio will have a key rate duration for each maturity range on the spot rate curve.
- B. The duration of a bond measures the sensitivity of the bond's full price to changes in the bond's coupon rate.
- C. The sensitivity of bonds to changes in the shape of the benchmark yield curve is measured by using partial duration.

The correct answer is **B**.

The duration of a bond measures the sensitivity of the bond's full price (including accrued interest) to changes in the bond's yield-to-maturity and not coupon rate.

**A is incorrect.** The sensitivity of bonds to changes in the shape of the benchmark yield curve is measured by using partial duration or key rate duration.

**C is incorrect.** A bond or portfolio will have a key rate duration for each maturity change on the spot rate curve.

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP)***

---

Q.2153 A \$5 million par value bond has a modified duration of 7.42 and a full price of 101.32, expressed per \$100 of face value. Its money duration per \$100 of face value is *closest to*:

- A. \$752.
- B. \$371,000.
- C. \$37,589,720.

The correct answer is **A**.

$$\text{Money duration} = \text{Modified duration} \times \text{Full value of the bond}$$

$$\text{Money duration per \$100 of par value} = 7.42 \times 101.32 = \$751.79$$

Note: If the question had not asked for the money duration per \$100 of par value, the answer would then be:

$$\text{Money duration} = 7.42 \times \$5,000,000 \times 1.0132 = \$37,589,720$$

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP)***

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Q.3879 The duration of a pure discount bond is equal to its time to maturity. Its price is:

- A. Not affected by changes in interest rates.
- B. Greatly affected by changes in interest rates.
- C. Minimally affected by changes in interest rates.

The correct answer is **B**.

Pure discount bonds also known as zero-coupon bonds are Bonds that do not pay interest during the bond's life. It is issued at a discount to par value and redeemed at par. Because a zero-coupon bond's only cash-flow is at maturity, its price is greatly affected by changes in interest rates.

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (b): Explain how a bond's maturity, coupon, and yield level affect its interest rate risk.***

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Q.3892 An investor holds a \$5 million (par value) in a 4.5% bond maturing on March 31, 2020. The bond is currently priced at 97.250 per 100 of par value to yield 5.250% on an annual basis for settlement on 30 June 2019. The total market value including accrued interest is \$4,980,000. If the bond's annual Macaulay duration is 2.500, then its dollar duration is *closest to*:

- A. 231.
- B. 237.
- C. 462.

The correct answer is **A**.

Dollar duration is the name given to money duration in the United States.

$$\begin{aligned}
 \text{MoneyDur} &= \text{AnnModDur} \times \text{PV}^{\text{Full}} \\
 &= \frac{\text{MacDur}}{1 + y} \times \text{PV}^{\text{Full}} \\
 &= \frac{2.5}{1 + 0.0525} \times \$97.250 \approx \$231
 \end{aligned}$$

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP)***

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Q.4884 If all other characteristics of a bond are held constant, what is the *most likely* effect of an increase in the bond's yield-to-maturity on its modified duration?

- A. The bond's modified duration will increase.
- B. The bond's modified duration will decrease.
- C. The bond's modified duration will remain unchanged.

The correct answer is **B**.

When the yield-to-maturity (YTM) of a bond increases, the present value of the bond's future cash flows decreases, leading to a shorter weighted average time until those cash flows are received. This results in a decrease in the bond's modified duration, as the bond's price becomes less sensitive to changes in YTM.

**A is incorrect:** An increase in yield-to-maturity decreases the present value of future cash flows and shortens the duration. Therefore, the modified duration decreases, not increases, as the bond's price sensitivity to interest rate changes diminishes with higher yields.

**C is incorrect:** If the YTM increases, modified duration will not remain unchanged.

**CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP)**

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Q.4885 If two bonds are identical in all other respects (e.g., time-to-maturity, yield, etc.), which of the following statements about their modified durations is true?

- A. The bond with the lower coupon rate will have a higher modified duration.
- B. The bond with the higher coupon rate will have a higher modified duration.
- C. Both bonds will have the same modified duration.

The correct answer is **A**.

When two bonds are identical except for their coupon rates, the bond with the lower coupon rate will have the higher modified duration. This is because the present value of the cash flows from the lower coupon rate bond constitutes a smaller portion of its total price, making its price more sensitive to changes in yield.

**B is incorrect:** A higher coupon rate bond will have a lower modified duration because the present value of its cash flows is a larger portion of the total price, making it less sensitive to changes in yield compared to a lower coupon rate bond.

**C is incorrect:** Coupon rates directly affect the bond's modified duration, so bonds with different coupon rates will not have the same modified duration, even if all other characteristics are identical.

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP)***

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Q.4886 Daniel is analyzing a 5% semiannual coupon bond issued by XYZ Corporation. The bond has an annualized Macaulay duration of 4.250 years. XYZ Corporation has recently faced financial difficulties, leading to an increase in the bond's yield from 6% to 7%. Daniel wants to determine the anticipated percentage change in the bond's full price due to this yield increase. The anticipated percentage change in the bond's full price is *closest to*:

- A. -3.920%
- B. -4.126%
- C. -4.157%

The correct answer is **B**.

To calculate the anticipated percentage change in the bond's full price using Macaulay duration, we use the formula:

$$\% \Delta PV^{\text{Full}} \approx -\text{AnnModDur} \times \Delta \text{AnnYield}$$

First, convert the Macaulay duration to the modified duration using the formula:

$$\text{ModDur} = \frac{\text{MacDur}}{(1 + r)}$$

So, we calculate the modified duration as:

$$\text{ModDur} = \frac{4.250}{1 + (\frac{0.06}{2})} = \frac{4.250}{1 + 0.03} = \frac{4.250}{1.03} \approx 4.126 \text{ years}$$

Next, calculate the percentage annual change in yield ( $\Delta \text{AnnYield}$ ):

$$\Delta \text{AnnYield} = 7\% - 6\% = 1\% = 0.01$$

Now, use the modified duration to find the anticipated percentage change in the bond's price:

$$\% \Delta PV^{\text{Full}} = -4.126 \times 0.01 \approx -0.04126 \approx -4.126\%$$

**CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP)**

---

Q.4887 Which of the following statements best describes the use of duration measures in bond yields? Duration measures the:

- A. expected change in a bond's price for a given change in credit rating.
- B. average time it takes to receive all the cash flows from a bond.
- C. sensitivity of bond prices to changes in yields, estimating the percentage price change for a given change in interest rates.

The correct answer is **C**.

Duration is used to estimate how much the price of a bond will change in response to a change in interest rates or yields. It provides a measure of the bond's sensitivity to yield changes.

**A is incorrect.** It incorrectly associates duration with changes in credit ratings. Duration does not measure the impact of credit rating changes on bond prices; instead, it measures the sensitivity of bond prices to changes in interest rates or yields.

**B is incorrect.** It describes the Macaulay duration, which is the weighted average time to receive the bond's cash flows. While Macaulay duration is related to the concept of duration, it is not the primary measure used to estimate price sensitivity to yield changes.

**CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP).**

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Q.4888 Alex, an investor, is analyzing a bond issued by XYZ Corporation. The bond has a coupon rate of 2%, paid annually, and matures in ten years. If its yield-to-maturity is 1%, its modified duration is *most likely*:

- A. less than its Macaulay duration.
- B. the same as its Macaulay duration.
- C. greater than its Macaulay duration.

The correct answer is **A**.

The relationship between Macaulay duration and modified duration is given by the following formula: Given that the yield-to-maturity is 1%:

$$1 + r = 1 + 0.01 = 1.01$$

Since the denominator (1.01) is greater than 1, the modified duration will be less than the Macaulay duration because dividing by a number greater than 1 reduces the result.

Therefore, when the yield-to-maturity is positive, the Macaulay duration will be greater than the modified duration.

**B is incorrect:** The modified duration is only equal to the Macaulay duration if the yield is 0%, which would make the denominator equal to 1. Since the yield here is 1%, the modified duration will not be the same as the Macaulay duration.

**C is incorrect:** If the yield-to-maturity were negative, the denominator would be less than 1, making the modified duration greater than the Macaulay duration.

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBp).***

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Q.4889 Emma is evaluating a zero-coupon bond issued by ABC Corporation. The bond matures in seven years and is currently priced to yield 4% p.a. Emma is interested in understanding the bond's sensitivity to changes in interest rates. Given this information, the modified duration of this bond is *most likely*:

- A. less than seven years.
- B. seven years.
- C. more than seven years.

The correct answer is **A**.

To understand the Macaulay duration and Modified durations, let's first calculate the modified duration:

$$\text{ModDur} = \frac{\text{Macaulay Duration}}{1 + r} = \frac{7 \text{ years}}{1 + 0.04} = \frac{7 \text{ years}}{1.04} = 6.731 \text{ years}$$

The calculation shows that the modified duration is approximately 6.731 years, which is less than seven years. The modified duration of a zero-coupon bond is always less than its Macaulay duration when the yield is positive. This adjustment accounts for the time value of money, making the modified duration a more accurate measure of interest rate sensitivity.

**B is incorrect:** The modified duration cannot be exactly seven years if the yield is positive.

**C is incorrect:** With a positive yield of 4%, the modified duration will always be less than the Macaulay duration. If the yield were negative, the modified duration could be greater than the Macaulay duration.

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP).***

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Q.4890 David is analyzing a 3-year zero-coupon bond issued by the UK government and a 10-year corporate bond issued by XYZ Corp. The UK government bond is priced to yield 1%, and the XYZ Corp bond has a coupon rate of 5%, paid semiannually, with a yield-to-maturity of 4%. Assuming the bonds were issued on the same date and it is now exactly one year later, which bond *most likely* has the longest Macaulay duration?

- A. UK government bond.
- B. XYZ Corp bond.
- C. Both bonds have the same Macaulay duration.

The correct answer is **B**.

Since one year has passed, so the remaining maturity is now 9 years. The Macaulay duration of a coupon bond is typically less than its time to maturity but still significant, especially for longer-term bonds. Therefore, the XYZ Corp bond's Macaulay duration is greater than the 2-year duration of the zero-coupon UK government bond.

**A is correct:** The Macaulay duration of a zero-coupon bond is equal to its time to maturity. Given one year has passed, the remaining maturity is now 2 years.

**C is incorrect:** The UK government bond's duration is equal to its remaining maturity (2 years), whereas the XYZ Corp bond's duration, though less than its 9-year remaining maturity, will be greater than 2 years due to the longer remaining maturity and periodic coupon payments.

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP).***

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Q.4891 Jessica is comparing two bonds: a 5-year semiannual coupon bond issued by DEF Corp with a coupon rate of 3% and a yield-to-maturity of 2%, and a 20-year annual coupon bond issued by GHI Corp with a coupon rate of 6% and a yield-to-maturity of 5%. Assuming interest rates increase by 50 basis points immediately, which bond's price will *likely* decrease the most in percentage terms?

- A. GHI Corp bond
- B. DEF Corp bond
- C. Both bonds will decrease by the same percentage

The correct answer is **A**.

The GHI Corp bond has a 20-year maturity and pays annual coupons. Long-term bonds generally have higher durations, meaning they are more sensitive to interest rate changes. With duration likely around 14-15 years, this bond will experience a greater price decrease than the DEF Corp bond.

**B is incorrect:** Although the DEF Corp bond has a 5-year maturity and semiannual coupons, its duration will be shorter than that of the GHI Corp bond due to the shorter maturity period. Bonds with shorter durations are less sensitive to interest rate changes.

**C is incorrect:** The GHI Corp bond's longer duration means its price will decrease more in percentage terms compared to the DEF Corp bond when interest rates increase.

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP).***

---

Q.4892 Michael is evaluating a 4-year zero-coupon bond issued by the US Treasury and an 8-year semiannual coupon bond issued by ABC Inc. with a coupon rate of 4% and a yield-to-maturity of 3%. Assuming the bonds were issued on the same date and it is now exactly one year later, the bond with the lowest modified duration is *most likely*:

- A. US Treasury bond.
- B. ABC Inc. bond.
- C. Both bonds have the same modified duration.

The correct answer is **A**.

Since one year has passed, the remaining maturity is now 3 years. The modified duration of a zero-coupon bond is equal to its Macaulay duration divided by  $(1 + \text{yield per period})$ . For the US Treasury bond, the modified duration is approximately 2.913 years where 3 years is divided by  $(1 + 0.03)$ . Zero-coupon bonds generally have lower modified durations compared to similar maturity coupon bonds because there are no interim cash flows.

**B is incorrect:** Since one year has passed, the remaining maturity is now 7 years. The ABC Inc. bond, with semiannual coupons, will have a higher modified duration compared to the zero-coupon US Treasury bond. The presence of semiannual coupons and the longer remaining maturity contribute to a higher modified duration.

**C is incorrect:** The US Treasury bond, being a zero-coupon bond with a 3-year remaining maturity, will have a lower modified duration compared to the 7-year semiannual coupon bond issued by ABC Inc.

**CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP).**

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Q.4893 Consider a bond issued by XYZ Corporation, which pays semi-annual coupons. The bond has a coupon rate of 5%, a yield-to-maturity of 4%, and a time-to-maturity of 10 years. John, a financial analyst, observes that between coupon payments, the yield-to-maturity remains constant. How does the Macaulay duration of XYZ Corporation's bond change between coupon payments if the yield-to-maturity remains unchanged?

- A. Decreases throughout the coupon period.
- B. Increases throughout the coupon period.
- C. Remains constant throughout the coupon period.

The correct answer is **A**.

As time passes and the next coupon payment approaches, the time remaining to receive future cash flows decreases, causing the Macaulay duration to decrease.

**B is incorrect:** Duration decreases as time to cash flows shortens; it does not increase.

**C is incorrect:** Duration changes as time to each future cash flow decreases, so it cannot remain constant.

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (b): Explain how a bond's maturity, coupon, and yield level affect its interest rate risk.***

---

Q.4894 Consider two bonds issued by ABC Corporation, both with a time-to-maturity of 10 years and a yield-to-maturity of 5%. Bond A trades at a premium, while Bond B trades at a discount. Mary, a portfolio manager, is analysing these bonds' interest rate risk and duration characteristics. Which statement about the Macaulay duration of these bonds is *most accurate*?

- A. The Macaulay duration of Bond A is higher than that of Bond B.
- B. The Macaulay duration of Bond A is the same as that of Bond B.
- C. The Macaulay duration of Bond A is lower than that of Bond B.

The correct answer is **C**.

The premium bond A has higher coupon payments, which means more of its cash flows are received earlier compared to the discount bond B. This reduces the weighted average time to receive the bond's cash flows, resulting in a lower Macaulay duration.

**A is incorrect:** Bond B (discount bond) has lower coupon payments, meaning its duration is higher due to a greater concentration of value in the final payment.

**B is incorrect:** Despite having the same time-to-maturity and yield-to-maturity, the higher coupon payments of Bond A cause its duration to differ from Bond B.

**CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (b): Explain how a bond's maturity, coupon, and yield level affect its interest rate risk.**

---

Q.4895 An investor is considering purchasing a perpetual bond that pays an annual coupon of \$50. The current market yield for similar bonds is 5%. The Macaulay duration is *closest to*:

- A. 15 years.
- B. 18 years.
- C. 21 years.

The correct answer is **C**.

The formula for Macaulay Duration of a Perpetual Bond is given as:

$$\text{MacDur} = \frac{1 + r}{r} = \frac{1.05}{0.05} = 21 \text{ years}$$

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP).***

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Q.4896 A floating-rate note has a coupon period of 180 days. If 45 days have passed since the last coupon reset, the Macaulay duration of the note is *closest to*:

A. 0.25

B. 0.50

C. 0.75

The correct answer is **C**.

Formula for Macaulay Duration of Floating-Rate Notes is given as:

$$\text{MacDur}_{\text{Floating}} = \frac{T - t}{T}$$

Where;

$$T = 180 \text{ days}$$

$$t = 45 \text{ days}$$

Substitute the given values:

$$\text{MacDur}_{\text{Floating}} = \frac{180 - 45}{180} = \frac{135}{180} = 0.75$$

***CFA Level I, Fixed Income, Learning Module 11: Yield Based Bond Duration Measures and Properties. LOS (a): Define, calculate, and interpret modified duration, money duration, and the price value of a basis point (PVBP).***

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## **Learning Module 12: Yield Based Bond Convexity and Portfolio Properties**

Q.83 A corporate bond has the following characteristics:

Price: USD 106.50

Coupon rate: 5%

Duration: 7.5 years

Convexity: 101

If the credit spreads narrow by 175 basis points, then the price of the bond will be *closest to*:

A. USD 114.68.

B. USD 122.13.

C. USD 123.78.

The correct answer is **B**.

$$\begin{aligned}\% \Delta PV^{\text{full}} &\approx (-\text{AnnModDur} \times \Delta \text{Yield}) + \left(\frac{1}{2} \times \text{AnnConvexity} \times (\Delta \text{Yield}^2)\right) \\ &= (-7.5 \times (-0.0175)) + (1/2 \times 101 \times (-0.0175)^2) \\ &= 0.1313 + 0.0155 = 0.1468 = 14.68\% \\ \text{Price} &= 106.5 \times (1 + 0.1468) = 122.13\end{aligned}$$

The negative sign at the beginning recognizes the fact that bond prices and yields-to-maturity move inversely (as bond prices increase, bond yields fall).

Also, note that the change in yield is negative because the question tells us that credit spreads narrow by 175 basis points; that's a decrease (-)

***CFA Level I, Fixed Income, Learning Module 12: Yield-Based Bond Convexity and Portfolio Properties. LOS 12a: calculate and interpret convexity and describe the convexity adjustment.***

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Q.969 Which of the following is *most likely* known as a positive amount on a traditional (option-free) fixed-rate bond for either an increase or a decrease in the yield?

- A. Modified Duration.
- B. Annualized convexity.
- C. Convexity Adjustment.

The correct answer is **C**.

Convexity adjustment refers to the positive amount on a traditional fixed-rate bond for either an increase or decrease in yield.

$$\begin{aligned}\% \Delta \text{Full price of a bond} = & (-\text{Annual Modified Duration} \times \Delta \text{Yield}) \\ & + \left(\frac{1}{2} \times \text{Annual Convexity} \times (\Delta \text{Yield})^2\right)\end{aligned}$$

As seen above, the convexity effect, the function after the addition sign, remains positive regardless of whether the change in yield is positive because the  $\Delta \text{yield}$  part of the convexity adjustment is squared. The square gets rid of the negative in the case of a decreased yield.

***CFA Level I, Fixed Income, Learning Module 12: Yield-Based Bond Convexity and Portfolio Properties. LOS 12a: calculate and interpret convexity and describe the convexity adjustment.***

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Q.972 Calculate the expected percentage price gain (loss) from the following data:

- Reduction in yield-to-maturity: 20bps
- Annual modified duration: 23.657
- Annual convexity: 678.98

A. -4.60%.

B. 4.86%.

C. 4.59%.

The correct answer is **B**.

$$\begin{aligned}\% \Delta \text{Full price of a bond} &= (-\text{Annual Modified Duration} \times \Delta \text{Yield}) \\ &+ \left(\frac{1}{2} \times \text{Annual Convexity} \times (\Delta \text{Yield})^2\right)\end{aligned}$$

$$\text{Percentage change in full price} = [-23.657 \times (-0.002)] + \frac{1}{2} \times [678.98 \times (-0.002)^2] = 4.86\%$$

***CFA Level I, Fixed Income, Learning Module 12: Yield-Based Bond Convexity and Portfolio Properties. LOS 12a: calculate and interpret convexity and describe the convexity adjustment.***

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Q.2148 For a given change in yields, the difference between the actual change in a bond's price and the predicted change in price using the duration measure will be greater for:

- A. A short-term bond.
- B. A bond with less convexity.
- C. A bond with greater convexity.

The correct answer is **C**.

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

Note: Short-term bonds generally have low convexity.

***CFA Level I, Fixed Income, Learning Module 12: Yield-Based Bond Convexity and Portfolio Properties. LOS 12b: Calculate the percentage price change of a bond for a specified change in yield, given the bond's duration and convexity***

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Q.2155 A bond has a duration of 10.62 and a convexity of 91.46. For a 200 bps increase in yield, the bond's approximate percentage price change is *closest to*:

- A. -24.90%.
- B. -19.41%.
- C. -1.62%.

The correct answer is **B**.

$$\begin{aligned}\text{The estimated price change} &= -(\text{Duration}) \times (\text{Change in yield}) + \left(\frac{1}{2}\right) \times (\text{Convexity}) \times (\text{Change in y}) \\ &= -10.62 \times 0.02 + 0.5 \times 91.46 \times 0.02^2 = -19.41\%\end{aligned}$$

***CFA Level I, Fixed Income, Learning Module 12: Yield-Based Bond Convexity and Portfolio Properties. LOS 12b: Calculate the percentage price change of a bond for a specified change in yield, given the bond's duration and convexity***

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Q.2157 The duration-only based estimate of the decrease in price resulting from an increase in yield is:

- A. Larger than the actual decrease, so it's also improved by a positive adjustment for convexity.
- B. Smaller than the actual decrease, so it's also improved by a positive adjustment for convexity.
- C. Larger than the actual decrease, so it's also improved by a negative adjustment for convexity.

The correct answer is **A**.

The convexity adjustment to the price change is the same for both an increase and a decrease in yield. The duration-only based estimate of the increase in price resulting from a decrease in yield is too low for a bond with positive convexity and is improved by a positive adjustment for convexity. The duration-only based estimate of the decrease in price resulting from an increase in yield is larger than the actual decrease, so it's also improved by a positive adjustment for convexity.

***CFA Level I, Fixed Income, Learning Module 12: Yield-Based Bond Convexity and Portfolio Properties. LOS 12c: Calculate portfolio duration and convexity and explain the limitations of these measures***

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Q.2158 A 9% bond has a full price of \$905 and a YTM of 10%. What is the percentage change in the full price of the bond for a 30 basis point increase in YTM assuming the bond's modified duration is 9.42 and its convexity is 68.33?

A. -2.83%.

B. -2.80%.

C. -2.65%.

The correct answer is **B**.

$$\text{Expected change in bond's price} = \frac{\delta P}{P} = -D_{\text{mod}} \times \Delta y + 0.5 \times C \times \Delta y^2$$

Where

$D_{\text{mod}}$  = Modified Duration,

$\Delta y$  = Change in Yield, and

C = Convexity Effect

$$\text{Duration effect} = -D_{\text{mod}} \times \Delta y = -9.42 \times 0.003 = -0.02826$$

$$\text{Convexity effect} = 0.5 \times C \times \Delta y^2 = 0.5 \times 68.33 \times 0.003^2 = 0.000307$$

Therefore,

$$\text{Expected change in bond's price} = (-0.02826 + 0.000307) = -2.79530\% \approx -2.80\%$$

***CFA Level I, Fixed Income, Learning Module 12: Yield-Based Bond Convexity and Portfolio Properties. LOS 12b: Calculate the percentage price change of a bond for a specified change in yield, given the bond's duration and convexity***

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Q.2166 A bond valued at \$200,000 has a duration of 8 and a convexity of 20. Assuming that the bond's spread relative to the benchmark curve increases by 25 basis points due to a credit downgrade, then the approximate change in the bond's market value is *closest to*:

- A. -\$4,012.50.
- B. -\$3,988.32.
- C. -\$3,960.20.

The correct answer is **B**.

$$\text{Price Change} = ((-\text{Duration} \times \text{Yield change}) + (0.5 \times \text{Convexity} \times \text{Yield change}^2))$$

$$\text{Price change} = (-8 \times 0.0025) + (0.5 \times 20 \times 0.0025^2) = -1.99\%$$

The bond's value will fall by approximately  $-1.99\% \times 200,000 = -\$3,988$ .

***CFA Level I, Fixed Income, Learning Module 12: Yield-Based Bond Convexity and Portfolio Properties. LOS 12c: Calculate portfolio duration and convexity and explain the limitations of these measures***

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Q.2167 Which of the following is *most likely not* a limitation of the portfolio duration measure?

- A. It assumes that the yield for all maturities changes by the same amount.
- B. It is subject to huge swings in value since book values may change over time.
- C. It is subject to huge swings in value since the market value may change over time.

The correct answer is **B**.

Bond duration is calculated using market values. Changes in book values are irrelevant.

There are two ways to calculate the duration of a bond portfolio: The weighted average of the time to receipt of aggregate cash flows and the weighted average of the durations of individual bonds that compose the portfolio. The major limitations include: The weighted average of the time to receipt of aggregate cash flows method can not be used for bonds with embedded options or floating rate notes due to uncertain future cash flows. The weighted average of the durations of individual bonds that compose the portfolio method assumes a parallel shift in the curve.

***CFA Level I, Fixed Income, Learning Module 12: Yield-Based Bond Convexity and Portfolio Properties. LOS 12c: Calculate portfolio duration and convexity and explain the limitations of these measures***

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Q.3880 All else being equal, an investor will prefer a bond that is:

- A. Less convex.
- B. More convex.
- C. Less or more convex depending on the investor's overall portfolio.

The correct answer is **B**.

Convexity is a measure of the curvature, or the degree of the curve, in the relationship between bond prices and bond yields. If a bond's duration increases as yields increase, the bond is said to have negative convexity and if a bond's duration rises and yields fall, the bond is said to have positive convexity. All else being equal, investors seek convexity in bonds. In practice, convexity will make bonds trade at a premium when compared to less convex bonds.

***CFA Level I, Fixed Income, Learning Module 12: Yield-Based Bond Convexity and Portfolio Properties. LOS 12a: calculate and interpret convexity and describe the convexity adjustment.***

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Q.3890 An expected change in a bond's price of -1.65% due to a change in yield to maturity (YTM) of 20 basis points creates a 0.02% change in the price of bond from the convexity effect. What is the *most likely* percentage contribution to the change in the bond's price owed to the duration effect?

- A. -0.0167.
- B. -0.0163.
- C. 0.0167.

The correct answer is **A**.

$$\begin{aligned}\text{Change in bond price} &= \text{Duration effect} + \text{Convexity effect} \\ \text{Duration effect} &= \text{Change in bond price} - \text{Convexity effect} \\ &= -1.65 - 0.02 = -1.67\%\end{aligned}$$

***CFA Level I, Fixed Income, Learning Module 12: Yield-Based Bond Convexity and Portfolio Properties. LOS 12b: Calculate the percentage price change of a bond for a specified change in yield, given the bond's duration and convexity***

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## **Learning Module 13: Curve Based and Empirical Fixed Income Risk Measures**

Q.82 The current price of a bond is \$100.

- When the YTM increases by 1%, the price of the bond goes down to \$98.5.
- When the YTM decreases by 1%, the price of the bond reaches \$103.

The effective duration of this bond is *closest to*:

- A. 0.045 years.
- B. 2.25 years.
- C. 4.5 years.

The correct answer is **B**.

$$D_{\text{Effective}} = \frac{(P_- - P_+)}{2 \times P_0 \times \Delta y}$$
$$D_{\text{Effective}} = \frac{(\$103 - \$98.5)}{(2 \times \$100 \times 0.01)} = 2.25$$

***CFA Level I, Fixed Income, Learning Module 13: Curve-Based and Empirical Fixed-Income Risk Measures. LOS 13a: Explain why effective duration and effective convexity are the most appropriate measures of interest rate risk for bonds with embedded options.***

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Q.84 The effective duration of a bond refers to:

- A. The sensitivity of the bond's price to a change in a benchmark yield curve.
- B. The percentage duration change for a bond given a change in its yield-to-maturity.
- C. The percentage duration percentage change for a bond given a change in its price.

The correct answer is **A**.

The effective duration of a bond is the sensitivity of the bond's price to a change in a benchmark yield curve.

$$D_{\text{Eff}} = \frac{(P_- - P_+)}{(2 \times P_0 \times \Delta y)}$$

**CFA Level I, Fixed Income, Learning Module 13: Curve-Based and Empirical Fixed-Income Risk Measures. LOS 13a: Explain why effective duration and effective convexity are the most appropriate measures of interest rate risk for bonds with embedded options.**

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Q.86 A bond selling for par currently has a 9% yield. If the bond price increases to USD 101 when yields fall 10 basis points and the price falls to USD 98 when yields rise by 10 basis points, then what is this bond's effective duration?

- A. 3 years.
- B. 15 years.
- C. 30 years.

The correct answer is **B**.

$$\begin{aligned} D_{\text{Eff}} &= \frac{(P_- - P_+)}{(2 \times \Delta \text{Curve} \times PV_0)} \\ &= \frac{(101 - 98)}{(2 \times 0.001 \times 100)} = 15 \text{ years} \end{aligned}$$

**CFA Level I, Fixed Income, Learning Module 13: Curve-Based and Empirical Fixed-Income Risk Measures. LOS 13a: Explain why effective duration and effective convexity are the most appropriate measures of interest rate risk for bonds with embedded options.**

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Q.3891 The interest rate risk of a fixed-rate bond with an embedded call option is *most likely* measured by?

- A. Key rate duration.
- B. Modified duration.
- C. Effective duration.

The correct answer is **C**.

Effective duration is a measure of the interest rate risk of a fixed rate bond with an embedded call option.

**A is incorrect.** The key rate duration is a method of measuring the interest rate sensitivities of a fixed-income instrument or portfolio to shifts in key points along the yield curve.

**B is incorrect.** The modified duration is a measure of the percentage price change of a bond given a change in its yield-to-maturity.

***CFA Level I, Fixed Income, Learning Module 13: Curve-Based and Empirical Fixed-Income Risk Measures. LOS 13a: Explain why effective duration and effective convexity are the most appropriate measures of interest rate risk for bonds with embedded options.***

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## **Learning Module 14: Credit Risk**

Q.92 Which one of the following is *not* one of the two main components of credit risk?

- A. Default risk
- B. Business risk
- C. Loss severity

The correct answer is **B**.

The two main components of credit risk are default risk and loss severity. Default risk is the risk that a borrower will fail to make required payments on a loan or other credit obligation. Loss severity is the potential financial loss that a lender may incur in the event of default.

***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14a: Describe credit risk and its components, probability of default and loss given default.***

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Q.93 Which of the following statements is *least likely* accurate?

- A. Simple assets tend to be more liquid than complex assets.
- B. The wider the bid-ask spread, the more liquid the market is.
- C. If the seller has urgency, this tends to exacerbate the liquidity risk.

The correct answer is **B**.

The wider the bid-ask spread, the lower the market liquidity risk is. Bid-ask spread is the difference between the ask and bid price of an asset in the market. A high bid-ask spread implies a huge difference between the price sellers are willing to sell, and the price buyers are willing to buy. This huge difference will decrease market liquidity as sellers will not be willing to sell at the buyers' prices, and buyers will not be willing to buy at the sellers' prices.

A and C are incorrect. They are true statements.

***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14a: Describe credit risk and its components, probability of default and loss given default.***

---

Q.97 Which of these bonds ratings would *most likely* have the highest yield?

- A. C
- B. CC
- C. CCC-

The correct answer is **A**.

In this question, C is the lowest rated bond. Therefore, it carries more risk and is more likely to have the highest yield.

As a general rule, investment-grade bonds will always have lower yields due to their low default risk. On the other hand, junk bonds/high yield bonds/non-investment grade bonds will always have higher yields due to their high default risk. The higher yields in non-investment grade bonds compensate investors for the high risk.

***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14b: describe the uses of ratings from credit rating agencies and their limitations.***

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Q.98 Municipal debt refers to debt issued by:

- A. a city only.
- B. a state, a province or local governments.
- C. a state, a province, a country or local governments.

The correct answer is **B**.

Municipal debt refers to debt issued by a state, a province, or local governments, which includes cities but not countries.

***CFA Level I, Fixed Income, Learning Module 15: Credit Analysis for Government Issuers, LOS 15a: explain special considerations when evaluating the credit of sovereign and non-sovereign government debt issuers and issues.***

---

Q.222 A Treasury Bill (T-Bill) with a \$100 face value is selling for \$97. There are 150 days until maturity. The T-Bill's effective annual yield *closest to*:

- A. 0.3%
- B. 7.69%
- C. 7.2%

The correct answer is **B**.

The correct calculation for the holding period yield (HPY) is  $(100-97)/97 = 0.03093$ .

Therefore, the correct calculation for the effective annual yield (EAY) would be  $(1 + 0.03093)^{(365/150)} - 1 = 0.0769$ , which is equivalent to 7.69%.

**A is incorrect.** It represents the holding period yield.

**C is incorrect.** It represents the bank discount yield.

**CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14a: Describe credit risk and its components, probability of default and loss given default.**

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Q.2020 Expected loss is equal to:

- A. the probability of default multiplied by credit risk.
- B. the probability of default multiplied by default risk.
- C. the probability of default multiplied by loss severity.

The correct answer is **C**.

The two main components of the expected loss are default risk and loss severity.

Expected loss = Default risk (or Probability of Default) \* Loss Severity.

**CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14a: Describe credit risk and its components, probability of default and loss given default.**

---

Q.2023 Which of the following is most likely correct regarding the effect of rating by rating agencies?

- A. Rating tends to have no impact on market prices.
- B. Rating tends to have an immediate effect on market prices.
- C. Rating tends to lag market prices.

The correct answer is C.

Bond prices and credit spreads can change rapidly with changes in perceived creditworthiness as compared to upgrades/downgrades by rating agencies. Therefore, rating agencies have an impact on market prices but they can lag behind the actual price change in the market.

**CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14b: describe the uses of ratings from credit rating agencies and their limitations.**

---

Q.2025 Covenants on new bond issues tend to be more valuable during:

- A. strong economic or market conditions.
- B. normal economic or market conditions.
- C. weak economic or market conditions.

The correct answer is C.

During market turmoil or weak economic or market conditions, investors seek more protection hence stronger covenants.

Option B) is incorrect because, in normal economic conditions, investors seek less protection.

Option A) is incorrect because, during strong economic conditions, investors seek less protection.

**CFA Level I, Fixed Income, Learning Module 1: Fixed-Income Instrument Features, LOS 1b: describe the contents of a bond indenture and contrast affirmative and negative covenants.**

---

Q.2027 Which of the following is *least likely* a bond covenant?

- A. The issuer must adhere to all applicable laws and regulations.
- B. The issuer can buy back as much stock as it likes.
- C. The issuer must offer security to this bond issue, before offering it to other creditors.

The correct answer is **B**.

Buying back as much stock as a company wants exposes lenders to default risk as the company might exhaust funds by buying back stock. The company can buy back as much stock as it likes when there are weak or no covenants. Strong covenants prohibit companies from buying back stocks.

Option A) is incorrect because it is an example of an affirmative covenant.

Option C) is incorrect because it is an example of a restrictive covenant.

***CFA Level I, Fixed Income, Learning Module 1: Fixed-Income Instrument Features, LOS 1b: describe the contents of a bond indenture and contrast affirmative and negative covenants.***

---

Q.2028 Credit analysis of the issuer's collateral should *most likely* involve analysis of:

- A. value of total asset compared to value of total debt.
- B. managements track record.
- C. reliability of accounting policies.

The correct answer is **A**.

The value of assets in relation to the level of debt is important to assess the collateral of the company; that is, the quality and value of the assets that support the debt levels of the company. Option B) is incorrect because it is a part of character.

Option C) is incorrect because it is also a part of character.

***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14a: Describe credit risk and its components, probability of default and loss given default.***

---

Q.2029 Capacity analysis should involve analysis of the:

- A. issuer's long-term goals.
- B. issuer's life cycle stage.
- C. issuer's accounting policies.

The correct answer is **B**.

Capacity is the ability of a borrower to pay off its debts (principal and interest). Issuer's life cycle stage is part of the capacity. A mature company will be better placed to service its debt than one that has just been launched.

**A is incorrect.** It is an example of character.

**B is incorrect.** It is an example of character.

**CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14a: Describe credit risk and its components, probability of default and loss given default.**

---

Q.2031 The ability to use monetary policy is *least likely* associated with:

- A. sovereign bonds.
- B. government bonds.
- C. municipal bonds.

The correct answer is **C**.

State, provincial, and local governments (e.g., cities, towns, and counties) issue municipal bonds. They rely on available resources and do not have the ability to use monetary policy.

A is incorrect. Sovereign bonds are bonds issued by a national government and thus have the ability to use monetary policy.

B is incorrect. Not all government bonds can use monetary policy, only those offered by the national government. Note that municipal and sovereign bonds are all examples of government bonds.

**CFA Level I, Fixed Income, Learning Module 15: Credit Analysis for Government Issuers, LOS 15a: Explain special considerations when evaluating the credit of sovereign and non-sovereign government debt issuers and issues.**

---

Q.2032 General obligation (GO) bonds are:

- A. unsecured bonds issued with the full faith and credit of the issuing government.
- B. secured bonds issued with the full faith and credit of the issuing government.
- C. unsecured bonds issued without the full faith and credit of the issuing government.

The correct answer is **A**.

A general obligation bond (GO) is a municipal bond backed by the credit and taxing power of the issuing jurisdiction rather than the revenue from a given project. General obligation bonds are issued with the belief that a municipality will be able to repay its debt obligation through taxation or revenue from projects.

Note: Option B) is incorrect because it is the definition of a sovereign bond.

**CFA Level I, Fixed Income, Learning Module 15: Credit Analysis for Government Issuers, LOS 15a: Explain special considerations when evaluating the credit of sovereign and non-sovereign government debt issuers and issues.**

---

Q.2035 Credit curves or spread curves are typically upward sloping because:

- A. longer maturity bonds tend to have wider spreads.
- B. shorter maturity bonds tend to have wider spreads.
- C. the maturity does not impact spreads.

The correct answer is **A**.

Credit curves or spread curves show the relationship between spread and maturity. Longer maturity bonds tend to have wider spreads because the longer the maturity, the higher the uncertainty of the future creditworthiness of the debt issuer. The opposite is true.

**CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14b: describe the uses of ratings from credit rating agencies and their limitations.**

---

Q.2038 The risk of default on a debt that may arise from a borrower failing to make required payments is *most likely* known as:

- A. default risk.
- B. loss given default.
- C. expected loss.

The correct answer is **A**.

A credit risk is the risk of default on a debt that may arise from a borrower failing to make required payments. In the first resort, the risk is that of the lender and includes lost principal and interest, disruption to cash flows, and increased collection costs. B is incorrect. Loss-given default, also known as loss severity, is the amount of money that a lender loses when a borrower defaults.

$$\text{Loss severity} = 1 - \text{recovery rate}$$

where recovery rate is the amount of the loan that a lender can recover from the borrower. C is incorrect. The expected loss is obtained by multiplying default risk by loss given default. The expected loss is basically the probability that a loss will occur multiplied by the cost of the loss.

***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14a: Describe credit risk and its components, probability of default and loss given default.***

---

Q.2039 Which of the following statements is/are accurate?

- I. The expected loss is equal to the default risk multiplied by the loss severity.
- II. The difference in yield between a credit-risky and credit-risk-free bond of similar maturity is called the spread risk.
- III. Bond prices are inversely related to spreads.

- A. II only
- B. I & III only
- C. I, II & III

The correct answer is **B**.

The difference in yield between a credit-risky and credit-risk-free bond of similar maturity is called the yield spread. ***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14a: Describe credit risk and its components, probability of default and loss given default.***

---

Q.2040 A 5-year corporate bond 'A' is trading at a spread of 175 basis points to Treasuries. The yield on 5-year Treasury notes is 4%. Another corporate bond 'B' of 5-years maturity is trading at a spread of 150 basis points. Which bond has a higher credit risk?

- A. Both bonds have the same credit risk because they have the same maturity.
- B. Bond B, because it has a lower spread.
- C. Bond A, because it has a higher yield of 5.75%.

The correct answer is **C**.

Bonds with higher credit risk trade at higher yields than bonds considered free of credit risk, such as Treasury bonds. This higher yield compensates investors for the additional risk they are taking. We compare the spreads and the resulting yields to determine which bond has a higher credit risk.

For Bond A:

- Spread to Treasuries: 175 basis points (1.75%)
- Yield on 5-year Treasury notes: 4%
- The yield on Bond A: 4% (Treasury yield) + 1.75% (spread) = 5.75%

For Bond B:

- Spread to Treasuries: 150 basis points (1.50%)
- Yield on 5-year Treasury notes: 4%
- Yield on Bond B: 4% (Treasury yield) + 1.50% (spread) = 5.50%

Since Bond A has a higher yield (5.75%) compared to Bond B (5.50%), investors require more compensation to hold Bond A due to its higher perceived credit risk. Therefore, Bond A has a higher credit risk than Bond B.

**A is incorrect.** Both bonds do not have the same credit risk simply because they have the same maturity. Credit risk is more closely related to the credit spread than maturity alone.

**B is incorrect.** Bond B has a lower spread (150 basis points) compared to Bond A (175 basis points), which actually indicates that Bond B has a lower credit risk, not higher.

***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14b: describe the uses of ratings from credit rating agencies and their limitations.***

---

Q.2041 Which of the following statement(s) is/are correct?

Statement I. Market liquidity risk is greater for bonds of less creditworthy issuers and for the bonds of bigger issuers who have large publicly-traded debt.

Statement II. Credit migration risk is the possibility that spreads will widen because the issuer has become less creditworthy.

- A. Both statements are correct.
- B. Both statements are incorrect.
- C. Only one statement is correct

The correct answer is **C**.

Statement I is incorrect. Market Liquidity risk is greater for bonds of less creditworthy issuers and for the bonds of smaller issuers who have little publicly-traded debt.

Statement II is correct. Credit migration risk is the risk that spreads will widen because the issuer has become less creditworthy.

***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14a: Describe credit risk and its components, probability of default and loss given default.***

---

Q.2042 The size of the bid-ask spread widening *least likely* reflects that:

- A. market liquidity risk increases.
- B. credit migration risk increases.
- C. there is an increased demand for security.

The correct answer is **C**.

Increased demand for security will decrease the bid-ask spread of the security. Decreased demand will widen the bid-ask spread.

A and B are incorrect. They are correct statements. An increase in market liquidity and credit migration risk will widen the bid-ask spread.

The size of the bid-ask spread reflects market liquidity risk. When the bid-ask spread widens, market liquidity falls, and market liquidity risk increases.

***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14c: Describe macroeconomic, market, and issuer-specific factors that influence the level and volatility of yield spreads.***

---

Q.2047 Which of the following statement(s) is/are correct?

Statement I. Higher credit ratings tend to be more stable than lower credit ratings.

Statement II. Credit ratings lag market pricing.

- A. Both statements are correct.
- B. Both statements are incorrect.
- C. Only one statement is correct.

The correct answer is **A**.

Both statements are correct. Higher credit ratings tend to be more stable than lower credit ratings and credit ratings lag market pricing.

***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14b: describe the uses of ratings from credit rating agencies and their limitations.***

---

Q.2050 Which of the following conditions is/are affirmative covenants?

I. The principal of \$500 million will be repaid at a 5% interest.

II. The debt-to-equity ratio of the borrowing company should not fall below 2.5.

III. The borrower is not allowed to distribute profits of the company as dividend as long as the loan is not repaid.

A. All three conditions are affirmative covenants.

B. Only I is an affirmative covenant.

C. Only I and II are affirmative covenants.

The correct answer is **B**.

A covenant is a provision in a bond indenture meant to protect lenders by forbidding borrowers or requiring them to do some things.

An affirmative/positive covenant is a type of promise or contract that requires a party to adhere to certain terms. Option I is a positive covenant.

A negative covenant restricts a company from engaging in certain actions or, in other words, a promise not to do something. Option II and III are negative covenants. Financial ratios and examples of what the borrower cannot do are both examples of negative covenants.

***CFA Level I, Fixed Income, Learning Module 16, Credit Analysis for Corporate Issuers, LOS16a: Describe the qualitative and quantitative factors used to evaluate a corporate borrower's creditworthiness.***

---

Q.2052 Determine the effect the following cases have on yield spreads.

Case 1: Absence of brokers and dealers that provide market-making capital in the bond market.

Case 2: High demand for bonds due to a predicted upcoming recession.

- A. The yield spread will widen in one case and narrow in the other.
- B. The yield spreads will widen in both cases.
- C. The yield spread will narrow in both cases.

The correct answer is **A**.

Case 1: In the absence of brokers and dealers to provide market-making capital in the bond market, the yield spread will widen because brokers and dealers usually provide sufficient capital to enable the market to function efficiently.

Case 2: Due to the high demand for bonds, the yield spread will narrow.

Note: Yield spread is the difference between the quoted rates of return on two different investments. The two investments have similar maturity dates but different credit qualities.

***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14b: describe the uses of ratings from credit rating agencies and their limitations.***

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Q.2054 Which of the following is *least likely* correct?

- A. Longer maturity bonds have wider spreads because of longer durations.
- B. Longer maturity bonds have wider spreads because of larger bid-ask spreads.
- C. Longer maturity bonds have wider spreads because of their stronger creditworthiness.

The correct answer is **C**.

Longer maturity bonds have higher uncertainty of the issuer's future creditworthiness. Thus, they have higher credit spreads.

***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14b: describe the uses of ratings from credit rating agencies and their limitations.***

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Q.2055 Estimating loss severity is essential for:

- A. high-yield debt.
- B. investment grade debt.
- C. municipal debt.

The correct answer is **A**.

Loss severity, also known as loss given default, is the portion of a bond's value, including unpaid interest, that an investor loses in the event of default. It is expressed as a monetary amount or as a percentage.

$$\text{Loss severity} = 1 - \text{Recovery rate}$$

The recovery rate is the percentage of the principal amount recovered in the event of default. Estimating loss severity is essential for High Yield Debt as they are most likely to default.

A and C are incorrect. It is less likely for an investment grade or a municipal bond to default.

***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14c: Describe macroeconomic, market, and issuer-specific factors that influence the level and volatility of yield spreads.***

---

Q.2056 A key metric for revenue bonds is the:

- A. operating profit ratio.
- B. debt service coverage ratio.
- C. debt ratio.

The correct answer is **B**.

Revenue bonds are bonds issued by a government other than the national government to finance a specific project. Revenue bonds carry more risks because their only revenue source is the particular project they are issued to finance. The debt service coverage ratio (DSCR), also known as "debt coverage ratio," (DCR) is the ratio of cash available for debt servicing to interest, principal, and lease payments.

$$\text{DSCR} = \frac{\text{Net operating income}}{\text{Total debt service}}$$

Because of how risky revenue bonds are, an investor needs to determine the debt service coverage ratio (will the proceeds from the specific project be enough to pay off the debt).

***CFA Level I, Fixed Income, Learning Module 15: Credit Analysis for Government Issuers, LOS 15a: explain special considerations when evaluating the credit of sovereign and non-sovereign government debt issuers and issues.***

---

Q.2057 The analysis of general obligation bonds is *most likely* similar to the analysis of:

- A. revenue bonds.
- B. corporate debt.
- C. sovereign debt.

The correct answer is **C**.

General obligation bonds are municipal bonds whose bond repayments are guaranteed by the revenue earned by the relevant government entity (tax and operating revenue generated by projects carried out by that specific government entity.) The analysis of general obligation bonds is similar to the analysis of sovereign debt, focusing on the strength of the local economy and its effects on taxes.

***CFA Level I, Fixed Income, Learning Module 15: Credit Analysis for Government Issuers, LOS 15a: explain special considerations when evaluating the credit of sovereign and non-sovereign government debt issuers and issues.***

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Q.2522 Bond A's yield and yield spread increase by the same amount. From this, we can conclude that the increase in Bond A's yield was *most likely* caused due to:

- A. microeconomic factors like credit risk and liquidity.
- B. both macroeconomic and microeconomic factors taken together.
- C. macroeconomic factors like expected inflation and the real risk-free rate.

The correct answer is **A**.

If a bond's yield increases while its yield spread remains unchanged, it implies that the yield on its benchmark has also increased, indicating that macroeconomic factors have driven up bond yields overall. However, when both the yield and yield spread of Bond A increase by the same amount, it suggests that the increase in Bond A's yield is more likely attributable to microeconomic factors like credit risk or the bond's liquidity.

**Note:** Yield refers to the return that an investor earns from a bond, whereas yield spread represents the difference in yields between two bonds.

**B is incorrect.** An increase in yield spread is primarily influenced by microeconomic factors.

**C is incorrect.** Inflation generally leads to higher prices in the economy, which can increase credit risk, putting upward pressure on yields. When the risk-free rate of return rises, corporate bond yields must also increase to compensate.

***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14c: Describe macroeconomic, market, and issuer-specific factors that influence the level and volatility of yield spreads.***

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## **Learning Module 15: Credit Analysis for Government Issuers**

Q.2018 In the event of default, who would have the lowest priority of claims?

- A. Senior Secured
- B. Senior Subordinated
- C. Senior Unsecured

The correct answer is **B**.

Priority of claim:

First Lien Loan

Senior Secured

Senior Unsecured

Senior Subordinated

Subordinated

Junior Subordinated.

Based on this priority of claims option A & C are incorrect.

***CFA Level I, Fixed Income, Learning Module 15: Credit Analysis for Government Issuers, LOS 15a: explain special considerations when evaluating the credit of sovereign and non-sovereign government debt issuers and issues.***

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Q.2021 Skyworks Global defaults on one of its several outstanding bonds. Provisions in Skyworks Global bond indentures may trigger default on the remaining issues as well. Such a provision is called:

- A. strategic default provision.
- B. cross-default provision.
- C. trigger-default provision.

The correct answer is **B**.

Bond indentures if too restrictive can trigger cross default.

**A is incorrect:** Strategic default is when a borrower stops making payments on a debt issue, despite having the financial ability to make his payments. It is typically associated with mortgage loans. When house prices fall substantially, the debt owed is greater than the house value so the borrower is inclined to default and buy a new property at the new market price.

**C is incorrect:** There is no such term as trigger default.

***CFA Level I, Fixed Income, Learning Module 15: Credit Analysis for Government Issuers, LOS 15a: explain special considerations when evaluating the credit of sovereign and non-sovereign government debt issuers and issues.***

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Q.2022 The practice by rating agencies of assigning different ratings to bonds of the same issuer is called:

- A. notching.
- B. Pari-Passu.
- C. tranches.

The correct answer is **A**.

Notching is the practice by rating agencies to give different credit ratings to the bonds of a single entity.

Option B is incorrect. Pari-Passu is a principle that describes a situation where two or more securities are managed in the same manner (without preferential treatment)

Option C is incorrect. A tranche is a segment that is created from a pool of securities. Tranches are created to increase the marketability of securities to an investor

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Q.2033 In the event of bankruptcy, which of the following is most accurate?

- A. Junior subordinated loans are subordinate to senior subordinated loans.
- B. Senior subordinated loans are subordinate to junior subordinated loans.
- C. Senior secured loans are subordinate to subordinated loans.

The correct answer is **A**.

Priority of claim:

- 1) First Lien Loan
- 2) Senior Secured
- 3) Senior Unsecured
- 4) Senior Subordinated
- 5) Subordinated
- 6) Junior Subordinated.

Based on this priority of claims option B & C are incorrect.

***CFA Level I, Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers, LOS 16c: Describe the seniority rankings of debt, secured versus unsecured debt and the priority of claims in bankruptcy, and their impact on credit ratings.***

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Q.2034 Higher coverage ratios *most likely* indicate:

- A. higher credit risk.
- B. lower credit risk.
- C. no credit risk.

The correct answer is **B**.

"EBITDA/Interest expense" and "EBIT/Interest expense" are the two types of coverage ratios. Higher coverage ratios indicate lower credit risk.

***CFA Level I, Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers, LOS 16b: Calculate and interpret financial ratios used in credit analysis.***

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Q.2036 A company that has a high proportion of the capital structure financed with secured bank debt is said to be:

- A. top-heavy.
- B. in a liquidity trap.
- C. unliquid.

The correct answer is **A**.

A company that has a high proportion of the capital structure financed with secured bank debt is said to be Top-heavy.

**B is incorrect.** A liquidity trap is a situation described in Keynesian economics; a situation that arises when monetary policy becomes ineffective due to low-interest rates that make consumers want to save and not to spend.

**C is incorrect.** A company that has a high proportion of the capital structure financed with secured bank debt could still be liquid.

***CFA Level I, Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers, LOS 16c: Describe the seniority rankings of debt, secured versus unsecured debt and the priority of claims in bankruptcy, and their impact on credit ratings.***

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Q.2037 Which of the following is *most likely* a coverage ratio?

- A. Debt/EBITDA
- B. FFO/Debt
- C. EBITDA/Interest expense

The correct answer is **C**.

EBITDA/Interest expense is a coverage ratio.

Options A) and B) are leverage ratios.

***CFA Level I, Fixed Income, Learning Module 15: Credit Analysis for Government Issuers, LOS 15a: explain special considerations when evaluating the credit of sovereign and non-sovereign government debt issuers and issues.***

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Q.2043 All senior secured debt holders are treated alike in case of corporate bankruptcy because of:

- A. the seniority ranking.
- B. the principle of Pari-passu.
- C. the priority of claim.

The correct answer is **B**.

All senior secured debt holders are treated alike in case of corporate bankruptcy. This is because of the principle of Pari-passu.

Note: Pari-passu is a Latin phrase meaning "equal footing" that describes situations where two or more assets, securities, creditors, or obligations are equally managed without any display of preference.

A and C are incorrect. There is preferential treatment (senior bondholders are paid off before junior bondholders) in seniority ranking and priority of claims.

***CFA Level I, Fixed Income, Learning Module 14: Credit Risk, LOS 14c: Describe macroeconomic, market, and issuer-specific factors that influence the level and volatility of yield spreads.***

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Q.2044 Credit Rating agencies base their ratings of the issuer on the basis of:

- A. senior secured debt.
- B. senior subordinated debt.
- C. senior unsecured debt.

The correct answer is **C**.

Credit Rating agencies base their ratings of the issuer on the basis of senior unsecured debt.

***CFA Level I, Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers, LOS 16a: describe the qualitative and quantitative factors used to evaluate a corporate borrower's creditworthiness***

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Q.2046 Which of the following statements is/are *least likely* accurate?

- I. Notching is the practice by which rating agencies reduce their ratings on structured financial collateral based on rating the collateral themselves.
- II. The practice by which rating agencies reduce their ratings on structured financial collateral based on ratings from another agency without rating the collateral themselves is called structural subordination.

- A. I only
- B. II only
- C. Both I & II

The correct answer is **C**.

Both statements are incorrect.

The practice of adjusting an issue credit rating upward or downward from the issuer credit rating to reflect the seniority and other provisions of the debt issue is called 'notching'. In other words, 'notching' is when rating agencies reduce their ratings on structured financial collateral based on ratings from another agency **without** rating the collateral themselves.

Structural subordination is the concept that a lender to a company will not have access to the assets of the company's subsidiary until after all of the subsidiary's creditors have been paid and the remaining assets have been distributed up to the company as an equity holder.

***CFA Level I, Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers, LOS 16c: Describe the seniority rankings of debt, secured versus unsecured debt and the priority of claims in bankruptcy, and their impact on credit ratings.***

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Q.2051 The two primary categories of ratios used for credit analysis are:

- A. leverage and coverage ratios.
- B. operating and financial ratios.
- C. profitability and liquidity ratios.

The correct answer is **A**.

The two primary categories of ratios used for credit analysis are leverage and coverage ratios.

A leverage ratio is any one of several financial measurements that look at how much capital comes in the form of debt (loans) or assesses the ability of a company to meet financial obligations.

A coverage ratio is a measure of a company's ability to meet its financial obligations. In broad terms, the higher the coverage ratio, the better the ability of the enterprise to fulfill its obligations to its lenders.

***CFA Level I, Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers, LOS 16b: Calculate and interpret financial ratios used in credit analysis***

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## **Learning Module 16: Credit Analysis for Corporate Issuers**

Q.94 ABC Corp has just filed for bankruptcy. Which debt is *least likely* to be recovered by creditors?

- A. Second lien debt
- B. Senior secured
- C. Senior subordinated

The correct answer is **C**.

The senior subordinated debt is least likely to be recovered by creditors.

Here is the list of seniority ranking for debt: (In the case of bankruptcy, debt will be cleared according to the seniority order, i.e., first-lien debt will be cleared before second lien debt, and if the proceeds from the sale of assets won't be enough to cover both debts, then only the highest-ranking debts will be settled.)

- First lien debt
  - Second lien debt
  - Senior secured
  - Senior unsecured
  - Senior subordinated
  - Subordinated
  - Junior subordinated
-

Q.96 ABC Corp's debt ranking is low because it doesn't have enough fixed assets to cover a respectable portion of the debt. To which one of the four Cs of credit analysis would you associate this statement?

- A. Capacity
- B. Collateral
- C. Character

The correct answer is **B**.

Fixed assets are often put up as collateral on a debt.

The four Cs of credit analysis are: Capacity, Collateral, Covenants, and Character.

Collateral refers to the quality and value of assets put up against a debt as protection. Good quality assets will sufficiently cover the debt, thereby making it rank higher. The opposite is true.

A is incorrect. Capacity refers to a firm's ability to repay principal and interest payments to its bondholders on time.

C is incorrect. Character is simply the quality of the management (its strategy, quality of earnings, and past treatment of bondholders)

Covenants are provisions in a bond indenture meant to protect lenders from default by borrowers by requiring borrowers to do some things (positive/affirmative covenants) or by forbidding them from doing some things (negative covenants)

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Q.2024 The credit analysis of telecommunication by the number of participants in the market is an example of:

- A. character.
- B. capacity.
- C. collateral.

The correct answer is **B**.

The number of participant in the market/level of competition is a component of the Porter five forces.

Option A) is incorrect because character refers to management's integrity and its commitment to repay loans.

Option C) is incorrect because collateral assesses the quality and value of a company's assets.

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Q.2049 An analyst is studying a company's fundamentals, industry structure, and industry fundamentals. Which component of credit analysis is he *most likely* studying?

A. Collateral

B. Character

C. Capacity

The correct answer is **C**.

The analyst is studying Capacity. Capacity is the ability of a company to service its debt. Capacity is determined by carrying out an industry analysis (industry structure and industry fundamentals) and company analysis of the issuing company (Company fundamentals).

A is incorrect. Collateral is the amount of assets that a company could sell to cover its debt obligations. Analysis of collateral is simply looking at the quality and value of the assets pledged as collateral.

B is incorrect. Character refers to the judgment of a company's management (its strategy, quality of earnings, and past treatment of bondholders.)

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Q.4710 Company A, B and C are peers with the following financial ratios:

	Company A	Company B	Company C
EBITDA/Interest	6.3	6.5	6.1
Debt/Capital	27%	25%	25%
EBITDA margin	17%	21%	20%
Debt/EBITDA	1.6	1.3	1.3

Using only the following financial ratios, which company *most likely* exhibits the lowest credit risk?

A. Company A

B. Company B

C. Company C

The correct answer is **B**.

EBITDA/Interest Ratio: Company B has the highest EBITDA/Interest ratio, indicating that it generates more than enough earnings before interest, taxes, depreciation, and amortization (EBITDA) to cover its interest expenses. This suggests a lower credit risk.

Debt/Capital Ratio: Both Company B and Company C have the same Debt/Capital ratio of 25%, which is lower than Company A's ratio of 27%. A lower Debt/Capital ratio indicates lower financial leverage and therefore lower credit risk.

EBITDA Margin: Company B has the highest EBITDA margin among the three companies, indicating stronger profitability and cash generation relative to revenue. This suggests better ability to handle debt obligations and lowers credit risk.

Debt/EBITDA Ratio: Company B has the lowest Debt/EBITDA ratio, indicating lower leverage compared to Company A and Company C. A lower Debt/EBITDA ratio suggests a lower credit risk.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (a): Describe the qualitative and quantitative factors used to evaluate a corporate borrower's creditworthiness.**

Q.4711 All other factors being equal, a borrower will *most likely* possess a greater ability to repay its debt in an industry where:

- A. barriers to entry is high.
- B. intensity of competition is high.
- C. bargaining power of buys is high.

The correct answer is **A**.

In an industry where barriers to entry are high, it is more difficult for new competitors to enter the market. When barriers to entry are high, existing companies face less competition from new entrants, which can lead to greater market stability, higher profitability, and stronger financial performance.

**B is incorrect.** A high intensity of competition typically indicates lower barriers to entry in the industry. When the intensity of competition is high, it suggests that there are many competitors vying for market share, which can lead to lower profitability and pricing pressure.

**C is incorrect.** The bargaining power of buyers primarily affects pricing and profit margins for firms within the industry. This can put pressure on firms' profit margins and reduce their pricing power.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (a): Describe the qualitative and quantitative factors used to evaluate a corporate borrower's creditworthiness.**

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Q.4712 Which of the following *most likely* indicates higher corporate creditworthiness?

- A. Low profit margins
- B. High debt-to-equity ratio
- C. Strong cash flow position

The correct answer is **C**.

A strong cash flow position typically indicates higher corporate creditworthiness because it reflects the company's ability to generate sufficient cash to cover its operating expenses, debt obligations, and other financial commitments.

**A is incorrect.** Low profit margins can be a sign of financial strain or inefficiency within a company. It may indicate that the company's revenues are not sufficient to cover its operating expenses and debt obligations, which could raise concerns about its ability to meet its financial commitments.

**B is incorrect.** A high debt-to-equity ratio suggests that a company has a significant amount of debt relative to its equity. This can raise concerns among lenders and creditors about the company's ability to manage its debt load and meet its financial obligations, especially in times of economic downturn or financial distress.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (a): Describe the qualitative and quantitative factors used to evaluate a corporate borrower's creditworthiness.**

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Q.4713 Which bond in the capital structure of a company *most likely* has the lowest risk of bankruptcy?

- A. First lien debt
- B. Subordinated debt
- C. Junior subordinated debt

The correct answer is **A**.

First lien debt typically has the lowest risk of bankruptcy among the options provided because it is secured by specific assets of the company. In the event of bankruptcy, holders of first lien debt have priority claim over the assets that secure their debt.

**B is incorrect.** Subordinated debt typically carries a higher risk of bankruptcy compared to first lien debt. Subordinated debt holders have a lower priority claim on the company's assets compared to first lien debt holders. In the event of bankruptcy, holders of subordinated debt are only paid after the claims of senior creditors, including first lien debt holders, are satisfied.

**C is incorrect.** Junior subordinated debt typically carries even higher risk compared to subordinated debt and first lien debt. Junior subordinated debt holders have the lowest priority claim on the company's assets in the event of bankruptcy. They are paid only after the claims of senior creditors, including first lien debt holders and subordinated debt holders, are satisfied.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (c): Describe the seniority rankings of debt, secured versus unsecured debt and the priority of claims in bankruptcy, and their impact on credit ratings.***

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Q.4714 Which of the following factors is *least likely* considered a qualitative factor in corporate creditworthiness?

- A. Profitability
- B. Business risk
- C. Corporate governance

The correct answer is **A**.

Profitability, typically measured by metrics such as net income margin, return on assets, and return on equity, is often considered a quantitative factor rather than a qualitative factor in corporate creditworthiness assessment. Quantitative factors are those that can be expressed numerically and are based on financial data, such as profitability ratios, liquidity ratios, and leverage ratios.

**B is incorrect.** Business risk, is typically considered a qualitative factor in corporate creditworthiness assessment. Business risk encompasses various non-financial factors that can impact a company's ability to generate stable revenues and cash flows.

**C is incorrect.** Corporate governance refers to the system of rules, practices, and processes by which a company is directed and controlled. Corporate governance is generally classified as a qualitative factor in corporate creditworthiness assessment, as it involves subjective judgments based on the quality of governance practices rather than purely numerical metrics.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (a): Describe the qualitative and quantitative factors used to evaluate a corporate borrower's creditworthiness.***

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Q.4715 The goal of quantitative analysis is to identify key factors that drive a corporate issuer's probability of default. Which of the following factors *most likely* measures a company's relative reliance on debt financing in its operations?

- A. Leverage
- B. Coverage
- C. Liquidity

The correct answer is **A**.

Leverage measures a company's relative reliance on debt financing by assessing the proportion of debt in its capital structure compared to equity. It is typically calculated as the ratio of debt to equity or debt to total capital. A higher leverage ratio indicates that a company relies more heavily on debt to finance its operations.

**B is incorrect.** Coverage ratios, such as interest coverage ratio or debt service coverage ratio, assess a company's ability to meet its debt obligations using its operating income or cash flows. These ratios provide insights into the company's ability to service its existing debt commitments, but they do not directly measure the extent to which the company relies on debt financing in its operations.

**C is incorrect.** Liquidity ratios, such as the current ratio or quick ratio, assess a company's ability to meet its short-term financial obligations using its liquid assets. They provide insights into the company's short-term solvency and its ability to cover its immediate liabilities with its available liquid assets.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (a): Describe the qualitative and quantitative factors used to evaluate a corporate borrower's creditworthiness.**

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Q.4716 Which of the following statements regarding shareholders and debtholders is *most likely* false?

- A. Shareholders and debtholders benefit from lower coverage.
- B. Shareholders and debtholders benefit from higher profitability.
- C. Shareholders prefer higher leverage, while debtholders prefer lower leverage.

The correct answer is **A**.

Lower coverage ratios such as interest coverage ratio or debt service coverage ratio may benefit shareholders by reducing the company's financial obligations, but they generally pose higher risk for debtholders. Lower coverage ratios indicate that the company may have difficulty meeting its debt obligations, which increases the risk of default for debtholders.

**B is incorrect.** For shareholders, higher profitability usually leads to higher dividends, capital gains, and an overall increase in the value of their investment. This enhances shareholder wealth and returns. For debtholders, higher profitability implies that the company is better positioned to meet its debt obligations. It indicates stronger cash flows and financial health, reducing the risk of default.

**C is incorrect.** Shareholders often prefer higher leverage because it can amplify returns on equity. When a company uses debt financing to fund its operations or expansion projects, it can increase its return on equity. Debtholders typically prefer lower leverage because it reduces the risk of default. Lower leverage means that the company has less debt relative to its equity, reducing the likelihood of financial distress.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (a): Describe the qualitative and quantitative factors used to evaluate a corporate borrower's creditworthiness.**

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Q.4717 Which of the following financial ratios is *most likely* used to measure a corporation's profitability?

- A. EBIT margin
- B. Debt to EBITDA
- C. EBIT to Interest Expense

The correct answer is **A**.

The EBIT margin, or Earnings Before Interest and Taxes margin, is a financial ratio that measures a corporation's profitability by expressing its earnings before interest and taxes as a percentage of its total revenue or sales. It is calculated as:

$$\text{EBIT Margin} = \left( \frac{\text{Total Revenue}}{\text{EBIT}} \right) \times 100\%$$

**B is incorrect.** The Debt to EBITDA ratio is a leverage ratio that measures a company's ability to pay off its debt obligations with its earnings before interest, taxes, depreciation, and amortization (EBITDA). It is calculated by dividing the company's total debt by its EBITDA.

**C is incorrect.** The EBIT to Interest Expense ratio assesses a company's ability to cover its interest expenses with its earnings before interest and taxes (EBIT). It is calculated by dividing the company's EBIT by its interest expenses.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (b): Calculate and interpret financial ratios used in credit analysis.**

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Q.4718 Which of these financial ratios *most likely* evaluates the extent to which operating profit meets regular financial obligations?

- A. EBIT Margin
- B. Debt to EBITDA
- C. EBIT to Interest Expense

The correct answer is **C**.

The ratio EBIT to Interest Expense assesses the extent to which a company's operating profit (EBIT) covers its periodic interest payments. It provides insights into the company's ability to meet its interest obligations using its operating income. A higher EBIT to Interest Expense ratio indicates that the company's operating profit is sufficient to cover its interest expenses comfortably.

**A is incorrect.** EBIT Margin measures the percentage of earnings before interest and taxes (EBIT) relative to total revenue or sales, rather than assessing the extent to which operating profit covers periodic interest payments. A higher EBIT Margin generally indicates stronger profitability and operational efficiency.

**B is incorrect.** The Debt to EBITDA ratio assesses a company's leverage or its ability to manage its debt burden by comparing its total debt to its earnings before interest, taxes, depreciation, and amortization (EBITDA).

**CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (b): Calculate and interpret financial ratios used in credit analysis.**

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Q.4719 Calculate FFO/debt given the following information:

Capital expenditure	(2,050,000)
Net income from continuing operations	8,500,000
Depreciation	700,000
Other non-cash items	90,000
Debt	12,500,000

A. 51.6%

B. 73.6%

C. 74.3%

The correct answer is **C**.

FFO/debt, also known as Funds from Operations to Debt ratio, is a financial metric used to assess a company's ability to cover its debt obligations using its funds from operations (FFO).

FFO is calculated as:

FFO = Net income from continuing operations + Depreciation + Deferred income taxes + Other non-cash items

$$\text{FFO} = 8,500,000 + 700,000 + 90,000 = 9,290,000$$

$$\frac{\text{FFO}}{\text{Debt}} = \frac{9,290,000}{12,500,000} = 0.743 = 74.3\%$$

**CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (b): Calculate and interpret financial ratios used in credit analysis.**

Q.4720 Which of the following competing companies has higher credit risk given the following information.

	Company A	Company B	Company C
Debt/EBITDA	2.3	1.9	2.6
EBITDA/Interest Expense	1.6	2.3	1.2
FCF before dividends	600,000	(1,200,000)	850,000

A. Company A

B. Company B

C. Company C

The correct answer is **C**.

**Debt/EBITDA:** This ratio measures a company's ability to repay its debt using its earnings before interest, taxes, depreciation, and amortization (EBITDA). A higher ratio indicates higher debt relative to EBITDA, which could pose greater credit risk.

**EBITDA/Interest Expense:** This ratio evaluates the company's ability to cover its interest payments with its EBITDA. A higher ratio suggests stronger coverage and lower credit risk.

**Free Cash Flow (FCF) before dividends:** This metric measures the cash generated by the company from its operating activities after deducting capital expenditures. Positive FCF indicates the company generates more cash than it spends on operations, while negative FCF suggests the opposite.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (b): Calculate and interpret financial ratios used in credit analysis.**

Q.4721 Which of the following *most likely* describes a situation where debt issuer ratings differ due to the loss given default differences?

- A. Notching
- B. Recovery rates
- C. Priority of claims

The correct answer is **A**.

Notching typically refers to the practice of assigning different credit ratings to different tranches or classes of debt issued by the same issuer. It involves adjusting the credit rating based on specific characteristics or features of each tranche, such as seniority, subordination, or security.

**B is incorrect.** Recovery rates refer to the percentage of the outstanding debt that creditors can expect to recover in the event of default and subsequent liquidation or restructuring. These rates are influenced by factors such as the seniority of the debt, the presence of collateral, the financial health of the issuer, and overall market conditions.

**C is incorrect.** Priority of claims refers to the order in which different classes of creditors are repaid in the event of a default. While the priority of claims can influence the recovery prospects for creditors, it is not the primary factor that directly determines differences in debt issuer ratings.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (c): Describe the seniority rankings of debt, secured versus unsecured debt and the priority of claims in bankruptcy, and their impact on credit ratings.***

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Q.4722 Which of the following is *least likely* a reason for differences in a debt issuer's loss given default?

- A. Seniority
- B. Issuer rating
- C. Sources of repayment

The correct answer is **B**.

While issuer rating can indirectly influence the cost and availability of debt, it does not directly determine the loss given default. The issuer rating reflects the creditworthiness of the issuer and may affect the interest rate and terms of the debt, but it does not directly determine the loss experienced by creditors in the event of default.

**A is incorrect.** Seniority is indeed a significant factor influencing differences in a debt issuer's loss given default. Seniority refers to the priority of debt repayment in the event of default. Senior debt holders have a higher claim on the assets of the issuer compared to subordinated debt holders.

**C is incorrect.** Sources of repayment refer to the various means by which a borrower can fulfill its debt obligations. Each debt's repayment source may vary depending on the agreement with the debtholders. Guaranteed sources of repayment can potentially reduce loss given default (LGD) for creditors in the event of a borrower's default.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (c): Describe the seniority rankings of debt, secured versus unsecured debt and the priority of claims in bankruptcy, and their impact on credit ratings.**

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Q.4723 Blue Limited faces impairment on its net current assets of £350 other than cash. Using the information provided below, what is the *most likely* potential recovery of the company's secured bank loans in the event of a default according to the priority of claims?

Asset	Amount (£)
Common shares	£120
Retained earnings	£80
Subordinated bonds	£160
Unsecured bonds	£40
Secured bank loans (secured by cash collateral)	£60

- A. Unsecured bondholders face partial recovery.
- B. Subordinated bondholders face partial recovery.
- C. Unsecured bondholders will receive zero recovery.

The correct answer is **B**.

To determine the potential recovery of the company's secured bank loans in the event of default according to the priority of claims, we need to consider the hierarchy of claims in the liquidation process.

The priority of claims is:

- i. Secured loans
- ii. Unsecured loans
- iii. Subordinated loans
- iv. Equity (common shares and retained earnings)

The £350 impairment will be absorbed by equity, i.e. common shares and retained earnings, a total of £200.

The remaining £150 impairment balance will be borne by the entire subordinated loans amount of £160. They will have a partial recovery of £10.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (c): Describe the seniority rankings of debt, secured versus unsecured debt and the priority of claims in bankruptcy, and their impact on credit ratings.***

Q.4724 The issuer credit rating provided by rating agencies *most likely* signifies?

- A. The recovery rate for a particular debt issued by the entity.
- B. The likelihood of default for the entity's senior unsecured debts.
- C. The anticipated credit loss across all the entity's outstanding debts.

The correct answer is **B**.

An issuer credit rating primarily reflects the likelihood of default on the issuer's senior unsecured debt. This rating is intended to provide investors with a gauge of the issuer's overall creditworthiness, which primarily considers the probability of default. Additionally, some rating agencies may also incorporate expected recovery rates in the event of a default.

**A is incorrect.** The issuer credit rating does not specifically address the recovery rate for individual debt issues. Recovery rates are usually considered separately and may differ significantly between secured and unsecured debts or due to other specific terms of the debt issuance.

**C is incorrect.** While the issuer credit rating takes into account the entity's ability to meet its financial obligations, it does not directly represent the expected credit loss for all outstanding debts. Instead, it evaluates the overall risk of default without specifying expected losses across all debts.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (c): Describe the seniority rankings of debt, secured versus unsecured debt and the priority of claims in bankruptcy, and their impact on credit ratings.**

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Q.4725 A credit analyst is analyzing the financial information of ABC Limited. He has gathered the following information:

	20X3	20X4
Total equity	\$250	\$400
Total debt	\$190	\$310
EBITDA	\$92	\$135
Interest expense	\$35	\$46

The Debt/capital ratio for ABC Limited for the year 20X4 is *closest to*?

- A. 0.436
- B. 0.775
- C. 0.619

The correct answer is **A**.

To calculate the Debt/Capital ratio, we need to find the proportion of total debt to the total capital of the company. Total capital is the sum of total equity and total debt.

For the year 20X4:

- Total equity = \$400
- Total debt = \$310
- Total capital = \$400 + \$310 = \$710

Now, we can calculate the Debt/Capital ratio:

$$\begin{aligned}\text{Debt/Capital ratio} &= \frac{\text{Total debt}}{\text{Total capital}} \\ \text{Debt/Capital ratio} &= \frac{\$310}{\$710} \\ \text{Debt/Capital ratio} &\approx 0.4366\end{aligned}$$

**CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (c): Describe the seniority rankings of debt, secured versus unsecured debt and the priority of claims in bankruptcy, and their impact on credit ratings.**

Q.4726 A situation where a corporation with a holding company structure has debt at both parent holding company and operating subsidiaries and the subsidiaries' cash flows are used to pay debt before being passed to the holding company is *most likely* referred to as?

- A. Notching
- B. Priority of claims
- C. Structural subordination

The correct answer is **C**.

In a holding company structure, where the parent company (holding company) owns subsidiary companies, structural subordination arises when the debt of the operating subsidiaries takes precedence over the debt at the holding company level. This means that the subsidiaries' cash flows are used to service their own debt obligations before any remaining funds are passed up to the holding company to service its debt.

**A is incorrect.** Notching refers to the practice of assigning different credit ratings to different debt instruments issued by the same entity, based on specific characteristics of each instrument. This differentiation in ratings may occur within the same entity's capital structure or across different entities within a corporate group.

**B is incorrect.** The priority of claims refers to the order in which different classes of creditors are repaid in the event of a company's liquidation or bankruptcy. Creditors with higher priority claims are typically entitled to receive repayment before those with lower priority claims.

***CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (c): Describe the seniority rankings of debt, secured versus unsecured debt and the priority of claims in bankruptcy, and their impact on credit ratings.***

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Q.4731 Which of the following factors is *least likely* a primary factor in assigning credit ratings?

- A. Recovery rates
- B. Loss given default
- C. Probability of default

The correct answer is **A**.

Recovery rates, while important in assessing credit risk and determining potential losses in the event of default, are typically not primary factors in assigning credit ratings. Recovery rates refer to the percentage of the principal amount of a debt instrument that creditors are expected to recover in the event of default and subsequent liquidation or bankruptcy proceedings.

**B is incorrect.** Loss given default (LGD) is indeed a primary factor in assigning credit ratings. LGD measures the expected loss on a debt instrument in the event of default. It considers factors such as the percentage of the debt that can be recovered after default, the seniority of the debt, and any collateral or security backing the debt.

**C is incorrect.** The probability of default is a primary factor in assigning credit ratings. It reflects the likelihood that an issuer will fail to meet its debt obligations within a specified time frame. Credit ratings agencies assess PD by analyzing various factors such as the issuer's financial health, industry dynamics, business model, management quality, and economic conditions.

**CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (c): Describe the seniority rankings of debt, secured versus unsecured debt and the priority of claims in bankruptcy, and their impact on credit ratings.**

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Q.4732 A credit analyst has gathered the information below on a company she is evaluating:

Issuer rating	B+
Probability of default	1.2%
Recovery rate	62%
Loss given default	38%

Using the information above, the company's debt expected loss is *closest to*?

A. 0.456%

B. 0.744%

C. 0.235%

The correct answer is **A**.

Expected loss is a key metric used by lenders, investors, and credit rating agencies to evaluate the risk of default on debt instruments such as loans, bonds, and other credit products. It represents the average amount of money that is expected to be lost if the borrower defaults on its debt obligations. It is calculated as:

$$\begin{aligned}\text{Expected loss (EL)} &= \text{POD} \times \text{LGD} \\ \text{EL} &= 1.2\% \times 38\% \\ \text{EL} &= 0.456\%\end{aligned}$$

***CFA Level I, Topic 7 - Fixed Income, Learning Module 16: Credit Analysis for Corporate Issuers. LOS (c): Describe the seniority rankings of debt, secured versus unsecured debt and the priority of claims in bankruptcy, and their impact on credit ratings.***

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## **Learning Module 17: Fixed Income Securitization**

Q.72 What is *most likely* the definition of a Special Purpose Vehicle (SPV)?

- A. A type of asset-backed security that is secured by a mortgage or collection of mortgages.
- B. A subsidiary company with an asset/liability structure and legal status that makes its obligations secure even if the parent company goes bankrupt.
- C. A structured financial product that pools together cash flow-generating assets and repackages this asset pool into discrete tranches that can be sold to investors.

The correct answer is **B**.

A Special Purpose Vehicle (SPV) is a subsidiary of a company that is bankruptcy remote from the main organization. The actions of an SPV are usually very tightly controlled, and they are only allowed to finance, buy, and sell assets.

**A is incorrect.** A type of asset-backed security that is secured by a mortgage or collection of mortgages is the definition of mortgage-backed securities.

**C is incorrect.** A structured financial product that pools together cash flow-generating assets and repackages this asset pool into discrete tranches that can be sold to investors is the definition of CDOs.

**CFA Level I, Fixed Income, Learning Module 17: Fixed-Income Securitization, LOS (b) Describe securitization, including the parties and the roles they play.**

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Q.2201 Compared to the traditional structure, with the bank serving the function of financial intermediary between borrowers and lenders, securitization can provide the following benefits, with the exception of:

- A. Securitization helps in reducing excessive lending by banks.
- B. The investors' legal claim to the mortgages or other loans is stronger.
- C. Securitization reduces intermediation costs, which results in lower funding costs for borrowers and higher risk-adjusted returns for lenders.

The correct answer is **A**.

Compared to the traditional structure, with the bank serving the function of financial intermediary between borrowers and lenders, securitization can provide the previously mentioned benefits, with the exception of helping in reducing excessive lending by banks. The benefits of securitization include:

- It allows investors to have more direct legal claims on loans and portfolios of receivables.
- The costs paid by borrowers can effectively be diminished due to disintermediation.
- Banks can improve their profitability by increasing loan origination and fees.
- Investors can easily access securities matching their risk, return, and maturity needs.
- Securitization also allows for the creation of tradable securities with much liquidity and results in more efficient financial markets.
- In emerging markets, companies and banks have used securitization to lower their funding costs.

**B is incorrect.** Securitization typically involves bundling loans into securities that are then sold to investors. This process can enhance the legal claim of investors to the underlying loans because they have direct ownership rights to the cash flows generated by those loans.

**C is incorrect.** Securitization can indeed reduce intermediation costs by eliminating the need for traditional banking intermediaries, such as banks, to hold the loans on their balance sheets. This can lead to lower funding costs for borrowers and potentially higher risk-adjusted returns for lenders.

**CFA Level I, Fixed Income, Learning Module 17: Fixed-Income Securitization, LOS (a)**  
**Explain benefits of securitization for issuers, investors, economies, and financial markets.**

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Q.2203 Is the following statement correct? "A Special Purpose Entity (SPE) is a separate legal entity from the seller or the originator of the loan and the originator of the loan can never be the servicer of the loans."

- A. Correct.
- B. Incorrect, because the SPE and the originator are the same legal entity.
- C. Incorrect, because the originator of the loan can act as the servicer of the loan.

The correct answer is **C**.

A Special Purpose Entity (SPE) is a separate legal entity from the seller or the loan originator. Even if not always the case, the loan originator CAN be the servicer of the loans. In exchange for a fixed service fee, a loan servicer collects payments from obligors, liquidates collateral if need be, manages default, and prepares reports.

**A is incorrect.** This statement is incorrect because it suggests that the originator of the loan can never be the servicer of the loans.

**B is incorrect.** This choice is incorrect because the definition of a Special Purpose Entity (SPE) explicitly states that it is a separate legal entity from the seller or originator of the loan. Therefore, the SPE and the originator cannot be the same legal entity.

**CFA Level I, Fixed Income, Learning Module 17: Fixed-Income Securitization, LOS (b) Describe securitization, including the parties and the roles they play.**

---

Q.2205 A corporation may issue asset-backed securities (ABS) because:

- A. It wants to reduce the cost of borrowing.
- B. It wants to change the structure of its balance sheet.
- C. Both to change the structure of its balance sheet and reduce the cost of borrowing.

The correct answer is **C**.

Both reasons are valid for the issue of asset-backed securities by a corporation. Both reasons are valid for the issue of asset-backed securities by a corporation. An asset-backed security is a separate legal entity from the loan originator. It is not included in the loan originator's balance sheet.

**Note:** The costs of borrowing will be reduced only after credit enhancements. Credit enhancements will lead to a higher credit rating of the asset-backed security. In return, A higher credit rating will lower the borrowing costs.

**A is incorrect.** While reducing the cost of borrowing can be a motivation for a corporation to issue asset-backed securities (ABS), it's not the only reason. ABS issuance can serve other purposes beyond just lowering borrowing costs.

**B is incorrect.** Changing the structure of the balance sheet is indeed one potential reason why a corporation may choose to issue asset-backed securities (ABS). However, this answer choice alone does not encompass all the possible motivations behind ABS issuance.

***CFA Level I, Fixed Income, Learning Module 17: Fixed-Income Securitization, LOS (a) Explain benefits of securitization for issuers, investors, economies, and financial markets.***

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Q.4802 Matching asset maturities to anticipated liability payout dates and increasing diversity in an asset pool while maintaining the option to adjust holdings quickly and cost-effectively is *most likely* a benefit to:

- A. Issuers.
- B. Investors.
- C. Economies and financial markets.

The correct answer is **B**.

Matching asset maturities to anticipated liability payout dates and increasing diversity in an asset pool while maintaining the option to adjust holdings quickly and cost-effectively is a benefit to investors, as it allows them to manage risk and optimize portfolio performance.

**A is incorrect.** While issuers benefit from securitization in various ways, this particular benefit is more relevant to investors.

**C is incorrect.** While securitization can have broader benefits for economies and financial markets, this specific benefit is more directly applicable to investors.

***CFA Level I, Fixed Income, Learning Module 17: Fixed-Income Securitization, LOS (a) Explain benefits of securitization for issuers, investors, economies, and financial markets.***

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Q.4803 Which type of asset-backed securities (ABS) remains on the balance sheet of the issuing bank, with investors receiving payments directly from the bank rather than from the cash flow generated by a specific pool of assets?

- A. Covered Bonds.
- B. Pass-through Securities.
- C. Bonds with Structural Enhancements

The correct answer is **A**.

Covered Bonds remain on the balance sheet of the issuing bank, and investors receive payments directly from the bank, not from the cash flow generated by a specific pool of assets. Covered Bonds are distinct from other ABS types because they do not involve the transfer of assets to a separate legal entity. Instead, the assets remain on the balance sheet of the issuing bank, and investors have a direct claim to the issuing bank's assets, making payments directly from the bank.

**B is incorrect.** Pass-through Securities involve investors receiving payments from the cash flow generated by a specific pool of assets.

**C is incorrect.** Bonds with Structural Enhancements redistribute cash flows in the pool across specified tranches according to a preset schedule, but investors still receive payments from the cash flow generated by the pooled assets.

Covered Bonds are distinct from other ABS types because they do not involve the transfer of assets to a separate legal entity. Instead, the assets remain on the balance sheet of the issuing bank, and investors have a direct claim to the issuing bank's assets, making payments directly from the bank.

***CFA Level I, Fixed Income, Learning Module 17: Fixed-Income Securitization, LOS (a) Explain benefits of securitization for issuers, investors, economies, and financial markets.***

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Q.4804 Which of the following is *least likely* a benefit of securitization for issuers?

- A. Enhancing profitability by collecting origination fees.
- B. Offloading illiquid assets to improve risk oversight.
- C. Increasing capital requirements for loans traded to investors.

The correct answer is **C**.

Increasing capital requirements for loans traded to investors is not a benefit of securitization for issuers. In fact, securitization often allows issuers to reduce capital requirements by transferring assets off their balance sheets.

**A is incorrect.** Enhancing profitability by collecting origination fees is a benefit of securitization.

**B is incorrect.** Offloading illiquid assets to improve risk oversight is indeed a benefit of securitization for issuers.

***CFA Level I, Fixed Income, Learning Module 17: Fixed-Income Securitization, LOS (a) Explain benefits of securitization for issuers, investors, economies, and financial markets.***

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Q.4805 Which type of asset-backed securities (ABS) involves pooling assets into a separate legal entity and distributing principal and interest payments to investors based on the cash flow generated by the assets?

- A. Covered Bonds.
- B. Pass-through Securities.
- C. Bonds with Structural Enhancements

The correct answer is **B**.

Pass-through Securities involve pooling assets into a separate legal entity and distributing principal and interest payments to investors based on the cash flow generated by the assets.

**A is incorrect.** Covered Bonds do not involve pooling assets into a separate legal entity; instead, they remain on the balance sheet of the issuing bank.

**C is incorrect.** Bonds with Structural Enhancements redistribute cash flows across specified tranches according to a preset schedule, but they still involve pooling assets into a separate legal entity.

***CFA Level I, Fixed Income, Learning Module 17: Fixed-Income Securitization, LOS (a) Explain benefits of securitization for issuers, investors, economies, and financial markets.***

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Q.4806 Which of the following is a benefit of securitization for investors?

- A. Directly managing the assets that back the securities.
- B. Tailoring interest rate and credit risk exposures.
- C. Obtaining higher returns from traditional bonds.

The correct answer is **B**.

Investors benefit from securitization by being able to tailor interest rate and credit risk exposures to suit their specific risk, return, and maturity needs. Securitization allows investors to customize their risk and return perspectives by choosing from different tranches or categories of securities, each with its credit risk level. This flexibility promotes portfolio diversification and aligns with specific investor preferences.

**A is incorrect.** Investors do not directly manage the assets that back the securities in securitization.

**C is incorrect.** Securitization may offer higher returns compared to traditional bonds, not the other way around.

***CFA Level I, Fixed Income, Learning Module 17: Fixed-Income Securitization, LOS (a) Explain benefits of securitization for issuers, investors, economies, and financial markets.***

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Q.4807 Which statement *accurately* describes the function of a Special Purpose Entity (SPE) in securitization?

- A. To provide loans directly to borrowers.
- B. To act as an intermediary between banks and borrowers.
- C. To receive pooled assets and issue securities backed by these assets to investors.

The correct answer is **C**.

A Special Purpose Entity (SPE) receives pooled assets and issues securities backed by these assets to investors in securitization.

**A is incorrect.** SPEs do not provide loans directly to borrowers.

**B is incorrect.** SPEs do not act as intermediaries between banks and borrowers; they are separate legal entities that hold pooled assets.

**CFA Level I, Fixed Income, Learning Module 17: Fixed-Income Securitization, LOS (a) Explain benefits of securitization for issuers, investors, economies, and financial markets.**

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Q.4808 Which party in the securitization process is primarily responsible for the administration of the loans, including collection of payments and management of loan defaulters?

- A. Seller/Originator.
- B. Special Purpose Entity (SPE).
- C. Servicer.

The correct answer is **C**.

The servicer is primarily responsible for the administration of the loans, including collection of payments and management of loan defaulters.

**A is incorrect.** The Seller/Originator's role is primarily to grant loans and sell them to the SPE.

**B is incorrect.** While the SPE issues the securities, it does not typically handle the administrative duties associated with the loans.

**CFA Level I, Fixed Income, Learning Module 17: Fixed-Income Securitization, LOS (b) Describe securitization, including the parties and the roles they play.**

---

Q.4810 Which entity in the securitization process serves as a separate legal entity that buys loans from the originator and issues securities backed by these loans to investors?

- A. Seller/Originator.
- B. Special Purpose Entity (SPE).
- C. Servicer.

The correct answer is **B**.

The Special Purpose Entity (SPE) serves as a separate legal entity that buys loans from the originator and issues securities backed by these loans to investors.

**A is incorrect.** The Seller/Originator grants loans to customers but does not issue securities.

**C is incorrect.** The Servicer is responsible for administering the loans, not issuing securities.

**CFA Level I, Fixed Income, Learning Module 17: Fixed-Income Securitization, LOS (b)**  
**Describe securitization, including the parties and the roles they play.**

---

Q.4811 Which document in the securitization process typically outlines the structure of the securitization, illustrating the flow of payments to different parties and describing any credit enhancements used?

- A. Purchase Agreement
- B. Bond Indenture
- C. Prospectus

The correct answer is **C**.

The Prospectus typically outlines the structure of the securitization, illustrating the flow of payments to different parties and describing any credit enhancements used.

**A is incorrect.** The Purchase Agreement details the conditions and responsibilities of the seller and the SPE regarding the assets being sold.

**B is incorrect.** The Bond Indenture is associated with bonds and not directly with the assets being sold in securitization.

**CFA Level I, Fixed Income, Learning Module 17: Fixed-Income Securitization, LOS (b)**  
**Describe securitization, including the parties and the roles they play.**

---

Q.4812 Which party in the securitization process is primarily responsible for safeguarding the assets and performing duties as per the terms of the prospectus, such as holding funds due to ABS holders?

- A. Seller/Originator.
- B. Special Purpose Entity (SPE).
- C. Trustee or Trustee Agent.

The correct answer is **C**.

The Trustee or Trustee Agent is primarily responsible for safeguarding the assets and performing duties as per the terms of the prospectus, such as holding funds due to ABS holders.

**A is incorrect.** The Seller/Originator's role is primarily to grant loans and sell them to the SPE.

**B is incorrect.** While the SPE issues the securities, it does not typically handle the administrative duties associated with safeguarding the assets.

***CFA Level I, Fixed Income, Learning Module 17: Fixed-Income Securitization, LOS (b) Describe securitization, including the parties and the roles they play.***

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## **Learning Module 18: Asset Backed Security (ABS) Instrument and Market Features**

Q.71 Which one of these is *least likely* a type of Collateral Debt Obligations (CDOs)?

- A. Arbitrage CDOs.
- B. Balance sheet CDOs.
- C. Weighted-average CDOs.

The correct answer is **C**.

Collateralized debt obligation (CDO) is a term used to describe a security backed by a diversified pool of one or more debt obligations. The two types of Collateral Debt Obligations (CDOs) are Arbitrage CDOs and Balance sheet CDOs. Weighted-Average CDOs are not a recognized type of CDOs. The term "weighted-average" might be used in various financial contexts, such as weighted-average life or weighted-average maturity, but it is not a specific category of CDOs.

**A is incorrect.** Arbitrage CDOs are typically structured to exploit the spread between the income generated by the pooled assets and the cost of funding these assets. Arbitrage CDOs aim to achieve returns through the careful selection and management of a diversified portfolio of debt obligations, leveraging differences in credit risk and return. This strategy is common in the CDO market and is designed to benefit from the inefficiencies in the pricing of credit risk.

**B is incorrect.** Balance Sheet CDOs are primarily used by financial institutions to remove assets from their balance sheets, thereby achieving regulatory capital relief and managing risk exposure. By pooling these assets and issuing securities backed by the pool, institutions can transfer the credit risk associated with these assets to investors. Balance Sheet CDOs serve as a tool for financial institutions to optimize their capital structure and enhance liquidity while providing investors with opportunities to invest in diversified pools of debt obligations.

**CFA Level I, Fixed Income, Learning Module 18: Asset-Backed Security (ABS) Instrument and Market Features, LOS (d): Describe collateralized debt obligations, including their cash flows and risks.**

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Q.73 Asset-backed securities, mortgage-backed securities, and collateralized debt obligations all have collaterals attached to them. What is the main difference between these three fixed-income products?

- A. The different types of issuers.
- B. The different types of collaterals.
- C. The different rating agencies rankings.

The correct answer is **B**.

The main difference between the three products is that they have different types of collaterals attached to them.

Structured Product	Collateral
Asset-backed securities (ABS)	Underlying pool of assets
Mortgage-backed securities (MBS)	Pool of mortgages
Collateralized debt obligations (CDO)	Pool of assets and loans

**A is incorrect.** While the issuers of ABS, MBS, and CDOs can vary, the key distinguishing factor among these securities is not the issuer but the type of collateral backing each product. The issuer's identity may influence the security's creditworthiness but does not fundamentally differentiate these products.

**C is incorrect.** Although rating agencies may assign different rankings to ABS, MBS, and CDOs based on their assessment of the securities' credit risk, the primary distinction among these products lies in their collateral types. Ratings help investors assess risk but do not define the fundamental differences between these securities.

**CFA Level I, Fixed Income, Learning Module 18: Asset-Backed Security (ABS) Instrument and Market Features, LOS (a): Describe characteristics and risks of covered bonds and how they differ from other asset-backed securities.**

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Q.953 Which of the following is *most likely* the main difference between an asset-backed security (ABS) and a collateralized debt obligation (CDO)?

- A. Management of collateral.
- B. Approach for dividing tranches.
- C. Requirement for pooling of debt obligations.

The correct answer is **A**.

Both asset-backed securities (ABSs) and collateral debt obligations (CDOs) require the creation of a special purpose vehicle (SPV) and pooling of debt obligations. In a CDO, a manager actively buys and sells debt obligations to alter debt composition whereas such management is not required in the case of an ABS.

**B is incorrect.** This option suggests that the approach for dividing tranches is the main difference between ABS and CDO. While it's true that both ABS and CDO structures involve tranching, which is the process of dividing the pool of assets into different slices or tranches with varying degrees of risk and return, this is not the primary distinguishing feature between the two.

**C is incorrect.** The requirement for pooling of debt obligations is a characteristic common to both ABS and CDO. Pooling refers to the aggregation of individual loans, receivables, or other debt obligations into a single portfolio, which is then used to back the issued securities. This pooling is a fundamental aspect of the securitization process for both ABS and CDO, allowing for the diversification of risk and the creation of securities that can be sold to investors.

**CFA Level I, Fixed Income, Learning Module 18: Asset-Backed Security (ABS) Instrument and Market Features, LOS (d): Describe collateralized debt obligations, including their cash flows and risks.**

---

Q.954 Which of the following is *most likely* distributed to holders of credit card receivable backed securities during the lockout period?

- A. Interest.
- B. The principal invested.
- C. Finance charges and fees.

The correct answer is **C**.

Interest is paid to holders of credit card receivable ABS periodically (e.g., monthly, quarterly, or semiannually). The collateral of credit card receivable ABS is a pool of non-amortizing loans that have lockout periods during which the cash flows that are paid out to security holders are based only on finance charges collected and fees. Credit card receivable backed securities are non-amortizing loans as only finance charges and fees are paid during the lockout period. When the lockout period is over, the principal that is repaid by the cardholders is distributed to investors.

**A is incorrect.** While interest is a component of the finance charges paid to holders of credit card receivable ABS, during the lockout period, the specific distributions are more accurately described as finance charges and fees rather than interest alone. Interest payments are part of the broader category of finance charges, which also includes various fees.

**B is incorrect.** The principal invested is not distributed to holders of credit card receivable backed securities during the lockout period. The lockout period is characterized by the absence of principal repayments from the pool of credit card receivables. Instead, the focus during this period is on collecting and distributing finance charges and fees generated from the credit card balances.

**CFA Level I, Fixed Income, Learning Module 18: Asset-Backed Security (ABS) Instrument and Market Features, LOS (b): Describe typical credit enhancement structures used in securitizations.**

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Q.955 Which of the following may *least likely* result in the prepayment of securities backed by auto loans?

- A. Capital gain resulting in prepayment.
- B. Sale and trade-ins requiring full payoff of the loan.
- C. Insurance proceeds received upon loss or destruction of autos.

The correct answer is **A**.

Capital gains does not result in prepayment of securities backed by auto loans. The cash flows for auto loan-backed securities consist of scheduled monthly payments and any prepayments. For securities backed by auto loans, prepayments result from sales and trade-ins requiring full payoff of the loan, repossession and subsequent resale of autos, insurance proceeds received upon loss or destruction of autos, and early payoffs of the loans.

**B is incorrect.** The sale and trade-ins of vehicles directly lead to the prepayment of auto loans. When a vehicle is sold or traded in, the outstanding loan balance often needs to be paid off immediately, which results in a prepayment of the loan. This is a common scenario that directly impacts the cash flows of securities backed by auto loans.

**C is incorrect.** Insurance proceeds received upon the loss or destruction of autos can also lead to prepayment of auto loans. If a vehicle is totaled or significantly damaged, insurance payouts may be used to pay off the outstanding loan balance, resulting in a prepayment. This is another direct factor that can influence the prepayment of auto loan-backed securities.

***CFA Level I, Fixed Income, Learning Module 18: Asset-Backed Security (ABS) Instrument and Market Features, LOS (b): Describe typical credit enhancement structures used in securitizations.***

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Q.957 Calculate the excess spread from the following information.

- Interests paid by the borrowers: 6%
- Servicing and other charges incurred: 0.6%
- The interests paid to the bond class is 8 times the excess spread.

A. 0.6%.

B. 0.67%.

C. 0.73%.

The correct answer is **A**.

Excess spread is the difference between the interest received by an asset-based security issuer and the one paid to the security holder.

$$\begin{aligned}\text{Interest Received} &= \text{Interest Paid} + \text{Excess Spread} \\ (6.0\% - 0.6\%) &= 8(\text{Excess Spread}) + \text{Excess Spread} \\ (6.0\% - 0.6\%) &= 9(\text{Excess Spread}) \\ \frac{(6.0\% - 0.6\%)}{9} &= \text{Excess Spread} = 0.6\%\end{aligned}$$

**B is incorrect.** It suggests an excess spread of 0.67%, which does not align with the calculation based on the given information. The calculation clearly shows that after accounting for servicing and other charges, the remaining interest income divided by the factor (which is 9 in this case, representing 8 times the excess spread plus the excess spread itself) yields an excess spread of 0.6%, not 0.67%.

**C is incorrect.** It suggests an excess spread of 0.73%, which is also not supported by the given data and calculations. This option might result from a further misinterpretation of the formula or the relationship between the interest income and the payments made to bondholders and for servicing and other charges. The precise calculation based on the provided figures leads to an excess spread of 0.6%, demonstrating that the excess spread is not as high as 0.73%.

**CFA Level I, Fixed Income, Learning Module 18: Asset-Backed Security (ABS) Instrument and Market Features, LOS (b): Describe typical credit enhancement structures used in securitizations.**

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Q.958 The restriction on receiving payments for a period of time by subordinate bond classes if the credit enhancement of the senior tranche deteriorates is referred to as:

- A. Block out.
- B. Collateral shifting.
- C. Shifting interest mechanism.

The correct answer is **C**.

The shifting interest mechanism refers to imposing a restriction on subordinate classes from receiving payments if the credit enhancement for the senior tranche deteriorates.

The point of a shifting interest mechanism is to maintain a certain level of protection to the senior tranche by reducing their loan amount overtime (paying them down) earlier than perhaps would have occurred.

Note: subordinate interest is simply an acknowledgment that one party's interests will be higher than another one's in the event of liquidation of the borrower's assets.

Collateral shifting allows you to instantly change your supplied, collateralized asset to a different one.

**A is incorrect.** The term "block out" does not accurately describe the process of restricting payments to subordinate bond classes due to the deterioration of the senior tranche's credit enhancement. Instead, "block out" is not a commonly used term in structured finance or securitization contexts, and it does not specifically relate to the mechanisms designed to protect senior tranche holders.

**B is incorrect.** Collateral shifting refers to the process of changing the collateral backing a particular debt obligation, which is different from the concept of shifting interest mechanism. While collateral shifting might involve the substitution or exchange of assets securing a loan or a debt instrument, it does not directly relate to the allocation of cash flows or the prioritization of payments among different classes of bondholders. The shifting interest mechanism specifically addresses the reallocation of cash flows to maintain or enhance the credit protection of senior tranches, without necessarily involving changes to the underlying collateral.

***CFA Level I, Fixed Income, Learning Module 18: Asset-Backed Security (ABS) Instrument and Market Features, LOS (b): Describe typical credit enhancement structures used in securitizations.***

---

Q.2202 Which of the following statements about Asset-Backed Securities (ABS) is *most likely* accurate?

- A. Credit enhancements are uncommon for ABS.
- B. The credit rating of an ABS must be the same as that of the issuer.
- C. Residential mortgages represent the largest type of asset that has been securitized.

The correct answer is **C**.

Residential mortgages represent the largest type of asset that has been securitized.

**A is incorrect.** An ABS is a separate legal entity from the issuer (originator of the loan) . An ABS is not included in the balance sheet of the issuer. Therefore, An ABS can have a different rating from that of the issuer. An issuer may have a lower credit rating, but an ABS originated by the issuer may be having a higher credit rating and vice versa.

**B is incorrect.** The credit rating of an ABS pool is a function of its credit enhancements. Better credit enhancements lead to higher credit ratings. A higher credit rating will reduce an issuer's borrowing costs. For this reason, credit enhancements are common among ABS.

***CFA Level I, Fixed Income, Learning Module 18: Asset-Backed Security (ABS) Instrument and Market Features, LOS (b): Describe typical credit enhancement structures used in securitizations.***

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Q.2204 Which of the following is *least likely* a reason to enhance the credit quality of an ABS pool?

- A. Increased liquidity.
- B. Increased costs of borrowing.
- C. Decreased probability of default.

The correct answer is **B**.

By reducing the risk of default, credit enhancements reduce borrowing costs as the loan issuer can now borrow at a low-interest rate.

**A is incorrect.** Credit enhancements improve the credit rating of a bond. A higher credit rating makes it easier to sell securities, thereby increasing the liquidity of the securities.

**C is incorrect.** It represents a true statement. Credit enhancements imply that an issuer has taken extra steps to ensure that he/she does not default on loan repayment.

***CFA Level I, Fixed Income, Learning Module 18: Asset-Backed Security (ABS) Instrument and Market Features, LOS (b): Describe typical credit enhancement structures used in securitizations.***

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Q.2206 When each class of asset-backed security (ABS) is paid sequentially, to the extent possible, from the cash flows from the underlying loan portfolio, this flow of funds is *most likely* called a:

- A. Tranche structure.
- B. Waterfall structure.
- C. Mortgage pass-through structure.

The correct answer is **B**.

Each class of ABS (called tranche) is paid sequentially, to the extent possible, from the cash flows from the underlying loan portfolio. This flow of funds is commonly called a waterfall structure.

**A is incorrect.** A tranche structure is an investment structure that allows an issuer to split out the security into smaller pieces and subsequently sell it to investors.

**C is incorrect.** A mortgage pass-through security structure represents a bond with a claim on the cash flows of an underlying mortgage-backed pool passed through to bondholders.

***CFA Level I, Fixed Income, Learning Module 18: Asset-Backed Security (ABS) Instrument and Market Features, LOS (b): Describe typical credit enhancement structures used in securitizations.***

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Q.2207 Consider an asset-backed security (ABS) structured under credit tranching with the following bond classes:

Senior Tranche	\$300,000,000
Subordinated Tranche A	\$80,000,000
Subordinated Tranche B	\$20,000,000
Total	\$400,000,000

The tranche that should have the lowest yield is *most likely* the:

- A. Senior tranche.
- B. Subordinated tranche A.
- C. Subordinated tranche B.

The correct answer is **A**.

The senior tranche is protected from any credit losses of \$100 million or less and, therefore, will have the highest credit rating and offer the lowest yield of the three bond classes.

Investors in the subordinated tranches will require a higher yield to compensate them for the more risk. Losses less than \$20,000,000 will only affect investors in subordinated Tranche B, whereas investors in subordinated Tranche A will be affected by losses greater than \$20,000,000. Therefore, subordinated tranche B will have the highest yield, followed by subordinated Tranche A. The senior Tranche will offer the lowest yield.

**B is incorrect.** This option incorrectly suggests that the senior tranche should offer a higher yield due to its lower risk profile. In reality, the inverse relationship between risk and yield in fixed-income securities means that the senior tranche, with its lower risk, naturally offers a lower yield. The fundamental principle of finance that higher risk demands higher return applies here, making the senior tranche the one with the lowest yield due to its highest level of security and lowest risk of loss.

**C is incorrect.** Subordinated Tranche A is next in line to absorb losses after Subordinated Tranche B has been fully impacted. As a result, investors in Subordinated Tranche A require a higher yield to compensate for this increased risk compared to the Senior Tranche.

**CFA Level I, Fixed Income, Learning Module 18: Asset-Backed Security (ABS) Instrument and Market Features, LOS (b): Describe typical credit enhancement structures used in securitizations.**

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Q.2225 In a Commercial Mortgage-backed Security (CMBS) structure, the most junior tranche that is sometimes *not* rated is called a/an:

- A. Equity tranche.
- B. Support tranche.
- C. Subordinate tranche.

The correct answer is **A**.

The most junior tranche that is not rated is referred to as the equity tranche, residual tranche, or first-loss tranche.

**B is incorrect.** As the name suggests, the support tranche offers support to a Planned Amortization Class (PAC) Tranche.

**C is incorrect.** Subordinated Tranche is a rated tranche that provides-protection to the more senior tranches.

***CFA Level I, Fixed Income, Learning Module 18: Asset-Backed Security (ABS) Instrument and Market Features, LOS (d) Describe collateralized debt obligations, including their cash flows and risks.***

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## **Learning Module 19: Mortgage Backed Security (MBS) Instrument and Market Features**

Q.28 Which of the following statements is *least likely* correct regarding mortgage-back securities?

- A. The risk of prepayment typically occurs in declining rate environments.
- B. When you invest in a mortgage-backed security, you are indirectly lending money to a homebuyer or business.
- C. Commercial mortgage-backed securities tend to be less volatile and complex than residential mortgage-backed securities.

The correct answer is **C**.

Commercial mortgage-backed tends to be more complex and volatile than RMBS due to the underlying properties being more diverse and having more complex financing structures. Commercial mortgage-backed securities also tend to have higher default rates than residential mortgage-backed securities, as commercial properties are more sensitive to economic and market conditions.

**A is incorrect.** The risk of prepayment occurs when borrowers refinance their mortgages or sell their homes, which tends to happen more frequently in declining rate environments.

**B is incorrect.** When investors buy mortgage-backed security, they are buying a portion of the cash flows from a pool of mortgages. These mortgages are usually issued to homebuyers or businesses and are backed by real estate property as collateral.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (c) Describe types and characteristics of residential mortgage-backed securities, including mortgage pass-through securities and collateralized mortgage obligations, and explain the cash flows and risks for each type.***

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Q.956 From which of the following sources can a lender *most likely* recover money in the case of default in non-recourse commercial mortgage loans?

- A. Borrower's other assets.
- B. Equity shares owned by the borrower.
- C. Proceeds from the sale of the mortgaged property.

The correct answer is **C**.

A non-recourse loan is a Loan in which the lender does not have a shortfall claim against the borrower, so the lender can look only to the property to recover the outstanding mortgage balance. In the case of non-recourse type loans, lenders can recover money only out of the proceeds from the sale of the property. Since the mortgaged property is the collateral in a commercial mortgage loan, it is the only asset the lender can go after. If it were a recourse loan, the lender would have gone after both the mortgaged property and the borrower's equity shares; this is because recourse loans allow a lender to go after a borrower's other assets if the collateral fails to settle the loan amount.

**A is incorrect.** The support tranche in a CMO plays a secondary role to the PAC tranche. Its primary function is to absorb the variability in prepayment rates that exceed the predefined bands protecting the PAC tranche. By doing so, the support tranche takes on additional prepayment and extension risk, ensuring that the PAC tranche's cash flow remains more stable and predictable. This additional risk exposure typically results in a higher yield for the support tranche compared to the PAC tranche, compensating investors for the increased uncertainty in cash flow timing.

**B is incorrect.** A floating rate tranche in a CMO offers a coupon rate that adjusts periodically based on a reference interest rate, such as the London Interbank Offered Rate (LIBOR) or the Secured Overnight Financing Rate (SOFR). This feature makes the floating rate tranche appealing to investors who are concerned about interest rate risk, as the periodic adjustments in the coupon rate help to mitigate the impact of changes in market interest rates.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (b) Describe fundamental features of residential mortgage loans that are securitized.***

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Q.959 Which of the following tranche *most likely* has the highest priority in receiving the repayment of the principal amount from the collateral in the case of a Collateralized Mortgage Obligation (CMO)?

- A. Support tranche.
- B. Floating rate tranche.
- C. Planned amortization class.

The correct answer is **C**.

The planned amortization class has the priority over all other classes for the repayment of the principal from the collateral.

**A is incorrect.** A support tranche is a tranche that provides payment support to a PAC tranche. In case of any extension or contraction risks, the support tranche will absorb them.

**B is incorrect.** A floating rate tranche is a CMO tranche in which the monthly coupon rate is typically set equal to a reference rate such as LIBOR. It is mainly designed to attract investors who prefer to buy variable rate securities.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (c) Describe types and characteristics of residential mortgage-backed securities, including mortgage pass-through securities and collateralized mortgage obligations, and explain the cash flows and risks for each type.***

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Q.961 Which of the following are *most likely* considered as weights while determining the weighted average maturity of a mortgage pass-through security?

- A. Original mortgage balance.
- B. Outstanding mortgage balance.
- C. Time to maturity as a percentage of the total life of the security.

The correct answer is **B**.

The weighted average maturity is simply the weighted average amount of time until the maturity of the mortgage-backed security. It is determined by weighting the remaining number of months to maturity for each mortgage loan by the amount of the outstanding mortgage balance.

**A is incorrect.** Using the original mortgage balance to determine the weighted average maturity of a mortgage pass-through security does not accurately reflect the current state of the mortgage pool. Over time, mortgage holders make principal repayments, and some may prepay their mortgages entirely. These actions reduce the outstanding balance of the mortgages, which should be considered when calculating the WAM. The original mortgage balance does not account for these changes, making it a less accurate measure for determining WAM.

**C is incorrect.** While the time to maturity as a percentage of the total life of the security might seem like a logical way to calculate the weighted average maturity, it does not accurately reflect the impact of principal repayments and prepayments on the maturity profile of the mortgage pool. This method overlooks the fact that the outstanding balance of each mortgage in the pool can significantly influence the overall maturity. Mortgages with larger outstanding balances that are closer to maturity can have a more substantial impact on the WAM than those with smaller balances or longer times to maturity.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (c) Describe types and characteristics of residential mortgage-backed securities, including mortgage pass-through securities and collateralized mortgage obligations, and explain the cash flows and risks for each type.***

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Q.962 A mortgage that starts at a fixed rate initially and is converted to a different fixed rate at a later date is *most likely* referred to as a:

- A. Hybrid mortgage.
- B. Rollover mortgage.
- C. Convertible mortgage.

The correct answer is **B**.

A mortgage that starts out with a fixed rate and converted to a fixed rate later is referred to as a rollover or renegotiable mortgage. These are often used in Canada, Germany, Denmark, etc.

**A is incorrect.** If the mortgage starts at a fixed rate and is later converted into an adjustable rate mortgage, then we would say this is a hybrid mortgage.

**C is incorrect.** A convertible mortgage is an adjustable-rate loan that gives the borrower the option to convert the loan to a fixed-rate mortgage.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (c) Describe types and characteristics of residential mortgage-backed securities, including mortgage pass-through securities and collateralized mortgage obligations, and explain the cash flows and risks for each type.***

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Q.2209 A mortgage that has an interest rate that changes based on a market-determined reference rate such as Libor is *most likely* called a (an):

- A. Convertible mortgage.
- B. Variable-rate mortgage.
- C. Index-referenced mortgage.

The correct answer is **B**.

A variable-rate mortgage or adjustable-rate mortgage (ARM) has an interest rate that changes based on a market-determined reference rate such as the Libor.

**A is incorrect.** A convertible mortgage, also called an adjustable mortgage rate, allows a borrower the option of converting from a variable-rate to a fixed-rate mortgage after some time.

**C is incorrect.** In an index-referenced mortgage the mortgage rate is periodically reset based on some reference rate or index predetermined at the lender's discretion.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (c) Describe types and characteristics of residential mortgage-backed securities, including mortgage pass-through securities and collateralized mortgage obligations, and explain the cash flows and risks for each type.***

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Q.2210 If the lender has no claim against the assets of the borrower except for the collateral property, the loan is *most likely* a:

- A. Recourse loan.
- B. Nonrecourse loan.
- C. Non-negotiable loan.

The correct answer is **B**.

Some mortgage loans are nonrecourse loans, which means the lender has no claim against the assets of the borrower except for the collateral property itself.

**A is incorrect.** A recourse loan gives the issuer the right to go after the borrower's other assets, not just the asset used as collateral.

**C is incorrect.** A non-negotiable loan is a loan that is not transferable between parties, for example, a government savings bond.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (b) Describe fundamental features of residential mortgage loans that are securitized.***

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Q.2211 An investor in mortgage-backed securities (MBS) who is interested in long-term gains should *most likely* invest in:

- A. Tranche I.
- B. Tranche III.
- C. Any of the tranches since mortgage-backed securities have long durations.

The correct answer is **B**.

Tranche III has the least amount of prepayment risk. Thus, there is a chance that the investor will be able to hold on to the investment for a longer time horizon. Tranche one absorbs prepayment risk before it gets to the senior tranches. An investor investing in tranche one may not be able to hold on to the investment for long.

**A is incorrect.** Investing in tranche I of mortgage-backed securities is not the most suitable option for an investor seeking long-term gains. Tranche I is typically the first to absorb prepayment risk. This means that in periods of declining interest rates, when prepayments increase, tranche I investors are the first to receive these prepayments. While this might seem advantageous, it actually reduces the duration of the investment, as the principal is returned faster than expected.

**C is incorrect.** They have long durations is misleading. While it's true that MBS can have long durations, the impact of prepayment risk varies significantly across different tranches. Tranches are structured to distribute prepayment risk in a way that affects their duration and yield differently. Therefore, not all tranches are equally suitable for investors seeking long-term gains.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (a) Define prepayment risk and describe time tranching structures in securitizations and their purpose.***

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Q.2213 A financial website presents the following information: “The pass-through rate (i.e., the coupon rate on the mortgage-backed security (MBS), also called its net interest or net coupon) is always lower than the mortgage rate of the underlying mortgages in the pool.” Is the statement accurate?

A. Yes.

B. No, because pass-through rates are always equal to the mortgage rates.

C. No, because pass-through rates are always higher than the mortgage rates.

The correct answer is **A**.

The statement is accurate. The pass-through rate (i.e., the coupon rate on the MBS, also called its net interest or net coupon) is always lower than the mortgage rate of the underlying mortgages in the pool. The pass-through rate is lower because of the deductions of management and other fees from the interest paid on mortgages.

**B is incorrect.** It suggests that pass-through rates are always equal to the mortgage rates of the underlying mortgages. This overlooks the deductions for servicing and management fees, adjustments for credit risk, and the effects of MBS structuring, all of which contribute to the pass-through rate being lower than the mortgage rates.

**C is incorrect.** It asserts that pass-through rates are always higher than the mortgage rates of the underlying mortgages. This is contrary to the operational reality of MBS, where the pass-through rate is reduced due to various deductions and adjustments, making it lower than the mortgage rates of the underlying assets.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (c) Describe types and characteristics of residential mortgage-backed securities, including mortgage pass-through securities and collateralized mortgage obligations, and explain the cash flows and risks for each type.***

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Q.2214 The risk that prepayments on an MBS will be slower than expected is *most likely* called:

- A. Default risk.
- B. Extension risk.
- C. Contraction risk

The correct answer is **B**.

The risk that prepayments will be slower than expected is called extension risk.

**A is incorrect.** Default risk is the risk that a borrower will not make the required payments on their debt obligation.

**C is incorrect.** The risk that prepayments will be more rapid than expected is called contraction risk.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (d) Describe characteristics and risks of commercial mortgage-backed securities.***

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Q.2216 During periods of falling interest rates, the refinancing of mortgage loans will *most likely*:

- A. Accelerate prepayments and reduce the average life of the MBS.
- B. Decelerate prepayments and increase the average life of the MBS.
- C. Accelerate prepayments, but the average life of the MBS remains unchanged.

The correct answer is **A**.

During periods of falling interest rates, the refinancing of mortgage loans will accelerate prepayments and reduce the average life of the MBS. The average life decreases because homeowners will want to refinance their loans more when the interest rates are lower.

**B is incorrect.** With rising interest rates, prepayments will be lower than expected and this will increase the average life of the MBS.

**C is incorrect.** Accelerated prepayments will have an impact on the average life of the MBS and it will therefore not remain unchanged.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (c) Describe types and characteristics of residential mortgage-backed securities, including mortgage pass-through securities and collateralized mortgage obligations, and explain the cash flows and risks for each type.***

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Q.2217 Identify the structure of the Collateralized Mortgage Obligation (CMO) associated with the following. "There are two tranches. Both tranches receive interest payments at a specified coupon rate, but all principal payments (both scheduled payments and prepayments) are paid to Tranche I until its principal is paid off."

- A. Floating Rate CMO.
- B. Sequential Pay CMO.
- C. Planned Amortization Class CMO.

The correct answer is **B**.

One way to reapportion the prepayment risk inherent in the underlying pass-through MBS is to separate the cash flows into tranches that are retired sequentially (i.e., create a sequential pay CMO). The given is an example of a sequential pay CMO.

In a sequential pay CMO, a tranche will receive interest payments provided that its principal has not been completely paid off. Principal repayments are made in order of seniority (the principal of the senior-most tranche has to be settled before that of a junior tranche can be settled.)

**A is incorrect.** A floating-rate CMO has a variable interest rate. The interest rate set at a basis point spread over LIBOR is usually reset quarterly.

**C is incorrect.** A planned amortization class CMO is a way of protecting investors from prepayment risk; this is done by coming up with a steady payment schedule in advance.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (c) Describe types and characteristics of residential mortgage-backed securities, including mortgage pass-through securities and collateralized mortgage obligations, and explain the cash flows and risks for each type.***

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Q.2218 In a planned amortization class (PAC) collateralized mortgage obligation (CMO), when compared to the underlying mortgage-backed security, the planned amortization class (PAC) tranches:

- A. Have reduced extension risk.
- B. Have reduced contraction risk.
- C. Have both reduced contraction risk and reduced extension risk.

The correct answer is **C**.

A planned amortization class (PAC) tranche is a sub-type of asset-backed security that is designed to protect investors from prepayment risk and extension risk. It is structured to make predictable payments, regardless of actual prepayments to the underlying MBS. The PAC tranches have both reduced contraction risk and reduced extension risk compared to the underlying MBS. Extension risk is the risk that when interest rates rise, prepayments will be lower than expected and contraction risk the risk that when interest rates decline homeowners will then refinance at the available lower interest rates.

**A is incorrect.** While it is true that PAC tranches have reduced extension risk, stating that they only have reduced extension risk overlooks the equally important benefit of reduced contraction risk. PAC tranches are specifically engineered to mitigate both types of prepayment risk, offering a more balanced protection to investors against the unpredictability of prepayment behaviors.

**B is incorrect.** Similar to option A, this choice only acknowledges the reduction in contraction risk, neglecting the simultaneous reduction in extension risk provided by PAC tranches. The unique structure of PAC tranches is designed to shield investors from both the acceleration and deceleration of prepayment speeds, ensuring a more predictable and stable investment outcome.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (c) Describe types and characteristics of residential mortgage-backed securities, including mortgage pass-through securities and collateralized mortgage obligations, and explain the cash flows and risks for each type.***

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Q.2219 A method for addressing a decrease in the level of credit protection provided by junior tranches as prepayments or defaults occur in a senior/subordinated structure is called:

- A. Credit tranching.
- B. Credit enhancements.
- C. Shifting interest mechanism.

The correct answer is **C**.

A shifting interest mechanism is a method for addressing a decrease in the level of credit protection provided by junior tranches as prepayments or defaults occur in a senior/subordinated structure. We will use the example below to understand better the shifting interest mechanism.

Suppose we have a tranche structure of: senior - \$50, subordinate - \$15.

The percentage of credit enhancements to the senior tranche (subordinate interest),

$$\frac{\$15}{\$ (50 + 15)} = 23\%$$

Now assume that the firm suffers losses of \$5. Since the loss is less than \$15, it will be absorbed by the subordinate tranche. The structure will, therefore, change to: Senior - \$50, subordinate - \$10.

The percentage of credit enhancement to the senior tranche (subordinate interest),

$$\frac{\$10}{\$ (50 + 10)} = 16.67\%$$

The percentage of credit enhancement to the senior tranche (subordinate interest) has decreased (20% to 16.67%) implying that the senior tranche now has less protection. To bring the protection back up to 20%; the senior tranche amount will have to be paid down (reduce a loan over time by making partial payments towards it).

The point of a shifting interest mechanism is to maintain a certain level of protection to the senior tranche by reducing their loan amount over time (paying them down) earlier than perhaps would have occurred.

Note: subordinate interest is simply an acknowledgment that one party's interests will be higher than another one's in the event of liquidation of the borrower's assets.

**A is incorrect.** Credit tranching is a structuring technique used in the securitization of assets where different tranches or slices of debt are created with varying degrees of risk and return. While credit tranching plays a crucial role in determining the initial credit enhancement levels for each tranche, it does not directly address changes in credit protection levels due to prepayments or defaults.

**B is incorrect.** Credit enhancements are methods used to improve the creditworthiness or reduce the risk of a financial transaction, thereby making securities more attractive to investors. Examples of credit enhancements include over-collateralization, insurance, or guarantees from third parties. While credit enhancements contribute to the initial structuring of credit protection in a securitization, they do not specifically describe the process of adjusting credit protection in response to changes in the asset pool's performance.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (c) Describe types and characteristics of residential mortgage-backed securities, including mortgage pass-through securities and collateralized mortgage obligations, and explain the cash flows and risks for each type.***

Q.2220 A Planned Amortization Class (PAC) tranche may have an initial collar given as 100 - 300 PSA. This means:

- A. The PAC tranche will make its scheduled payments to investors unless the actual prepayment experience is below 100 PSA.
- B. The PAC tranche will make its scheduled payments to investors unless actual prepayment experience is above 300 PSA or below 100 PSA.
- C. If the prepayment rate is outside of 100-300 PSA, and payments to a PAC tranche are either sooner or later than promised, the PAC tranche is referred to as a breached PAC.

The correct answer is **B**.

A PAC has an initial collar given as 100 - 300 PSA. This means the PAC will make its scheduled payments to investors unless actual prepayment experience is outside of these bounds (i.e., above 300 PSA or below 100 PSA). If the prepayment rate is outside of these bounds and payments to a PAC tranche are either sooner or later than promised, the PAC tranche is referred to as a broken PAC.

**A is incorrect.** It only addresses the scenario where prepayment speeds fall below 100 PSA, suggesting that only in this case will the PAC tranche fail to make its scheduled payments. This interpretation is incomplete as it does not consider the upper limit of the collar. The PAC tranche is designed to protect against both faster and slower than expected prepayment speeds, as long as they fall within the specified collar of 100 - 300 PSA.

**C is incorrect.** It introduces the term "breached PAC," which is not a standard term used in the context of PAC tranches. The option also fails to clearly state that the PAC tranche aims to make its scheduled payments unless prepayment speeds fall outside the 100 - 300 PSA range. The focus on the consequences of breaching the collar without explaining the protective mechanism of the collar itself makes this option misleading.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (c) Describe types and characteristics of residential mortgage-backed securities, including mortgage pass-through securities and collateralized mortgage obligations, and explain the cash flows and risks for each type.***

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Q.2221 A director at a large Wall Street bank made the following comment on a renowned business channel: "Support tranches have both more contraction risk and more extension risk than the underlying mortgage-backed security (MBS), and have a lower promised interest rate than the planned amortization class (PAC) tranche." Which of the following statements is most accurate?

A. The director's comment is accurate.

B. The director's comment is inaccurate; support tranches have only more extension risk than the underlying mortgage-backed security (MBS), and have a lower promised interest rate than the planned amortization class (PAC) tranche.

C. The director's comment is inaccurate; support tranches have both more contraction risk and more extension risk than the underlying mortgage-backed security (MBS), and have a higher promised interest rate than the planned amortization class (PAC) tranche.

The correct answer is C.

Support tranches have both more contraction risk and more extension risk than the underlying mortgage-backed security (MBS), and have a higher promised interest rate than the planned amortization class (PAC) tranche.

PAC tranches have lower interest rates because they have a scheduled principal paydown that provides investors cash flow certainty and specific average life. Support tranches lack this certainty that is compensated for by a higher interest rate.

Note: Extension risk occurs when interest rates are high, making borrowers take long to pay back debts. On the other hand, contraction risk occurs when interest rates are low, making borrowers pay back loans quickly than anticipated.

**A is incorrect.** In reality, the increased risks associated with support tranches—both contraction and extension risks—are compensated by a higher interest rate, not a lower one, compared to PAC tranches.

**B is incorrect.** This option inaccurately suggests that support tranches only have more extension risk than the underlying MBS and maintain a lower promised interest rate compared to PAC tranches. However, support tranches are exposed to both more contraction and extension risks due to their role in absorbing prepayment variability to protect PAC tranches.

**CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (c) Describe types and characteristics of residential mortgage-backed securities, including mortgage pass-through securities and collateralized mortgage obligations, and explain the cash flows and risks for each type.**

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Q.2222 A mortgage where a lender can go back to the borrower personally in an attempt to collect any excess of the loan amount above the net proceeds from foreclosing on and selling the property is *most likely* known as a:

- A. Residential mortgage with recourse.
- B. Residential mortgage without recourse.
- C. Commercial mortgage without recourse.

The correct answer is **A**.

The essential difference between a recourse and non-recourse loan has to do with which assets a lender can go after if a borrower fails to repay a loan. Recourse loans allow the lender to go after a borrower's other assets if the collateral fails to pay off the entire loan. On the other hand, non-recourse loans forbid lenders from going after a borrower's other assets and allow them to only go after the asset(s) used as collateral. As a matter of principle, borrowers almost always favor non-recourse loans, while lenders almost always favor recourse loans.

Therefore, in a residential mortgage with recourse the lender can go back to the borrower personally in an attempt to collect any excess of the loan amount above the net proceeds from foreclosing on and selling the property.

**B is incorrect.** Suggesting that a residential mortgage without recourse would allow a lender to pursue the borrower personally for any shortfall following the sale of the property is a misunderstanding of the term "without recourse." In a non-recourse loan, the lender's ability to recover the loan amount is strictly limited to the proceeds from the sale of the collateral property.

**C is incorrect.** A commercial mortgage without recourse similarly restricts the lender's ability to recover the loan amount to the proceeds from the sale of the collateral property. In commercial mortgages without recourse, the lender cannot go after the borrower's other assets in the event of a shortfall following the foreclosure and sale of the property.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (b) Describe fundamental features of residential mortgage loans that are securitized.***

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Q.2223 From the perspective of the MBS investor, a higher debt service coverage ratio is:

- A. Favorable.
- B. Unfavorable.
- C. Neither favorable nor unfavorable.

The correct answer is **A**.

The Debt service coverage ratio is a measure of a firm's available cashflows to pay its current debt obligations.

It is calculated as:

$$\text{Debt service coverage ratio} = \frac{\text{Property's annual net operating income}}{\text{debt service (interest and principal payments)}}$$

It indicates greater protection to the lender when it is higher. Debt service coverage ratios below one indicate that the borrower is not generating sufficient cash flow to make the debt payments and is likely to default.

From the perspective of both the lender and the MBS investor, the higher the ratio the better.

**B is incorrect.** Suggesting that a higher DSCR is neither favorable nor unfavorable overlooks the fundamental importance of this ratio in assessing the financial health of the property and the associated risk for MBS investors. A higher DSCR directly translates to lower risk and higher security for the investors, making it a critical factor in investment decisions.

**C is incorrect.** This option fails to recognize the significance of the DSCR in evaluating the risk and stability of cash flows from mortgage-backed securities. A higher DSCR is unequivocally favorable for MBS investors as it indicates a strong capacity of the underlying properties to generate income sufficient to cover debt obligations, thereby reducing the risk of default and enhancing the attractiveness of the investment.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (b) Describe fundamental features of residential mortgage loans that are securitized.***

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Q.2224 Given a current mortgage amount of \$500,000 and a current appraised value of \$1,000,000, the loan to value ratio is *closest to*:

A. 0.25

B. 0.5

C. 2

The correct answer is **B**.

The Loan-to-value ratio compares the loan amount on the property to its current fair market or appraisal value.

$$\text{LTVR} = \frac{\text{Current mortgage amount}}{\text{Current appraised value}} = \frac{500,000}{1,000,000} = 0.5$$

**A is incorrect.** This option suggests an LTVR of 0.25, which would imply that the current mortgage amount is only 25% of the property's appraised value. This is not accurate based on the given figures. An LTVR of 0.25 would require either a lower mortgage amount or a higher property value than those provided in the scenario.

**C is incorrect.** This option suggests an LTVR of 2, which would imply that the mortgage amount is twice the value of the property. An LTVR of 2 would indicate severe negative equity, where the borrower owes significantly more on the mortgage than the property is worth, which is not the case here.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (b) Describe fundamental features of residential mortgage loans that are securitized.***

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Q.3291 In a commercial mortgage-backed security structure, the first loss on the collateral is *most likely* absorbed by the:

- A. Equity owners.
- B. Unrated tranche.
- C. High-yield CMBS.

The correct answer is **A**.

The equity owners in a CMBS structure are the investors who hold the most subordinate and highest-risk tranche of the security. They have the first claim on the cash flows generated by the underlying collateral, and they absorb any losses that occur if the cash flows are insufficient to cover all of the payments due to the more senior tranches.

**B is incorrect.** The senior tranches of a CMBS are typically rated and have lower credit risk, while the more subordinate tranches are unrated and have higher credit risk. The unrated tranches are more likely to absorb losses after the equity owners, but they still have some protection from losses due to the credit enhancement mechanisms built into the CMBS structure, such as reserves, over-collateralization, and subordination.

**C is incorrect.** High-yield CMBS refers to a specific type of subordinate tranche that typically offers higher yields to compensate for the higher credit risk. However, the high-yield tranche is not necessarily the first to absorb losses in a CMBS structure. The specific order of loss allocation depends on the terms of the deal and the performance of the underlying collateral.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (b) Describe fundamental features of residential mortgage loans that are securitized.***

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Q.3889 A financial website presents the following information: “The pass-through rate (i.e., the coupon rate on the mortgage-backed security (MBS), also called its net interest or net coupon) is always lower than the mortgage rate of the underlying mortgages in the pool.” Is the statement accurate?

A. Yes.

B. No, because pass-through rates are always equal to the mortgage rates.

C. No, because pass-through rates are always higher than the mortgage rates.

The correct answer is **A**.

The statement is accurate. The pass-through rate (i.e., the coupon rate on the MBS, also called its net interest or net coupon) is always lower than the mortgage rate of the underlying mortgages in the pool. The net interest on a securitized asset, in this case, mortgage-backed security, is lower than the interest charged on the mortgage because of the fee deductions, for example, management fee, from the paid interest.

**B is incorrect.** In reality, the pass-through rate is lower than the mortgage rates of the underlying mortgages due to the deduction of various fees and expenses. The equality between pass-through rates and mortgage rates would imply that there are no costs associated with managing and guaranteeing the MBS, which is not the case in practice. The process of securitizing mortgages and managing MBS involves costs that are ultimately borne by the investors, leading to a lower net interest rate received compared to the gross mortgage rates.

**C is incorrect.** This misunderstanding could arise from a confusion between the gross interest collected from borrowers and the net interest passed through to MBS investors. The gross mortgage rate is the rate charged to borrowers, which includes the interest intended to cover the risk, costs, and profit margins of the lending and securitization process.

***CFA Level I, Fixed Income, Learning Module 19: Mortgage-Backed Security (MBS) Instrument and Market Features, LOS (c) Describe types and characteristics of residential mortgage-backed securities, including mortgage pass-through securities and collateralized mortgage obligations, and explain the cash flows and risks for each type.***

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Q.4215 Which of the following is *most likely* true regarding mortgage-backed securities?

- A. Mortgage-backed securities are direct investments in specific properties.
- B. Prepayment fees are not charged if a borrower sells the property before the maturity of the mortgage.
- C. The issuer creates a special purpose vehicle (SPV) that buys mortgages from lenders and other mortgage owners to form a diversified mortgage pool.

The correct answer is **C**.

Mortgage-backed securities (MBS) are created when an issuer buys a pool of mortgages from lenders and other mortgage owners and then securitizes them by issuing bonds collateralized by the underlying mortgages. This process creates a diversified pool of mortgages with varying interest rates, terms, and creditworthiness, providing investors with a range of risk and return profiles.

**A is incorrect.** Mortgage-backed securities are not typically direct investments in specific properties. Instead, they are backed by pools of mortgage loans that have been bundled together.

**B is incorrect.** Prepayment fees are usually charged if a borrower sells the property before the maturity of the mortgage. When a borrower prepays a mortgage, the investor who purchased the mortgage-backed security loses out on future interest payments.

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