

LM02 · FIXED INCOME · CFA LEVEL I

Fixed-Income Cash Flows and Types

How bond principal and interest cash flows are structured: bullet vs. amortizing; floating-rate notes; and contingency provisions (calls, puts, convertibles).

What This Reading Covers

Most bonds are simple bullet bonds, but the CFA curriculum requires you to know every major variant: fully vs. partially amortizing; sinking fund and waterfall structures; FRNs and their caps/floors; step-ups; credit-linked coupons; zero-coupon; deferred-coupon; PIK bonds; and the three embedded options (call/put/convert).

Learning Outcomes

LOS a Describe common cash flow structures of fixed-income instruments and contrast cash flow contingencies

LOS b Describe common coupon structures of fixed-income instruments

Exam Tip: Know the four repayment structures (bullet, fully amortizing, partially amortizing / balloon, sinking fund); the FRN formula and caps/floors; step-up and credit-linked coupons; and how each embedded option shifts value between issuer and bondholder.

LOS A · PRINCIPAL REPAYMENT STRUCTURES

Principal Repayment Structures

Bullet bond

Periodic coupon interest over life; principal paid in full with the final coupon at maturity. The most common structure.

Fully amortizing

Periodic payments include **both interest and some principal**; principal is fully paid off when the last periodic payment is made (e.g., mortgage).

Partially amortizing (balloon)

Periodic payments pay some principal; a **balloon payment** at maturity pays the unamortized principal.

Sinking fund

Provisions that require repayment of principal through a series of payments over the life of the bond, retiring a portion of the issue each period.

Waterfall structures (ABS / MBS)

Principal and interest cash flows from pooled assets are distributed across tranches in a prescribed order — senior tranches receive cash flows first, subordinated tranches absorb losses.

LOS B · COUPON STRUCTURES

Coupon Structures

Fixed-rate coupon

A **conventional bond** has a fixed, periodic coupon (typically semi-annual). Coupon payment = coupon rate $\times$ face value $\div$ periodicity.

Floating-rate notes (FRN)

$$\text{Coupon} = \text{MRR} + \text{quoted margin}$$

- **MRR** (market reference rate) — e.g. SOFR, Euribor.
- **Quoted margin** (spread) — reflects issuer-specific credit risk.
- **Inverse FRN** — coupon moves opposite to MRR (e.g., $10\% - \text{MRR}$).
- **Cap** — max coupon (benefits issuer).
- **Floor** — min coupon (benefits bondholder).
- **Collar** — both cap and floor.

Step-up, floating-to-fixed, credit-linked, and PIK

- **Step-up coupon** — coupon rate steps up to higher levels at specified dates (often tied to ratings downgrade protection).
- **Floating-to-fixed** — pays floating for early life, then fixed (or vice versa).
- **Credit-linked coupon** — coupon adjusts with changes in the issuer's credit rating.
- **Deferred-coupon** — no coupons in early years; regular coupons begin later.
- **PIK (Payment-in-Kind)** — issuer pays coupon by issuing **more bonds** instead of cash (common for highly leveraged issuers).
- **Zero-coupon** — no periodic coupons; issued at deep discount, matures at par.

- **Index-linked / inflation-linked** — principal and/or coupon tied to an index (e.g., TIPS, where principal adjusts with CPI).

LOS A • CASH FLOW CONTINGENCIES

Cash Flow Contingencies (Embedded Options)

Contingency provisions create **contingent cash flows** — cash flows that depend on a future event.

Callable bonds

Issuer has the right to redeem before maturity. Benefits **issuer**. Investors demand a higher yield. Types: American (anytime after lock-out), European (only at a date), Bermuda (specific dates).

Putable bonds

Bondholder has the right to sell the bond back to the issuer. Benefits **bondholder**. Bondholder accepts a lower yield in exchange.

Convertible bonds

Bondholder may convert the bond into a specified number of shares of the issuer's equity. Benefits **bondholder**; lower coupon vs. straight debt.

Key definitions on convertibles

Conversion ratio	Number of shares received per bond upon conversion
Conversion price	$\text{Par value} \div \text{conversion ratio}$
Conversion value	$\text{Conversion ratio} \times \text{market price of stock}$
Conversion premium	$\text{Bond price} - \text{conversion value}$

CHECKPOINT 1

Quiz 1: Structures

Answer all questions to test your understanding. Your score updates on the final step.

Q1. A bond that repays some principal over its life and pays the remaining outstanding principal in a lump sum at maturity is *best* described as:

Q2. A sinking fund provision *most accurately*:

Q3. Under an inverse FRN, if the reference rate *rises*, the coupon will *most likely*:

Q4. A PIK (payment-in-kind) bond pays coupon interest:

Q5. A bondholder's right to put the bond back to the issuer is *most likely* exercised when:

LOS A · LEGAL/TAX/REGULATORY FEATURES

Legal, Regulatory, and Tax Considerations

Fixed-income securities are subject to different legal and regulatory requirements depending on the jurisdiction, the type of issuer, and where the bond is sold.

Bond classifications

- **Domestic bonds** — issued in the home country, in local currency, sold to local investors.
- **Foreign bonds** — issued by a foreign entity in the local country's currency (e.g. Samurai, Yankee, Bulldog bonds).
- **Eurobonds** — issued outside the jurisdiction of any one country; typically in a currency different from the country of issuance; light regulation.
- **Global bonds** — issued simultaneously in multiple markets (Eurobond + domestic).

Bond types by tax treatment

- Coupon interest is typically taxed as ordinary income.
- Capital gains can arise from selling before maturity, or from buying at a deep discount (OID / original-issue-discount bonds are taxed on imputed annual accretion).
- **Municipal bonds** in the U.S. (non-sovereign gov't issuers) are generally exempt from federal income tax.

WORKED EXAMPLE · FRN COUPON

Worked Example — Floating-Rate Note Coupon**EXAMPLE****Calculating an FRN coupon****GIVEN**

A 3-year Italian floater pays **3-month MRR + 0.75%**. The current 3-month MRR is **1%**. Day-count is 30/360.

FIND

The next quarterly coupon payment (as a percentage of par).

SOLUTION

$$\text{Interest payment per period} = \frac{1.00\% + 0.75\%}{4} = \mathbf{0.4375\%}$$

That is, for each **100par**, *the investor receives* 0.4375 each quarter, or \$1.75 per year at current MRR.

ANSWER

0.4375% of par per quarter (1.75% annualized at current MRR of 1% + 0.75% quoted margin).

CHECKPOINT 2

Quiz 2: Coupons & Caps

Answer all questions to test your understanding. Your score updates on the final step.

Q6. A floating-rate note has an embedded **cap**. The cap:

Q7. The conversion price of a convertible bond with a par value of \$1,000 and a conversion ratio of 25 is:

Q8. A step-up coupon bond *most accurately*:

Q9. A Eurobond is *most accurately* described as:

Q10. A bond's indenture permits the issuer to defer coupon payments. This feature is *best* described as:

SUPPLEMENTAL · CREDIT-LINKED CASH FLOWS

Credit-Linked and Index-Linked Features

Credit-linked coupon bond

The coupon changes if the issuer’s **credit rating** changes — typically the coupon increases on downgrade (compensating investors for increased risk) and decreases on upgrade.

Inflation-linked (index-linked) bonds

- **Capital-indexed** — principal is adjusted by the reference index; coupon is a fixed rate applied to the inflation-adjusted principal (e.g., U.S. TIPS).
- **Interest-indexed** — fixed principal; coupon tied to the reference index.
- **Zero-coupon indexed** — only the principal at maturity is inflation-adjusted.
- **Indexed-annuity** — the entire fixed-annuity payment is adjusted.

REVIEW · SIDE-BY-SIDE COMPARISON

Side-by-Side Review Table

FEATURE	WHO BENEFITS?	EFFECT ON YIELD DEMANDED
Call option	Issuer	Investors demand higher yield
Put option	Bondholder	Investors accept lower yield
Convertibility	Bondholder	Investors accept lower yield; effective lower coupon
Cap (FRN)	Issuer	Investors demand higher yield
Floor (FRN)	Bondholder	Investors accept lower yield
Sinking fund	Both (reduces risk)	Slightly lower yield

CHECKPOINT 3 · SYNTHESIS

Quiz 3: Integration

Answer all questions to test your understanding. Your score updates on the final step.

Q11. Compared to an otherwise identical non-callable bond, a callable bond will *most likely* have:

Q12. A bond in which the coupon is floating early in life and fixed later is *best* described as:

Q13. Compared to a bullet bond, a fully amortizing bond of the same original maturity and coupon has:

Q14. A TIPS (Treasury Inflation-Protected Security) is *most accurately* classified as:

Q15. A waterfall structure in an ABS is *best* described as:

MODULE COMPLETE

Your Scorecard

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LM02 Key Takeaways — Exam-Ready Cheat Sheet

Principal Structures

Bullet — all principal at maturity. **Fully amortizing** — all principal over life. **Partial amortizing** — some + balloon. **Sinking fund** — scheduled retirement. **Waterfall** — ABS/MBS priority.

Coupon Structures

Fixed · Floating (MRR + QM, with cap / floor / collar) · Inverse floater · Step-up · Floating-to-fixed · Credit-linked · Deferred-coupon · PIK · Zero-coupon · Index-linked (capital / interest / zero / annuity).

Exam Checklist

Callable = issuer right → higher yield / higher coupon

Puttable = bondholder right → lower yield

Convertible = debt → equity right → lower yield; conv. price = par / conv. ratio

PIK pays coupon in more bonds; **deferred** skips early coupons

TIPS = capital-indexed to CPI

Eurobonds = issued outside any single country; light regulation

Step 1 of 12