

LM03 · DERIVATIVES · CFA LEVEL I

Derivative Benefits, Risks & Issuer/Investor Uses

Why derivatives exist, what they add to markets, their hazards, and how issuers vs investors use them

What This Reading Covers

Derivatives deliver **four benefits** (risk management, information discovery, operational advantages, market efficiency) and carry **five risks** (leverage, opacity, basis, liquidity/MTM, counterparty + systemic). Issuers primarily *hedge*; investors *replicate, hedge, or modify* exposure.

Learning Outcome Statements

LOS a Describe benefits and risks of derivative instruments

LOS b Compare the use of derivatives among issuers and investors

Exam Tip: Memorize the four benefits and five risks as short lists, plus the hedge-accounting hedge types (cash flow, fair value, net investment) and the covered-call construction (long stock + short call).

BENEFIT 1

Risk Allocation, Transfer & Management

Derivatives enable risk transfer **without trading the underlying**. You can:

- 1 **Gain** a new risk exposure by buying exposure synthetically
- 2 **Hedge / offset** some risk to neutralize a position
- 3 **Manage return distribution** — e.g., *long stock + short call = covered call* (caps upside, lowers volatility, earns premium)
- 4 **Allocate risk across time** — e.g., sell puts today + long equity-index futures for 30 days → synthetically reinvest dividends

Risk transfer = the single most important economic rationale for the existence of derivative markets.

BENEFIT 2

Information Discovery

Derivatives (futures) often trade **outside of cash-market hours** and aggregate information in ways the cash market cannot:

- 1 **Pre-market signal** — equity index, commodity, and bond futures foreshadow where the cash market will open
- 2 **Market belief signal** — Federal funds futures (FFF) anticipate future Fed actions
- 3 **Volatility signal** — VIX aggregates expected 30-day S&P 500 volatility

BENEFIT 3 & 4

Operational Advantages & Market Efficiency

Operational advantages

- **Reduced cash outlay** — no need to buy the underlying outright
- **Lower transaction costs** — especially for commodities (eliminate transportation / storage)
- **Increased liquidity** vs cash market — consequence of lower capital requirements
- **Ability to short** — especially for commodities where borrow is impractical

Market efficiency (4): derivatives make arbitrage *less costly*, pulling prices back to fair value faster and tightening the link between related markets.

RISK 1

Speculative Use & Implicit Leverage

Derivatives embed **high implicit leverage** via margin. A small move in the underlying produces a large move in equity.

WORKED EXAMPLE
CL (Crude Oil) Futures — Leverage
GIVEN

CL @ \$108/bbl $\times$ 1,000 bbl contract = **\$108,000** notional. Initial margin $\approx$ **\$8,500**.

LEVERAGE & P/L

Leverage = $108,000 / 8,500 = 12.7\times$.

A *1move* (0.9261,000 P/L on one contract = $1,000 / 8,500 = 11.76\%$ gain or loss on equity).

IMPLICATION

Under 1% price move $\rightarrow$ $\sim 12\%$ equity swing. This magnification is the core speculative risk of derivatives.

RISKS 2 & 3

Lack of Transparency & Basis Risk

Risk 2 — Lack of transparency

Adds complexity to a product or portfolio that may not be well understood by end users or risk managers. This is particularly acute for bespoke OTC structures.

Risk 3 — Basis risk

Divergence between **spot and forward/future** price return. Arises when:

- Expiration of derivative *doesn't match* the future date of the expected underlying transaction
- Imperfect hedges — e.g., using **heating oil (HO) futures** to hedge **jet fuel** price risk

Spot and futures converge at $t = T$, but diverge before.

QUIZ 1 · BENEFITS & RISKS

Test Your Understanding

Q1. Which is *not* among the four canonical benefits of derivatives?

Q2. In the CL crude oil example, the implicit leverage is closest to:

Q3. Hedging jet fuel price exposure with heating oil futures creates which risk?

Q4. A covered call is constructed as:

Q5. Federal funds futures (FFF) are an example of which benefit of derivatives?

RISKS 4 & 5

Liquidity (MTM) Risk, Counterparty Risk & Systemic Risk

Risk 4 — Liquidity risk from MTM

Daily mark-to-market settlement can trigger massive cash needs even if the hedge is economically sound.

Case study — LME Nickel. A Chinese nickel producer held a short LME nickel futures position > 100k tons (hedging output). When prices spiked, the producer had to take massive bank loans to meet the mark and stay in the contracts — despite being a physical producer with the ability to deliver.

Risk 4b — Counterparty credit risk

- **ETD:** lower (clearinghouse), especially with price limits
- **OTC commitments (forwards, swaps):** *both sides* have counterparty risk
- **OTC contingencies (options, CDS):** *only the long side* has counterparty risk on the short (writer)

Risk 5 — Destabilization & systemic risk

Excessive risk-taking and leverage can create market stress when equity depletes and credit for margin calls dries up — the classic "1998 LTCM" or "2008 AIG" mode of failure.

LOS B · ISSUERS

How Issuers Use Derivatives — Hedging & Hedge Accounting

Issuers (corporations) primarily **hedge**:

- 1 **Asset values** (e.g., inventory price risk)
- 2 **Liabilities** (e.g., interest-rate exposure on debt)
- 3 **Revenues / expenses** (e.g., FX, commodity input prices)

Accounting rule. Issuers must report all gains/losses on derivatives through the **Income Statement** (not OCI) *unless* the position qualifies for **hedge accounting**. To qualify, dates and notional amounts must **closely match** the features of the underlying transaction → issuers primarily use **OTC derivatives** (customization).

Three hedge types

HEDGE TYPE	WHAT IT HEDGES	EXAMPLE
Cash flow hedge	Absorbs variable cash flows of a floating-rate (or -price) asset or liability	FX hedge on expected receipts; interest-rate hedge on floating-rate debt; commodity hedge on input inventory
Fair value hedge	Offsets fluctuations in fair value of an A or L	Receive-fixed / pay-floating swap increases duration to offset an existing low-duration bond issue
Net investment hedge	Offsets FX risk of the equity (A – L) of a foreign operation	Short EUR forward against a European subsidiary's net assets

With qualifying hedges, all gains/losses are held in **OCI** until the underlying transaction is recognized.

LOS B · INVESTORS

How Investors Use Derivatives

Three investor uses

- 1 Replicate a cash strategy — e.g., S&P 500 futures to mimic index fund exposure with less capital
- 2 Hedge financial risk — FX, equity, rate, credit
- 3 Modify a risk exposure — e.g., overlay strategies, covered calls, protective puts

Retail vs institutional

- | | |
|---------------|--|
| Retail | ETD exclusively — standardized futures & listed options |
| Institutional | Mix of ETD and OTC — tailor OTC to specific benchmark mismatches or liability structures |

ROLE	ISSUERS (CORPORATES)	INVESTORS
Primary motive	Offset / hedge exposures from commercial or financing activities	Replicate, hedge, or modify portfolio exposures
Venue	Primarily OTC (customized)	Retail → ETD; institutional → ETD + OTC
Accounting	IS (default) or OCI via hedge accounting	Depends on account / fund status

QUIZ 2 · HEDGING & USES

Issuer / Investor Use Cases

Q6. Which hedge type *best* fits an issuer wanting to neutralize future FX receipts on confirmed export sales?

Q7. A pay-floating / receive-fixed swap layered onto a fixed-rate bond issue is *most accurately* a:

Q8. A US parent with a European subsidiary hedges the FX exposure of that subsidiary's net assets. This is a:

Q9. Retail investors typically access derivatives via:

Q10. Which statement about counterparty credit risk in OTC derivatives is *most accurate*?

QUIZ 3 · INTEGRATION

Integration Questions

Q11. The LME Nickel episode illustrates *which* derivative risk?

Q12. Without hedge accounting, an issuer's derivative P/L flows through:

Q13. Which is *most* consistent with derivative-enabled market efficiency?

Q14. An investor uses S&P 500 futures to gain equity exposure with much less capital than buying the stocks. This is:

Q15. Which statement is *most accurate*?

MODULE COMPLETE

Your Scorecard

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LM03 Key Takeaways

Four Benefits

- 1 Risk allocation / transfer / management (incl. covered calls, time-shifting exposures)
- 2 Information discovery (FFF, pre-open signals, VIX)
- 3 Operational advantages (lower cost, increased liquidity, easier shorting)
- 4 Market efficiency (cheaper arbitrage → fair value)

Five Risks

- 5 Speculative use / implicit leverage (CL example: 12.7×)
- 6 Lack of transparency
- 7 Basis risk (HO vs jet fuel)
- 8 Liquidity risk from MTM (LME Nickel)
- 9 Counterparty credit risk + destabilization / systemic risk

Issuer / Investor Uses

- 10 **Issuers:** hedge A, L, revenues/expenses. Primary tool: OTC. Hedge accounting types: *cash flow*, *fair value*, *net investment*. With qualifying hedge → P/L parks in OCI until recognition.
- 11 **Investors:** replicate, hedge, or modify exposure. Retail = ETD only; institutional = ETD + OTC.

Last-Minute Checklist

Benefits (4): risk · info · ops · efficiency

Risks (5): leverage · opacity · basis · liquidity/MTM · counterparty/systemic

Hedge types (3): cash flow · fair value · net investment

Issuers mostly OTC; **Retail** mostly ETD

Step 1 of 13