



INSIGHTS

Commodity, FX and Interest Rate **Volatility**

A CFO's playbook for Cash Flow at Risk and
the hedge accounting that supports it

Published: June 2026

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A pathway, not a textbook. The paper builds from a CFaR primer through volatility, board-level questions, hedging, accounting and the operating model that ties them together.

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Volatility, basis risk and the modern treasury team.

The question Group Treasurers, CFOs and risk leads ask me is no longer *whether* to upgrade the hedging programme, but *how to combat volatility, handle basis risk that is not in acceptable tolerance levels, and evolve the team to deliver the analysis the board now expects.*

This paper is built around five connected pieces:

Quantification

A multi-asset CFaR number the board can target, with basis risk measured, not assumed.

Hedging

Instrument selection, level of cover, and CFaR-driven optimisation that delivers measurable risk reduction per euro of cost.

Accounting

ASC 815 and IFRS 9 portfolio hedging, with a preview of the IASB Risk Mitigation Accounting proposal for commodities (RMA).

Team and governance

The skills, controls and process that turn the framework into a repeatable monthly cadence and business case, not a one-off project.

Communication

Risk is a daunting subject, and the techniques used to manage it are harder still. This paper is built to help you translate risk management for your peers and board in language they can digest, trust, and act on.

Each section is built to stand alone. Build the knowledge sharing and discussions of evolving financial risk management within your companies.

If anything sparks a question drop me a note at dominic@yourtreasury.ai.

Dominic Lynch

Co-Founder, Your Treasury

Introduction

This paper is written for CFOs and corporate treasurers who want a working framework, not a tutorial. Corporate treasury risk management has matured in three distinct eras: through the 1990s, simple forwards governed by percentage policies; in the decade after the 2008 financial crisis, the migration of Value at Risk (VaR)-derived analytics from the trading floor onto the corporate balance sheet, together with the move from International Accounting Standard 39 (IAS 39) to the more principles-based International Financial Reporting Standard 9 (IFRS 9); and from roughly 2015, an integrated cash flow risk framework, Cash Flow at Risk (CFaR), Earnings at Risk (EaR) and tail-sensitive extensions, that became technically feasible at corporate scale.¹ Capability has been there for a decade. Adoption has lagged it.

The case for closing that gap has never been stronger. Over the past five years, treasury teams have faced an unbroken sequence of macro shocks: covid-era supply disruption, the rate whipsaw of 2023-24, trade tariff disruption in 2025, and the renewed energy volatility of early 2026. Each episode exposed the structural weakness of single-asset hedging and favoured treasuries capable of modelling the consolidated distribution of outcomes under correlated shocks. Equally important has been a shift in mindset. Trading-floor VaR measures how much could be lost on open positions before they can be unwound; corporate CFaR instead asks how a business navigates the months or years needed to reprice, renegotiate contracts, or adapt capital plans. Medium-term performance is the relevant horizon, not the time required to close out a book, and the more useful question is no longer *are we within limits?* but *what should we do differently?*

The pages that follow are organised as a pathway, not a textbook. We start with **what CFaR is** and how to read the number (sections on the primer and worked example), move into **the volatility landscape and cross-asset correlations** that drive it, then translate the analytics into **board-level questions**: how much risk are we carrying, how much can we afford, and what does the hedge programme buy us. From there the paper turns to **practice**: instrument selection, level of cover, and CFaR-driven hedge optimisation. Commodity exposures sit slightly apart from FX and rates, benchmarks rarely match the physical contract, so **basis risk** is treated explicitly in the quantification chapters and surfaces again, lightly, when we cover hedge accounting under ASC 815 and IFRS 9, since the two standards treat that mismatch very differently. The closing chapters cover the IASB Risk Mitigation Accounting proposal, technology and governance, board communication, and a transition roadmap from percentage hedging to risk targets.

The exercise is more tractable than it sounds: in most corporate portfolios, three to five risk factors, sometimes ten, explain the bulk of cash flow volatility, so a top-down first-generation model can produce defensible answers in weeks, not the multi-year build typical of trading VaR systems. The intent of this paper is operational, not academic: to equip the CFO and the treasury team to produce, defend and act on a risk number that moves the audit committee conversation from policy to outcome.

What Cash Flow at Risk Means

Before working through the multi-asset analysis that follows, it is worth pausing on what Cash Flow at Risk *measures*, how it differs from the risk metrics that boards and CFOs are already familiar with, and what kind of decision it is built to support. The introduction set out *why* an integrated framework matters; this section sets out *what* the framework is.

RISK IN A CORPORATE CONTEXT

Risk, in a treasury context, is the gap between the cash flows the business has planned for and the cash flows it actually delivers. A budget assumes Brent at \$80, EUR/USD at 1.10, and three-month Euribor at 2.50%; the year delivers Brent at \$103, EUR/USD at 1.17, and a hawkish ECB. The difference between plan and outcome, in euros of free cash flow, not in basis points of rate, is the risk the business has lived with. CFaR is a way of estimating that gap *before* the year has happened.

FROM VAR TO CFAR

Trading desks use Value at Risk to size positions over short horizons, typically one to ten days, because that is roughly the time it takes to unwind a book under stress. The corporate question is different. A treasurer cannot 'unwind' a manufacturing plant, a long-dated supply contract, or a euro-denominated revenue base. The exposures are **structural** and the horizons that matter are quarterly, annual, and multi-year. CFaR keeps VaR's distributional logic, simulate many possible futures, look at the loss at a chosen confidence level, but applies it to consolidated cash flows over the horizon the business actually plans against.

HOW THE NUMBER IS BUILT

A CFaR figure rests on four building blocks, each of which the rest of this paper develops in turn:

- **Exposure mapping.** Identify the cash flow line items that are sensitive to market factors, revenue by currency, input costs by commodity, debt service by rate basis, and quantify their size and timing.
- **Factor model.** Define the small number of market factors (typically three to five, occasionally up to ten) driving most variability, then calibrate volatility and correlation using market data.
- **Simulation.** Run the factor model forward over the horizon, revalue the exposures under each path, and aggregate to a consolidated cash flow distribution.
- **Attribution.** Decompose the resulting CFaR figure by exposure and by factor, so the board can see which currencies, commodities, and rates contribute most to the downside, and which are already offsetting one another within the group.

What Cash Flow at Risk Means (continued): Reading and related metrics

HOW TO READ THE NUMBER

A statement that '*twelve-month CFaR at 95% confidence is €85m*' means: in roughly one year out of twenty, the business should expect free cash flow to fall short of plan by €85m or more, given current exposures and current market volatility. It is not a forecast of what *will* happen; it is a probability-weighted statement about what *could* happen, in the same euros the budget is written in. The metric is most useful when it is anchored to thresholds the business genuinely cares about, a covenant headroom, a credit-rating trigger, the cash needed to fund a capital programme, so that 'is €85m of CFaR a problem?' has a defensible answer.

RELATED METRICS, BRIEFLY

- **Earnings at Risk (EaR).** Same machinery as CFaR, but applied to accounting earnings rather than cash flows; useful when the audit committee's focus is reported EBITDA or EPS rather than liquidity.
- **Expected Shortfall (ES, or tail-CFaR).** The average shortfall in the worst 5% of outcomes, rather than the threshold of the 5%; a sharper view of tail risk for stress-testing and insurance-style coverage decisions.
- **Hedge ratio.** Still useful as an execution measure, what proportion of a given exposure is covered, but downstream of the CFaR question, not a substitute for it.

With those concepts in place, the rest of the paper builds outwards: first the multi-asset volatility landscape that defines the inputs, then the correlations and stress tests that shape the distribution, and finally the hedging, accounting, and governance decisions that the CFaR number is meant to inform.

A Worked Example: From exposures to a CFaR number

To make the abstract concrete, consider a stylised industrial business with three principal exposures: a US dollar revenue stream, a euro cost base, and a floating-rate term loan benchmarked to EURIBOR. The treasury team forecasts that next year's plan delivers €1,200m of operating cash flow, of which roughly €180m of headroom sits above the dividend, capex and debt-service commitments the board has approved. The question is not whether the plan is achievable in the central case, it is, but how confidently that €180m of headroom survives a normal range of market outcomes.

STEP 1: MAP EXPOSURES TO DRIVERS

Three risk factors are material at this horizon: EUR/USD, the front five contracts on a benchmark commodity (proxying the input cost basket), and 12-month EURIBOR. A two-week consultation with FP&A confirms the sensitivities: a 1% appreciation of EUR/USD removes €14m of operating cash flow; a \$5/bbl move in the commodity proxy moves cost of goods by €22m; a 25bp move in EURIBOR moves interest expense by €6m. These are the deltas the Monte Carlo will sample against.

STEP 2: CALIBRATE VOLATILITY AND CORRELATION

Annualised volatilities are taken from the traded options market, EUR/USD 9%, commodity 32%, EURIBOR 110bp, and the correlation matrix is estimated from three years of daily returns, with a stress overlay that lifts the EUR/USD vs commodity correlation from -0.18 to -0.45 in the worst decile to reflect risk-off regime behaviour. These choices are documented in a one-page assumption sheet that the audit committee signs off.

STEP 3: READ THE DISTRIBUTION

Twenty thousand simulations later, the operating cash flow distribution has a mean of €1,198m (close to plan, as expected) and a 5th-percentile outcome of €1,063m. The 12-month, 95% Cash Flow at Risk is therefore **€135m**: the gap between the central case and that fifth-percentile outcome. Against €180m of headroom, the conclusion is uncomfortable but actionable: in a normal bad year, the plan still funds itself, but with only €45m of cushion, and a single additional shock, a delayed receivable, a capex overrun, is enough to push the business into covenant territory.

The decision the number invites

A €135m CFaR against €180m of headroom is not a hedging question in the abstract; it is a question of which lever buys the most cushion per euro spent. A 50% hedge of the EUR/USD exposure compresses CFaR to roughly €108m at an annual cost of €3-4m of option premium. A short-dated commodity collar takes a further €15m off the tail. The Risk Compass evaluates both side-by-side, in the same units as the headroom they protect.

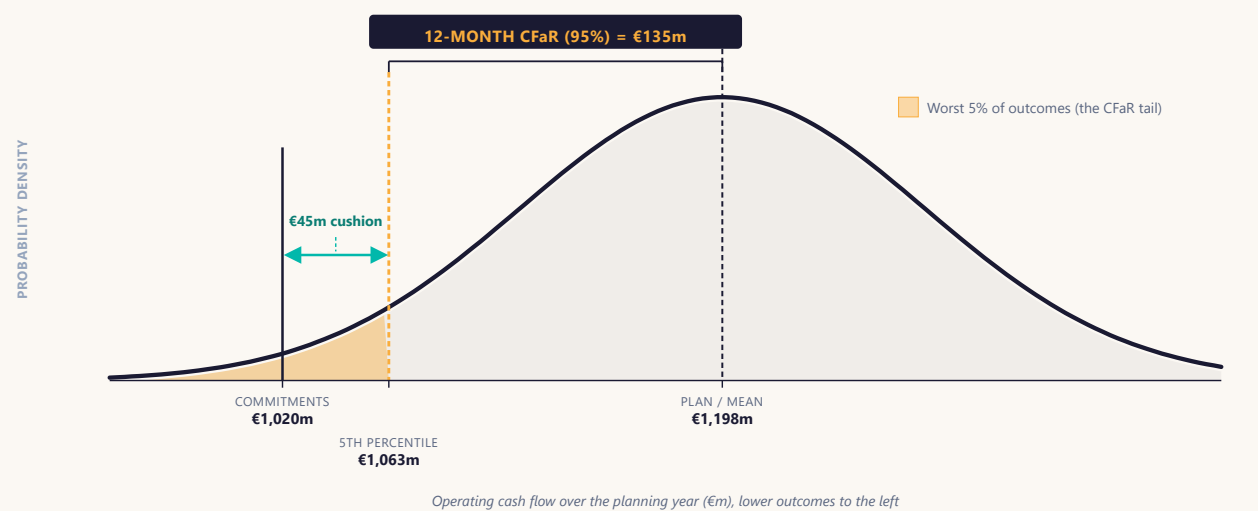
The Worked Example, Visualised

The same numbers, seen as a picture. The simulated distribution shows where the €135m Cash Flow at Risk comes from, how thin the cushion above the board's commitments really is, and how each hedging lever pulls the tail back toward safety.

EXHIBIT 1 — WHERE THE €135M COMES FROM

Simulated operating cash flow, 20,000 Monte Carlo paths

STYLISTED EXAMPLE



The plan centres on €1,198m, but in the worst 1-in-20 year cash falls to €1,063m, €135m short of plan. That leaves just €45m above the €1,020m the board has already committed: a single further shock pushes the business into covenant territory.

EXHIBIT 2 — HOW EACH LEVER BUYS CUSHION

	CFaR (95%)	Cushion within €180m headroom	ANNUAL COST
No hedging (baseline)	€135m	€45m	—
+ 50% EUR/USD forward hedge	€108m	€72m	~€3–4m premium
+ short-dated commodity collar	€93m	€87m	~nil net (collar)

€0€90m€180m

Read against the €180m of headroom: hedging half the EUR/USD exposure lifts the cushion from €45m to €72m for a few million in premium; a commodity collar adds a further €15m of tail protection. The Cash Confidence Map evaluates both in the same units as the headroom they protect.

1. The Volatility Landscape: Snapshot and Curve Shape

A multi-asset volatility framework recognises that commodity prices, exchange rates, and interest rates rarely move in isolation. Monetary policy expectations, geopolitical disruption, inflation dynamics, and shifts in global growth can all reshape multiple markets simultaneously, creating exposures that interact in ways single-asset hedging programmes often fail to capture.

For treasury teams, understanding volatility means looking beyond spot prices. Forward curves, implied volatility, and cross-asset relationships all influence both the cost of hedging and the shape of downside risk. The examples below illustrate the types of market dynamics that matter when building a multi-asset CFaR framework.

COMMODITY PRICE SNAPSHOT (APRIL 2026, FOR ILLUSTRATIVE PURPOSES*)

COMMODITY	SPOT PRICE	3M FORWARD	12M FORWARD	REALISED VOL (ANN.)	CURVE SHAPE
Brent Crude (\$/bbl)	103.72	115.00*	95.00*	52%	Steep backwardation
WTI (West Texas Intermediate) Crude (\$/bbl)	101.80	112.00*	92.00*	48%	Steep backwardation
Henry Hub Gas (\$/MMBtu)	3.04	3.20	3.76	32%	Contango
TTF Gas (€/MWh)	38.50	42.00	36.00	48%	Backwardation (crisis)
London Metal Exchange (LME) Aluminium (\$/t)	2,520	2,550	2,580	24%	Contango
LME Copper (\$/t)	9,280	9,150	9,000	26%	Backwardation
Chicago Board of Trade (CBOT) Soybeans (c/bu)	1,085	1,070	1,040	22%	Backwardation
Gold (\$/oz)	3,220	3,260	3,310	20%	Contango

**Illustrative market data for explanatory purposes only. Treasury teams should calibrate models using current market conditions and business-specific exposures.*

CONTANGO VS BACKWARDATION

Forward curve shape matters because it directly affects hedging cost and effectiveness. In contango, forward prices sit above spot, meaning buyers locking in future prices effectively pay a carry premium linked to storage, financing, or market expectations. In backwardation, forwards trade below spot, often reflecting tighter near-term supply and potentially reducing hedging costs for buyers.

For treasury teams, curve shape matters not only for pricing hedges, but also for hedge accounting effectiveness, derivative valuation, and basis risk between physical exposures and hedging instruments.

2. Cross-Asset Correlations and Basis Risk

A core weakness of siloed hedging approaches is that they treat commodities, currencies, and interest rates as separate problems. In practice, these risks often move together, shaped by common macroeconomic drivers such as inflation, monetary policy, geopolitical disruption, and shifts in global growth. A rise in energy prices may strengthen some currencies, alter inflation expectations, and ultimately change the path of interest rates. Treasury exposures rarely move in isolation.

For this reason, a robust CFaR framework looks not only at individual sensitivities, but also at how risks interact across the portfolio.

ILLUSTRATIVE CROSS-ASSET CORRELATION MATRIX (ROLLING 6-MONTH, MARCH 2026)

	BRENT	HENRY HUB	EUR/USD	GBP/USD	USD 2Y SWAP	EUR 2Y SWAP
Brent Crude	1.00	0.52	-0.38	-0.29	0.41	0.18
Henry Hub Gas	0.52	1.00	-0.22	-0.15	0.28	0.31
EUR/USD	-0.38	-0.22	1.00	0.81	-0.56	0.33
GBP/USD	-0.29	-0.15	0.81	1.00	-0.48	0.25
USD 2Y Swap	0.41	0.28	-0.56	-0.48	1.00	0.44
EUR 2Y Swap	0.18	0.31	0.33	0.25	0.44	1.00

Note: correlations are regime-dependent and shift materially under stress, they should be recalibrated at least quarterly, and ahead of any CFaR decision taken in a fast-moving market.

The negative correlation between oil prices and EUR/USD (-0.38) is a critical relationship: rising oil prices tend to strengthen the USD via safe-haven flows and energy trade settlement dynamics. For a European manufacturer with USD commodity purchases, this creates a natural offset, the commodity becomes more expensive in USD but cheaper relative to EUR. CFaR captures this interplay; siloed VaR does not.

UNDERSTANDING BASIS RISK

Basis is the difference between the spot price of a commodity and its nearby futures contract price. For most purchasers of commodities, there can be significant basis risk between what they actually buy versus the futures or over-the-counter (OTC) hedge they are able to put on. This is one of the most challenging aspects of commodity risk management.

What Drives Basis?

Location: A natural gas user in New Orleans pays a price linked to local delivery, not the Henry Hub NYMEX benchmark. Transportation cost and local supply/demand dynamics create a location basis.

Grade/Quality: Jet fuel cannot be perfectly hedged with crude oil futures. The crack spread between WTI and jet fuel introduces grade basis. Similarly, aluminium alloy 3104 for can bodies hedges against LME High Grade Aluminium, the fabrication premium creates basis.

Timing: Futures contracts have standard settlement dates. A corporate's actual purchase may fall on a different date, creating timing basis between the hedge settlement and the physical transaction.

2. Cross-Asset Correlations (continued): Forward Basis and Transmission

Modelling the Forward Basis Curve

Since there is typically no benchmark rate for a company's actual commodity exposure (e.g. soybean paste, aluminium cans, jet fuel at a specific airport), you need to build a pricing model for the finished product you are trying to hedge.

Flat spread method: Take a trailing average of documented purchase prices versus the futures price. Simple but may not satisfy auditors who question the flat assumption.

Regression method: Use historical data to calculate slope and y-intercept ($y = mx + b$), building a forward basis curve with term structure. More robust for hedge accounting but more complex to maintain.

Either way, the forward basis curve is essential for both risk quantification and hedge effectiveness testing under Accounting Standards Codification 815 (ASC 815) / IFRS 9.

RISK TRANSMISSION CHANNELS

These transmission channels create both risk amplification (when exposures move in the same direction) and natural hedges (when exposures offset). An integrated CFaR framework quantifies the net effect, enabling treasurers to hedge only the residual risk, in our client experience, this typically reduces hedging costs by 15-25% compared to siloed approaches.

Commodity → FX

Oil price shocks flow through to commodity-exporting currencies (NOK, CAD, AUD, BRL). A \$10/bbl rise in Brent has historically moved USD/NOK by 3-5%.

Interest Rates → FX

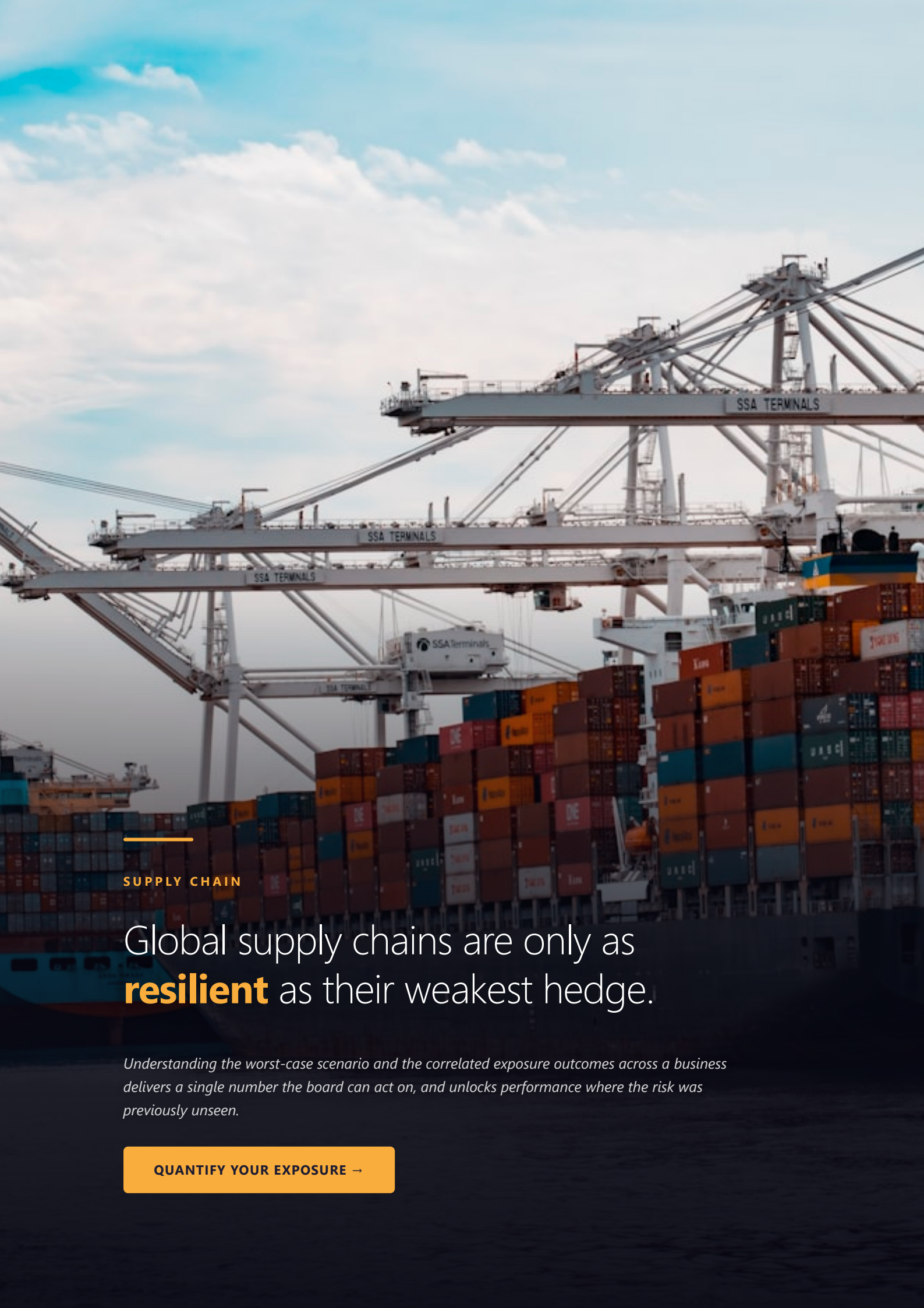
Rate differentials drive forward points and carry trade flows. The widening Fed-ECB spread has been the dominant force behind EUR/USD moves in Q1 2026.

FX → Interest Rates

Currency depreciation can trigger monetary policy responses. Central banks may raise rates to defend their currency, directly impacting floating-rate borrowing costs.

Commodity → Interest Rates

Energy price spikes feed through to inflation expectations. The January 2026 oil spike added ~30bps to 1Y US inflation expectations, reshaping the Fed's rate outlook.



SUPPLY CHAIN

Global supply chains are only as
resilient as their weakest hedge.

Understanding the worst-case scenario and the correlated exposure outcomes across a business delivers a single number the board can act on, and unlocks performance where the risk was previously unseen.

QUANTIFY YOUR EXPOSURE →

Basis Risk: When a hedge stops behaving like the exposure

Most hedging programmes are written against liquid benchmarks: Brent for oil-linked exposures, EUR/USD for European multinationals, three-month EURIBOR for floating debt. The benchmarks are deep, transparent, and cheap to transact. The exposures they hedge, however, are almost never the benchmark itself, they are physical jet fuel deliveries into Rotterdam, a basket of Eastern European currencies a sales subsidiary invoices in, or a bilateral bank facility priced off an internal funding rate. The wedge between the benchmark and the underlying is basis risk, and in normal markets it sits quietly inside the noise. In stressed markets it does not.

THREE FORMS THAT MATTER AT THE CASH FLOW HORIZON

- **Product basis:** the spread between a benchmark commodity and the physical grade or geography the business actually consumes. Refining margins, freight, sulphur content and seasonal demand all drive wedges that are small in aggregate but episodically large; the 2022 European gas crisis pushed jet-Brent crack to multi-decade extremes.
- **Currency basis:** the gap between the spot and forward implied by covered interest parity. For most G10 pairs this is a few basis points; for EUR/USD funding stress it has reached -100bp in a single quarter, materially repricing the cost of any hedge held to maturity.
- **Tenor and credit basis:** the spread between the benchmark used to price floating debt (e.g. EURIBOR) and the bank's own funding cost. The transition from LIBOR to SOFR/€STR exposed a generation of legacy hedges to a basis they had implicitly assumed was zero.

HOW BASIS ENTERS THE CFAR ENGINE

Basis risk is not an afterthought, layered on top of a benchmark hedge as a residual; it is a separate driver in the simulation, with its own volatility, its own correlation structure to the headline risk factor, and, critically, its own regime behaviour. The CFaR distribution that emerges with basis modelled explicitly is materially wider in the tail than one that assumes a 1:1 relationship between benchmark and underlying. For a refiner running a Brent-based crude hedge against jet-A consumption, basis can add 15-25% to the 95th-percentile shortfall.

PRACTICAL TAKEAWAYS

Two implications fall out of this. First, the choice of *which* benchmark to hedge against is itself a risk decision, not just an execution one; sometimes a less liquid but better-matched contract dominates a cheaper, deeper benchmark once basis is priced in. Second, basis risk is the single most common reason a hedging programme that 'works on paper' fails to deliver the cushion expected when it is most needed, which is exactly the question the CFaR framework is built to answer.

3. Stress Testing and Scenario Analysis

CFaR estimates the probability of cash flow shortfalls under a range of market outcomes, typically expressed at a chosen confidence level such as 95%. Stress testing answers a different question: what happens if conditions deteriorate beyond the expected range? Rather than modelling probability, it tests the resilience of the business against specific adverse scenarios, a sharp commodity shock, a major FX move, or a sudden repricing of interest rates.

Used together, CFaR and stress testing provide a more complete view of risk. CFaR quantifies the likely range of outcomes under prevailing conditions, while stress testing explores how severe but plausible events could affect liquidity, covenant headroom, and strategic flexibility. One measures probability; the other tests preparedness.

MACRO STRESS SCENARIOS: EBITDA IMPACT

SCENARIO	OIL PRICE (BRENT)	EUR/USD	ECB RATE	EST. EBITDA IMPACT
Hormuz Closure Persists Q2-Q3	\$128	1.12	+75bps	-€14.2m
Global Stagflation Scenario	\$112	1.18	+125bps	-€22.1m
Negotiated Ceasefire and Supply Recovery	\$72	1.06	-25bps	+€6.8m
Status Quo (Base Case)	\$92	1.10	+25bps	€0.0m

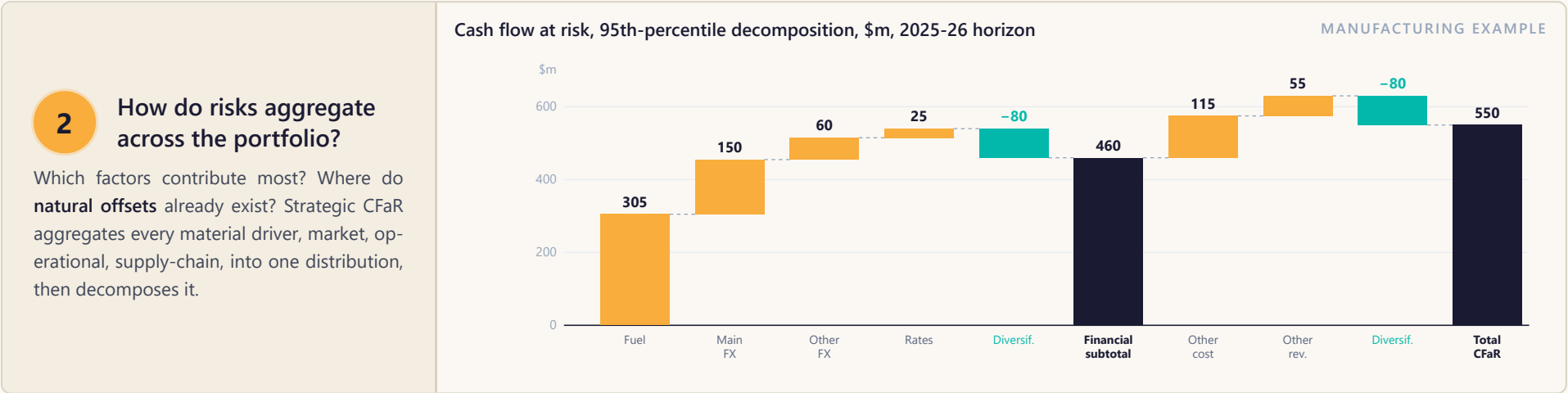
The stagflation scenario combines simultaneous oil supply shocks, EUR depreciation, and policy tightening, a tail event that single-factor sensitivity analysis would miss. CFaR's Monte Carlo simulation prices in correlation; stress testing names the specific scenarios that drive the worst tail outcomes and assigns them economic context.

Quarterly board reporting should include both CFaR metrics and stress results, statistical probability and worst-case preparedness. A board that sees only CFaR at 95% may feel comfortable; adding the stagflation scenario at -€22.1m EBITDA ensures they understand tail risks beyond the confidence interval.

Trading-desk VaR asks: given today's positions, how much could we lose over a short horizon? Useful, but boards are asking three strategic questions about how volatility hits the business over the months and years it takes to change course.



In 2026, the expected consolidated year-end cash is €40 million. There is only a 5 percent chance that it will be above +€400 million, but there is a 95 percent level of confidence that it will not be worse than -€400 million. There is a 35 percent chance it will be less than zero, the headline is the spread, not the point estimate.



Standalone risks add to \$735m, but diversification (\$80m + \$80m) brings the integrated CFaR to \$550m, fuel and FX aren't usually bad in the same path.

3

How does risk depend on the choices we make?

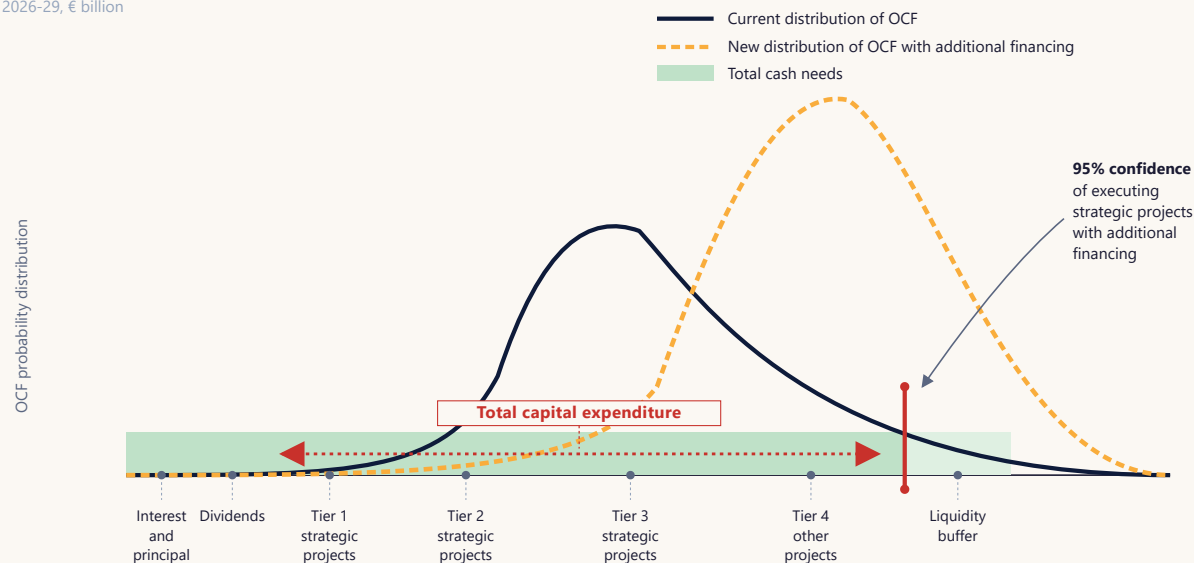
The strategic CFaR model is a **decision-support tool**, not a monitoring report. How does CFaR change if an investment is delayed? If hedging is restructured? If the balance sheet is reshaped?

The output is rarely a single number, it is the **comparison between two distributions**, with cash needs overlaid in tiers of priority. The model supports a financing or hedging decision by quantifying which priority tiers the choice protects.

Cumulative operating cash flow (OCF)

2026-29, € billion

OIL and GAS EXAMPLE



Decision shifts the distribution right, additional financing buys 95% confidence through tier-3 strategic projects.

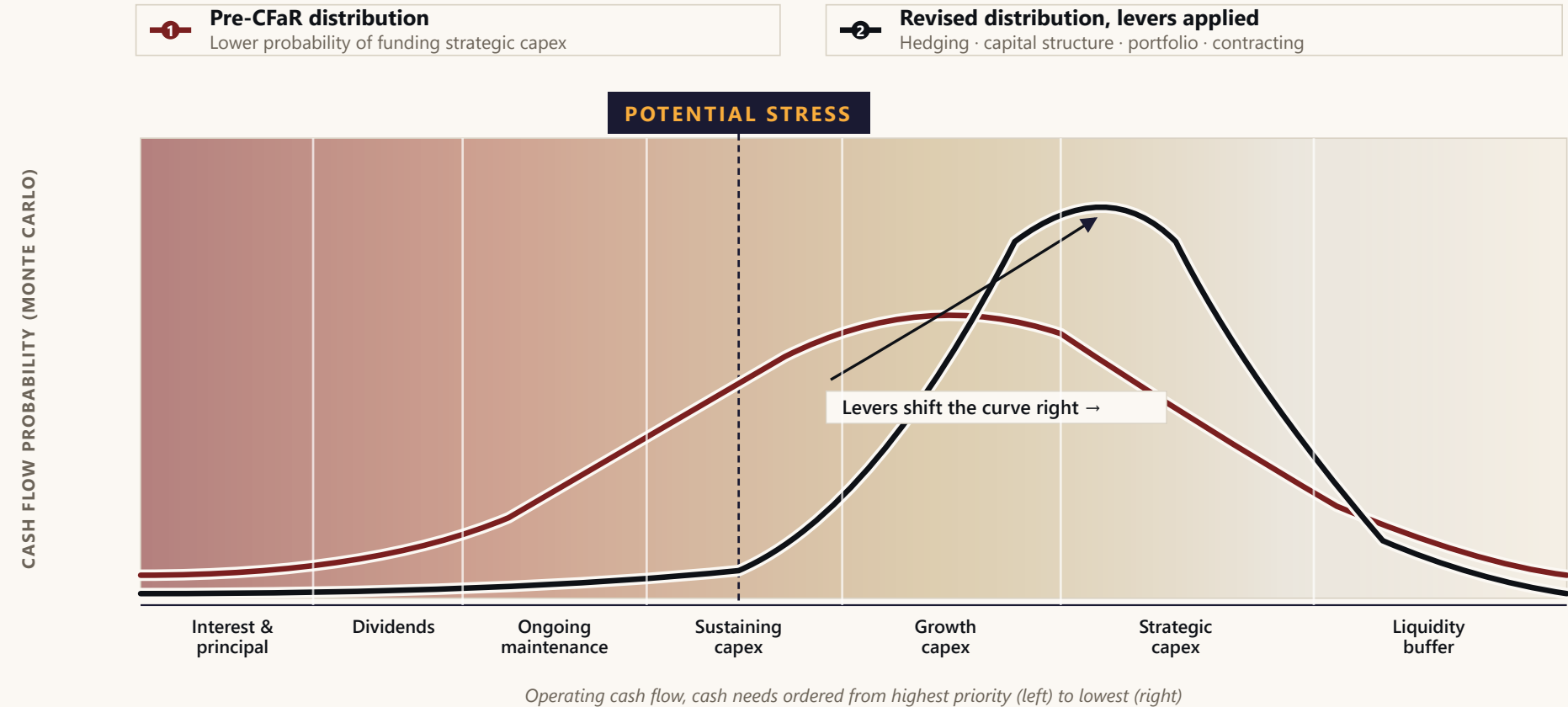
Reading the exhibit: under current conditions the company funds interest, principal, and dividends with near-certainty, but only partially covers tier-2, -3, and -4 strategic projects. Raising additional financing shifts the distribution to the right; under the new curve, the business has 95% confidence of executing through tier-3. The decision the model supports is not whether to hedge, it is whether the financing move is worth the cost.

These three questions, performance at risk, risk aggregation, and decision sensitivity, are what the rest of this paper develops in detail. The next page introduces the picture that ties them together: the **Cash Confidence Map**, which gives the board a single view of which commitments are protected, which are exposed, and which lever moves the answer most.

The Cash Confidence Map: Visualising Risk Capacity

The board needs a single picture that says which commitments are protected, which are exposed, and which lever moves the answer most. The **Cash Confidence Map** overlays the probability distribution of operating cash flow against the priority-ranked schedule of cash needs, quantifying the distribution, testing trade-offs against a board-approved risk target, and embedding the result in governance.

Operating cash flow distribution overlaid on priority-ranked cash needs

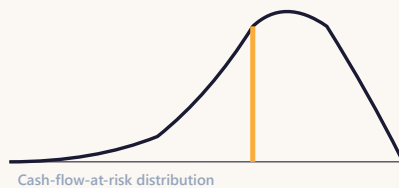


Read left to right, the Map tells the board which commitments are funded and which are exposed; read top to bottom, which lever moves the distribution most efficiently.

Building the Map: Objectives and Principles

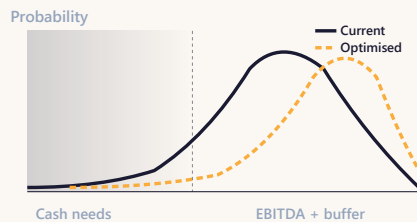
KEY OBJECTIVES

1



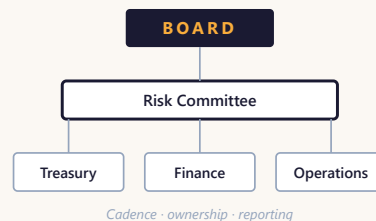
Construct the Risk Compass on a **CFaR** model that captures the full distribution, not a worst-case point.

2



Evaluate **risk/return optimisation** strategies, hedging, capital structure and the lever that moves CFaR most per euro spent.

3



Define the **governance model** and the implementation plan that lands the Compass in board reporting.

KEY PRINCIPLES

A practical tool, integrated into the decision-making process

Robust enough to test multiple business scenarios, user-friendly enough to incorporate in ongoing decision-making.

Addresses both market and business uncertainties

Commodity prices and FX matter, but so do capex and opex overruns on new mega-projects.

Collaborative, iterative team approach

Built with treasury, finance, procurement and operations on an ongoing basis, not a once-a-year exercise.

4. Why CFaR Matters: Sensitivity, Diversification and the Efficient Frontier

The goal of CFaR analysis is not to produce a single risk number to target. It is to reveal the **sensitivity** of your financial statements to market movements and the **diversification** that already exists, or is missing, within your consolidated exposure. These two insights, not the CFaR figure itself, are what transform how a treasury team manages risk.

THE SHORTCOMINGS OF PERCENTAGE HEDGING

The market standard for hedging FX and commodity risk is a simple percentage-of-exposure methodology, typically approved by the board and etched into policy years ago. Treasury receives monthly cash flow forecasts from business units, applies fixed minimum and maximum hedging percentages, and executes hedges accordingly. This reduces cash flow volatility at the subsidiary level and is generally considered best practice, accepted by auditors and boards alike.

But ask any board, CFO, or treasurer for a rationale on why hedging 80% is better than 75% or 95%, and the answer is not particularly compelling. The percentage approach takes a niche view of individual currency or commodity exposures and does not account for the holistic picture at a consolidated level. Critically, it ignores two phenomena that can make the difference between a predictable earnings announcement and a double-digit surprise:

Currency diversification at group level

A UK subsidiary's EUR payment exposure and a European subsidiary's USD receivable may partially offset at group level. Hedging both at the subsidiary level can *create* group-level earnings risk that did not exist before. The percentage approach cannot see this because it manages each entity in isolation.

The CFaR/EaR trade-off

Currency fluctuations impact cash flow and earnings differently. A treasurer focused on liquidity wants to minimise CFaR; a CFO focused on analyst guidance wants to minimise EaR. These objectives can directly conflict: hedging that reduces subsidiary cash flow volatility may increase group earnings volatility. A risk-target strategy makes this trade-off explicit and manageable.

4. Why CFaR Matters (continued): Risk Targets and the Efficient Frontier

FROM HEDGE PERCENTAGE TO RISK TARGET

The solution is to stop managing to a hedging percentage and start managing to a **risk target** expressed in the currency of financial statements. A Risk Committee can adopt a maximum EaR target at a 95% confidence level and leave the CFaR to be managed within the constraints of that earnings objective. Instead of asking "what percentage should we hedge?", the board asks "how many millions of dollars of earnings volatility from FX and commodity movements are we willing to accept?"

This reframing has profound consequences. Treasury now layers on hedges not to hit a percentage target, but to move the portfolio closer to the **efficient frontier**: the optimal trade-off between EaR and CFaR for a given set of hedges. For a company with a good credit rating and low liquidity risk, the optimisation will often identify inefficiencies: for the same level of CFaR, you can lower your EaR significantly by reallocating hedges. Conversely, a highly leveraged organisation may accept higher EaR to reduce CFaR and protect financial liquidity.

THE EFFICIENT FRONTIER: OPTIMISING EAR VS CFAR



Each yellow dot is a possible hedge portfolio. The orange curve is the **efficient frontier**: portfolios where no further EaR reduction is possible without increasing CFaR. The green dot is a typical current hedge (sub-optimal); the blue dot is the optimal portfolio (same CFaR, lower EaR). The framework's power is the ability to visualise and manage the trade-off.

5. CFaR in Practice: Quantifying Multi-Asset Exposure

Consider a European industrial group with €1.2bn revenue, German and UK manufacturing, and commodity-intensive supply chains. Treasury manages the following 12-month exposures:

EXPOSURE	TYPE	NOTIONAL	DRIVER
USD revenue	FX	€120m equiv.	North American sales (invoiced in USD)
GBP costs	FX	€45m equiv.	UK subsidiary payroll and local procurement
Brent crude purchases	Commodity	€35m equiv.	Petrochemical feedstock for resin production
Natural gas (TTF)	Commodity	€18m equiv.	German plant energy costs
EUR floating rate debt	Interest Rate	€200m	Revolving credit facility (EURIBOR + 120bp)
USD fixed rate bonds	Interest Rate	\$150m	5-year senior notes (4.25% coupon)

SCENARIO WALK-THROUGH: HOW EACH RISK FACTOR HITS EBITDA

The Monte Carlo simulation generates 10,000 correlated paths. Three representative scenarios show how risk factors combine into an EBITDA outcome:

Scenario A: Benign Markets (75th percentile)

EUR/USD 1.08→1.05 (+€3.4m), Brent -8% (-€2.8m), TTF flat, EURIBOR -25bp (-€0.5m). EBITDA impact: **+€6.2m**.

Scenario B: Mixed Pressures (25th percentile)

EUR/USD 1.14 (-€6.8m), Brent +12% (+€4.2m), TTF +18% (+€3.2m), EURIBOR -50bp (-€1.0m). FX is dominant drag. EBITDA impact: **-€13.2m**.

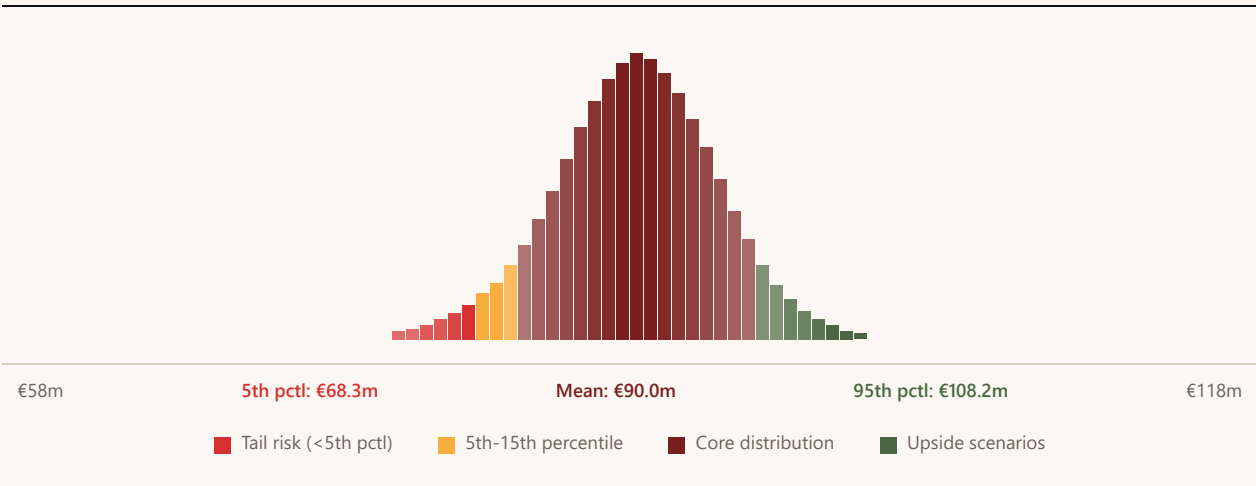
Scenario C: Tail Event (5th percentile)

EUR/USD 1.18 (-€11.4m), Brent +25% (+€8.8m), TTF +35% (+€6.3m), EURIBOR +75bp (+€1.5m). FX and commodity shocks are positively correlated. EBITDA impact: **-€21.7m**; the integrated CFaR at 95%.

5. CFaR in Practice (continued): Simulation Results

The three scenarios are paths from the full Monte Carlo distribution. Scenario C sits at the 5th percentile, CFaR at 95%. Standalone CFaR sums to €28.4m vs integrated €21.7m: the **€6.7m diversification benefit** (23.6%) only emerges from correlated simulation.

EBITDA DISTRIBUTION: MONTE CARLO SIMULATION (10,000 PATHS, 12-MONTH HORIZON)



CFAR DECOMPOSITION BY RISK FACTOR

The decomposition below separates each factor's standalone CFaR (measured in isolation) from its marginal contribution to the integrated portfolio. Put simply, the difference between the siloed total (€30.6m) and integrated CFaR (€21.7m) is the diversification benefit identified in Scenario C.

RISK FACTOR	STANDALONE CFAR (95%)	MARGINAL CONTRIBUTION	% OF TOTAL
FX (EUR/USD)	€14.2m	€9.8m	45.2%
FX (EUR/GBP)	€3.8m	€2.4m	11.1%
Brent Crude	€6.1m	€4.5m	20.7%
Natural Gas (TTF)	€3.2m	€2.1m	9.7%
EUR Interest Rates	€1.8m	€1.6m	7.4%
USD Interest Rates	€1.5m	€1.3m	6.0%
Total (Siloed Sum)	€30.6m	€21.7m	100.0%

EUR/USD dominates at 45.2%, the €120m exposure tells the board where hedging delivers most. Brent is second at 20.7%; rates contribute 13.4%.

Case Study: Putting Integrated CFaR to Work

CASE STUDY

Integrated CFaR: From Siloed Risk to Optimised Hedging

A European specialty chemicals manufacturer with €800m revenue faced converging risks: 40% of sales in USD, 25% of raw material costs linked to oil and naphtha (priced in USD), and €300m of floating-rate EUR debt. The treasury team had been managing each risk independently, resulting in over-hedging in some areas and under-hedging in others.

The company's procurement department managed commodity hedging with futures contracts. Treasury handled FX with forward contracts. Finance managed interest rate risk separately. No one was looking at the interactions between these risk categories, the fact that when oil prices rise in USD terms, the EUR cost may not rise as much if the EUR simultaneously strengthens against USD.

€800m

ANNUAL REVENUE

€42.3m

SILOED CFAR (95%)

€31.8m

INTEGRATED CFAR
(95%)

24.8%

DIVERSIFICATION
BENEFIT

METRIC	BEFORE (SILOED)	AFTER (INTEGRATED CFAR)	IMPROVEMENT
CFaR (95%, 12M)	€42.3m	€18.4m	56.5% reduction
Annual hedging cost	€3.1m	€2.2m	€0.9m saving
FX hedge ratio (EUR/USD)	90%	72%	Reduced (natural offset)
Commodity hedge ratio	80%	55%	Reduced (FX correlation)
IR hedge (IRS notional)	€0	€120m	Added (previously unhedged)
EBITDA volatility (1-yr)	±8.2%	±3.4%	58.5% reduction

Key finding: Because USD revenue and USD-linked commodity costs create a natural hedge (both move with the USD), the siloed approach was over-hedging by effectively double-counting USD exposure. The integrated CFaR model identified this offset, enabling the treasury team to reduce FX and commodity hedge ratios while adding previously neglected interest rate protection, achieving better risk reduction at lower total cost.

6. Beyond CFaR: Tail Risk and Expected Shortfall

CFaR at 95% tells you the minimum loss you will experience 5% of the time, but says nothing about **how bad** the 5% tail can be. Expected Shortfall (ES), also called Conditional Value at Risk (CVaR), addresses this blind spot. Basel's Fundamental Review of the Trading Book (FRTB) framework has already moved banks from VaR to ES at 97.5%, corporate treasuries should follow.

CASH FLOW AT RISK

$$CFaR_{95\%} = \text{minimum loss exceeded 5\% of the time}$$

VS

EXPECTED SHORTFALL

$$ES_{95\%} = \text{average loss in the worst 5\% of scenarios}$$

EXPECTED SHORTFALL CAPTURES THE SEVERITY OF TAIL EVENTS, NOT JUST THEIR THRESHOLD

CFAR VS EXPECTED SHORTFALL COMPARISON

Metric	CFAR (95%)	ES (95%)
Unhedged	€21.7m	€29.4m
Current hedge	€14.3m	€18.1m
Optimised hedge	€7.8m	€9.6m

Note: The gap between CFaR and ES widens for unhedged positions (€7.7m gap vs €1.8m for optimised), demonstrating that tail risk is asymmetric and disproportionately affects unhedged exposures.

Fat Tails and Non-Normal Distributions

Commodity and FX returns exhibit excess kurtosis (fat tails) and skewness. A normal distribution underestimates the probability of extreme moves by 3-5x.

Monte Carlo simulations should incorporate Student's t-distributions or historical bootstrap methods to capture realistic tail behaviour. The 2026 oil price surge (Brent moving from \$76 to \$128 in 8 weeks) would be a multi-sigma event under normal assumptions, and precisely why fat-tail distributions matter.

This is precisely why Expected Shortfall matters: it penalises models that underestimate tail severity, forcing more conservative and realistic risk assessment.

6. Beyond CFaR (continued): Tail Risk Management Strategies

Knowing your Expected Shortfall is one thing; reducing it is another. Three families of strategy are available to corporate treasurers when ES dominates the risk discussion.

Out-of-the-Money Options

Deep OTM puts/calls provide asymmetric protection for tail events at modest premium cost. A Brent \$130 call option may cost only 2-3% of notional but provides unlimited protection against a Hormuz-style supply shock. The cost is predictable; the protection is unbounded.

Macro Tail Hedges

Cross-asset hedges that pay off in systemic stress: long gold positions, long VIX-linked instruments, or sovereign CDS on energy-importing nations. These instruments have low carry cost in normal markets but significant payoff in crisis scenarios.

Dynamic Hedging Triggers

Predefined escalation rules that automatically increase hedge ratios when volatility exceeds thresholds. Example: if Brent 30-day realised vol exceeds 45%, increase commodity hedge from 50% to 75%. Removes decision paralysis during fast-moving crises.

MANUFACTURING

Industrial margin lives on
the **commodity curve**.

SOURCE

"Copper and aluminium remain structurally supported by energy-transition and AI/data-centre demand."

Citi Research, Q2 2026

WHERE DOES VOLATILITY HIT YOUR VALUE CHAIN? →

Expected Shortfall in Practice: Sizing the tail, not just the threshold

The page-25 introduction framed Expected Shortfall (ES) as the average of the worst 5% of outcomes, rather than the threshold of that 5%. The distinction matters less when distributions are well-behaved and more when they are not, which, for cash flow problems, is most of the time. Returning to the worked example from page 8, the same simulation that produces a 95% CFaR of €135m yields an ES at the same confidence level of €186m. Both numbers describe the same distribution; they answer different questions.

READING THE TWO NUMBERS TOGETHER

METRIC	VALUE	WHAT IT TELLS THE BOARD
95% CFaR	€135m	In one bad year out of twenty, the cash shortfall is <i>at least</i> this much.
95% ES (tail-CFaR)	€186m	In that same bad year, the <i>expected</i> shortfall, not the entry threshold, is this much.
ES / CFaR ratio	1.38×	How fat the tail is; values above 1.5× warrant explicit tail discussion.

WHY THE GAP IS INFORMATIVE

If the cash flow distribution were Gaussian, the ES-to-CFaR ratio would be a tight 1.20-1.25 across all confidence levels, a function of geometry, not exposure. A ratio of 1.38, as in the example, signals that the simulated distribution has visibly fatter tails than the normal would predict; the drivers, on inspection, are the correlation-stress overlay and the commodity volatility skew. Both are doing economic work, not statistical noise, and both should appear in the board commentary.

WHERE EXPECTED SHORTFALL SHARPENS THE HEDGING DECISION

Two situations push ES from a nice-to-have to a primary metric. The first is when the capital structure leaves little room for additional borrowing; the relevant question is no longer 'how often might we miss the plan?' but 'when we miss, how badly?', which is exactly what ES quantifies. The second is when hedging instruments themselves have non-linear payoffs, bought options, collars, knockouts, whose value protection accrues disproportionately in the tail. Ranking strategies on CFaR alone underweights these structures; ranking on ES gives them appropriate credit.

A note on reporting

Some boards prefer to see a single risk number; others want both. Our recommendation is to lead the discussion with CFaR (the threshold, the more intuitive figure) and to carry ES as a companion metric on the same page, with the ratio between them as a tail-fatness indicator. The combination is more honest than either alone, and avoids the rounding-error debates that consume time when a single number is forced to carry too much weight.

7. Level of Cover and Hedging Strategy

The level of cover, how much of an exposure is hedged, and over what tenor, is the most consequential decision a treasury makes. Too little cover leaves earnings exposed to volatility; too much locks in adverse market moves and consumes capital in margin and credit lines. CFaR analysis turns this from a judgment call into a quantified trade-off between risk reduction and hedging cost.

THREE COMMON HEDGING ARCHITECTURES

Static Ratio

Hedge a fixed percentage (e.g. 75%) of forecast exposure for the budget year. Simple to govern; misses the diversification embedded in correlated risks; easy for the board to understand.

Layered Programme

Build cover progressively over time, e.g. 100% of Q+1, 75% of Q+2, 50% of Q+3, 25% of Q+4, rolling forward each quarter. Smooths the realised hedge rate; is the dominant approach among large industrials.

Risk-Target / CFaR-Driven

Hedge whatever is required to keep CFaR within a board-approved limit (e.g. €10m at 95%). Cover ratios become outputs of the model rather than inputs, and they adjust automatically as volatility and correlations move.

TENOR: HOW FAR FORWARD TO HEDGE

Tenor decisions follow the same logic. The horizon of hedging should match the period over which the business cannot adjust prices, contracts, or supply chains. Most industrial corporates settle on **12 to 36 months** of forward cover, declining with distance: high cover for the next four quarters, tapering thereafter as forecast confidence falls. Hedging beyond three years is generally reserved for capital projects, debt issuances, or long-term offtake contracts where the cash flow profile is contractually fixed.

This layered approach provides an averaging or smoothening effect on exchange rates and commodity prices, reducing overall volatility. Most companies prescribe a range per quarter instead of an absolute amount, with some flexibility in timing. The key advantage is that hedging buys companies valuable time to strategically adapt their business, enabling price revisions, supply chain diversification, cost optimisation, or renegotiation of commercial terms.

7. Level of Cover (continued): Instruments and Delta Cover

OPTIONS AND DELTA-ADJUSTED COVER

Measuring the level of cover solely by the notional of the derivative divided by the exposure would not be a true representation when using options. A **delta report** provides a more accurate measure: the delta is the change in price of the derivative with respect to a change in price of the underlying. An at-the-money option has a delta of approximately 0.5 or 50%, while a deep in-the-money option behaves like a swap with a delta close to 1.0. Since deltas are additive across instruments, companies should use delta-adjusted notionals when measuring their level of cover.

HEDGING INSTRUMENT SELECTION

Commodity Hedging

- **Fixed-price swaps:** lock in purchase price for budget certainty
- **Costless collars:** cap upside risk while retaining some downside benefit via put-call parity
- **Average-rate options:** hedge over a period rather than a single fixing; cheaper than vanilla equivalents
- **Basis swaps:** manage location/grade differentials vs benchmark (e.g., crack spread between WTI and jet fuel)
- **Seagull / 3-way:** sell a third option to reduce premium when the zero-cost collar floor strike is too high

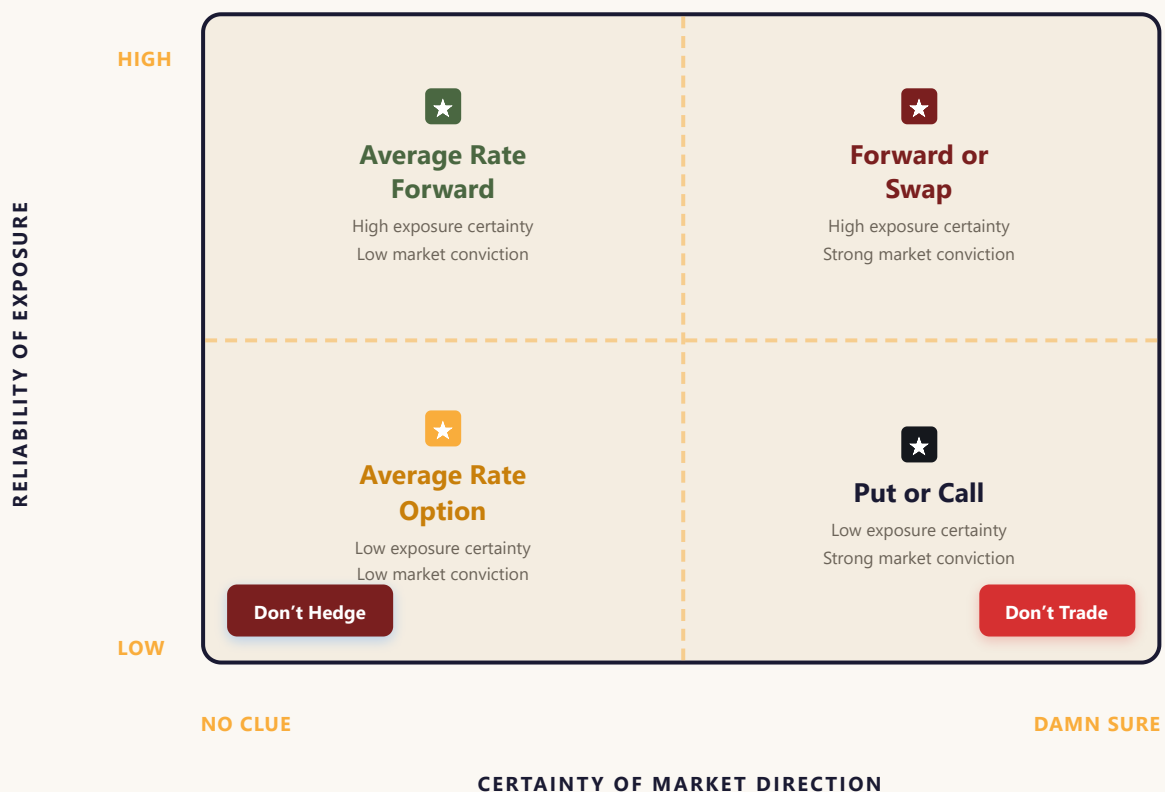
FX and Interest Rate Hedging

- **Layered forwards:** dynamic rolling programme with rate averaging effect
- **Cross-currency swaps:** manage both FX and IR (interest rate) risk simultaneously
- **Interest rate swaps (IRS):** fix floating rate exposure on debt
- **Caps and floors:** set maximum/minimum rate levels with premium cost
- **Participating forwards:** downside protection with partial upside participation

7. Level of Cover (continued): Decision Chart and Policy

HEDGE DECISION CHART

This chart helps determine which hedging product to consider based on the reliability of the underlying exposure forecast and certainty about market direction. The more probable the exposure and the higher your market conviction, the more appropriate a fixed-price instrument becomes. As forecast probability drops or market uncertainty increases, option strategies provide better risk-reward.



Risk Management Policy: Many companies write their risk management policy without first knowing their true risks. A good policy incorporates not just what risks you are hedging and how, but also why you aren't hedging certain risks. No hedge does NOT mean no risk. The policy should be reviewed periodically and updated as the business and its risks evolve.

8. CFaR-Driven Hedge Optimisation

CFaR analysis does more than quantify risk, it directly informs optimal hedge ratios. By re-running the Monte Carlo simulation under different hedging scenarios, we can identify the strategy that minimises CFaR for a given hedging budget, or conversely, the minimum-cost strategy that achieves a target CFaR reduction.

HEDGING SCENARIOS: IMPACT ON CFAR (95%, 12-MONTH)

SCENARIO	FX HEDGE	COMMODITY	IR HEDGE	CFAR (€M)	REDUCTION	ANNUAL COST
Unhedged	0%	0%	0%	€21.7m	-	-
FX only	75%	0%	0%	€14.3m	34.1%	€0.9m
FX + Commodity	75%	60%	0%	€9.8m	54.8%	€1.6m
Full integrated	75%	60%	50% IRS	€7.2m	66.8%	€1.9m
CFaR- optimised	80%	50%	30% IRS	€7.8m	64.1%	€1.4m

Optimised Strategy Insight

The CFaR-optimised scenario achieves nearly the same risk reduction as the full integrated hedge (64.1% vs 66.8%) at much lower cost (€1.4m vs €1.9m). The correlation-aware model recognises that the negative oil-EUR/USD correlation provides a natural hedge, allowing the commodity hedge to drop from 60% to 50%. The €0.5m annual saving (€2.5m over five years) is the direct value of integrated risk management.

BENCHMARKING YOUR HEDGE PROGRAMME

Benchmarking communicates how well your hedge programme is performing. When a hedge loses money, perception is often that it “isn't working”, the same manager pays home insurance without considering it a “loss” when the house doesn't burn. Common approaches:

- **100% Fixed Benchmark:** measures the difference in average cost against what you would have paid if fully hedged for the period
- **50% Hedge Benchmark:** measures the average cost had you been 50% hedged at all times
- **No Hedge Benchmark:** the opposite picture, showing the result if you had no hedges at all
- **Timing Benchmark:** for companies with flexibility in execution timing, compares your achieved hedge cost against the benchmark price at the top of each quarter

9. Hedge Accounting: ASC 815 and IFRS 9 Fundamentals

Hedge accounting is a **choice**, not a requirement. It lets companies match the P&L impact of their hedges with the underlying exposure, but they must prove they are hedging rather than speculating. Both ASC 815 (US GAAP) and IFRS 9 set specific criteria to evidence this, and the compliance cost is real, people, systems, and audit.

About 80% of listed companies elect to hedge account anyway. **P&L volatility matters to shareholders:** earnings volatility raises cost of capital. The derivative hedges economics; hedge accounting ensures the financials reflect that.

Basic approach under both standards: derivatives go on the balance sheet at fair value, with P&L as default contra, unless you elect hedge accounting to either (a) defer P&L (cash flow hedge) or (b) bring it forward (fair value hedge).

ASC 815 VS IFRS 9: KEY DIFFERENCES FOR COMMODITY HEDGING

FEATURE	ASC 815 (US GAAP)	IFRS 9
Effectiveness threshold	No codified bright-line; the 80-125% range is established practice, not an explicit requirement. ASU 2017-12 permits qualitative assessment where supported	No bright-line; qualifies where an economic relationship exists, credit risk does not dominate, and the hedge ratio reflects the actual risk-management relationship
Prospective testing	Quantitative at inception; later assessments may be qualitative where circumstances are consistent	Forward-looking assessment against the qualifying criteria; frequently qualitative
Retrospective testing	Ongoing effectiveness assessment each reporting period; may be qualitative	No formal retrospective test; effectiveness monitored via the qualifying criteria
Component hedging	Permitted for contractually specified components of non-financial forecasted transactions	Broader; permits separately identifiable, reliably measurable components, contractual or not
Option time value	Flexibility to exclude option time value from effectiveness testing; alternative treatments available	Time value may be treated as a "cost of hedging", deferred in OCI and released systematically
Rebalancing	Generally requires de-designation and redesignation	Hedge ratio rebalanced without discontinuation, if the risk objective is unchanged
Voluntary de-designation	Permitted at any time	Not permitted; discontinued only when criteria cease to be met or the risk objective changes
Forecast probability	"Probable" (likely to occur)	"Highly probable", a higher threshold than US GAAP

9. Hedge Accounting (continued): Hedge Types and Commodity Challenges

HEDGE TYPES FOR COMMODITY RISK

For commodity exposures, the most common designation is a **cash flow hedge**, as companies are typically managing forecast purchases or sales rather than assets already recognised on the balance sheet. Under both ASC 815 and IFRS 9, derivatives are recorded at fair value, with gains and losses generally recognised through OCI (Other Comprehensive Income) rather than profit and loss where hedge accounting criteria are met. Once the forecast transaction occurs, the accumulated OCI balance is reclassified into earnings, helping align the accounting treatment with the underlying economics of the exposure.

THE UNIQUE CHALLENGE WITH COMMODITIES

Commodity hedging has historically presented a particular accounting challenge because the exposure being managed is rarely identical to the benchmark instrument available to hedge it. Under legacy US GAAP, companies could not hedge the “copper in the copper pot”, in other words, they generally had to designate the price risk of the entire finished product rather than an individual input component.

ASU 2017-12 relaxed this restriction. ASC 815 now permits companies to designate a contractually specified component of a non-financial forecasted transaction as the hedged risk, provided that component is explicitly identified in the underlying contract. In practice, this means commodity hedging under US GAAP has become more flexible, though still more restrictive than IFRS 9 where pricing relationships are indirect or basis risk is significant.

IFRS 9 takes a broader approach, allowing companies to hedge risk components of non-financial items provided they are separately identifiable and reliably measurable, whether or not those components are contractually specified. For commodity-intensive businesses, this remains one of the most meaningful practical advantages of IFRS 9.

DOCUMENTATION AND DESIGNATION

The most effective hedge accounting process begins with a defined hedge accounting documentation policy that outlines the core hedging scenarios a company is likely to engage in. The policy should cover risk management objectives, strategy, hedge types, nature of instruments, and how effectiveness will be assessed. Transaction-level documentation then links each specific hedge to the relevant policy.

Forecast Transaction Specificity

Hedged forecast transactions must be sufficiently specific so that when the transaction occurs, it can be identified as the hedged transaction. This requirement disallows hedging of net forecasts.

What works: "The first 100,000 lbs of soybean paste in Q1 2026"

What won't comply: "15% of soybean paste purchases in Q1 2026"

You must only prove that the quantity *hedged* is probable, not the entire forecast. This allows partial designation, if you hedge 450,000 lbs but only feel confident proving 360,000 lbs is probable, you can designate only 80% of the hedge for hedge accounting and take the remaining 20% to P&L.

EFFECTIVENESS TESTING METHODS

METHOD	DESCRIPTION	COMMODITY RELEVANCE
Critical Terms Match	Hedge and hedged item must match on notionals, dates, indexes	Usually unavailable, physical and location differences create mismatches
Dollar Offset	Compare cumulative change in FV of hedge vs hedged item	Simple but prone to failure with small numbers or basis volatility
Regression (Trade Value)	Compare fair value movements based on statistically significant historical data	Popular, best chance of meeting effectiveness with basis risk
Regression (Index Value)	Compare index fixings rather than trade values	Conceptually easier; some auditors prefer trade value approach
Scenario Analysis	Compare FV movements under hypothetical market rate shifts	Popular prospective test for commodities

9. Hedge Accounting (continued): Hypotheticals, Recognition and Credit

HYPOTHETICAL DERIVATIVES

In many commodity situations, it is difficult to calculate the change in fair value of the hedged item directly. A **hypothetical derivative**: a derivative with terms that match those of the hedged item, representing the "perfect" hedge, provides a basis for comparison when determining effectiveness and measuring ineffectiveness. For a European company hedging its jet fuel costs with NYMEX Heating Oil #2 swaps, the hypothetical derivative would be a swap on USGC Jet Fuel at the actual delivery location, priced using the forward basis curve.

P&L RECOGNITION AND STOCK TURNOVER

For cash flow hedges of commodity purchases, the underlying hedged item often becomes **inventory** rather than immediately hitting P&L. A raw material may be purchased, stored, transformed into finished goods, and then sold months later. The hedge-effective fair value accumulated in OCI should only be released to P&L when the raw material component has been recycled through cost of sales. In practice, many companies use their **average stock turnover** as a proxy to amortise the hedge fair value, for example, if stock turnover is 4x per year, the OCI balance is amortised over approximately 3 months.

CREDIT ADJUSTMENTS AND FAIR VALUE (ASC 820 / IFRS 13)

Fair value measurement requires the incorporation of non-performance risk. When a derivative is in an asset position, valuation should reflect counterparty credit risk (commonly through a Credit Valuation Adjustment, or CVA). When the derivative is a liability, the company's own credit risk is also considered (typically through a Debit Valuation Adjustment, or DVA).

Required under both ASC 820 and IFRS 13, these adjustments can introduce hedge ineffectiveness where the derivative and the hypothetical derivative used for hedge accounting are treated differently. In practice, differences in credit assumptions or valuation methodology may contribute to unexpected P&L volatility even where the underlying hedge economics remain sound.

A photograph of three wind turbines standing on a rolling green hill under a cloudy sky. The turbines are white with three blades each. The hill is covered in lush green grass, and the sky is filled with soft, white clouds. In the background, there are more hills and mountains.

ENERGY TRANSITION

The energy transition is creating
new hedging challenges
for corporates worldwide.

SOURCE

"The IASB is actively considering extending Risk Mitigation Accounting to energy and commodities sectors."

IASB, December 2025

FUTURE-PROOF YOUR ACCOUNTING →

Effectiveness Testing and Documentation: Where hedge accounting is won or lost

Hedge designations fail audit not because the economics are wrong, but because the paperwork is incomplete. Both ASC 815 and IFRS 9 require contemporaneous documentation of the hedging relationship at inception and ongoing assessment that the relationship remains effective; the two regimes converge on substance and diverge on form. Treasury teams that win clean opinions year after year share three characteristics: a templated designation memo, a quarterly effectiveness cadence that is calendared rather than improvised, and a single owner accountable for the file.

THE DESIGNATION MEMO: WHAT GOOD LOOKS LIKE

- **Risk management objective.** One paragraph stating what cash flow or fair-value risk is being hedged and how the strategy fits the board-approved policy.
- **Identification of hedged item and instrument.** Notional, currency, tenor, counterparty, ISIN where applicable; cross-referenced to the trade confirmation and the underlying forecast or asset.
- **Hedge ratio and rationale.** Why the chosen ratio, 1:1, partial, layered, reflects the economic relationship rather than a desire to manage P&L volatility.
- **Method for assessing effectiveness,** prospectively and retrospectively, with the threshold (qualitative match plus quantitative regression for IFRS 9; the 80-125% offset corridor still common under legacy ASC 815 elections).
- **Sources of ineffectiveness** identified at inception, basis, tenor mismatch, credit risk on the instrument, and how each is monitored.

EFFECTIVENESS TESTING: THE QUARTERLY RHYTHM

Quarterly testing should be boring. A regression of changes in the hedging instrument's fair value against changes in the hedged item's fair value (or a critical-terms-match qualitative test for instruments and items perfectly aligned in notional, tenor and underlying) yields an R-squared, a slope, and a residual standard error. Slopes between 0.80 and 1.25, R-squared above 0.80, and stable residuals across reporting periods are the conventional bar; any movement triggers root-cause analysis before the close, not after.

SYMPTOM	LIKELY CAUSE	ACTION
R-squared falling below 0.80	Basis or correlation drift	Re-balance hedge ratio; consider de-designation if structural
Slope outside 0.80-1.25	Sizing mismatch	Adjust notional in next cycle; document in memo
Residual widening	New source of ineffectiveness	Update inception memo; disclose

The audit file is then assembled once, not five times: designation memo, monthly mark-to-market, quarterly test, broker confirmations and a one-page rollforward. With this in place, the substantive accounting questions, reclassification timing, ineffectiveness in P&L, OCI presentation, become mechanical rather than judgmental.

10. The Future: IASB Risk Mitigation Accounting

*In December 2025, the IASB published Exposure Draft ED/2025/1, proposing a new **Risk Mitigation Accounting (RMA)** model through amendments to IFRS 9 and IFRS 7. The proposal is initially focused on interest rate repricing risk, particularly where exposures are managed dynamically on a portfolio basis rather than instrument by instrument.*

While the immediate emphasis is interest-rate risk, the IASB has indicated that, if the model proves operational in practice, it may consider extending the approach to other sectors characterised by dynamic risk management, including energy and commodities. For multi-asset corporate hedgers, the proposal is therefore worth watching closely as a potential step towards closer alignment between economic risk management and accounting outcomes.

THE PROBLEM RMA SOLVES FOR CORPORATES

Consider a chemicals manufacturer hedging naphtha exposure with Brent swaps, EUR/USD exposure with FX forwards, and floating-rate EUR debt with interest rate swaps. Under current IFRS 9, each hedge relationship is typically designated, documented, and tested separately. Yet treasury rarely manages these exposures in isolation. Natural offsets between USD commodity costs and USD revenues, or the relationship between energy prices and EUR/USD, may be central to how risk is managed economically even though they remain largely invisible within the accounting framework.

In its current form, the proposed RMA model focuses on dynamically managed interest rate repricing risk rather than multi-asset corporate portfolios. However, if the framework were ultimately expanded to sectors such as energy and commodities, it could represent a meaningful step towards accounting treatment that better reflects how treasury teams manage interconnected risks in practice.

CURRENT IFRS 9 VS PROPOSED RMA: IMPACT ON CORPORATE COMMODITY HEDGERS

FEATURE	CURRENT IFRS 9	PROPOSED RMA	CORPORATE IMPACT
Designation level	Individual hedge-by-hedge	Portfolio / group level	Eliminates hundreds of individual designations for rolling commodity programmes
Rebalancing	De-designate and re-designate	Continuous adjustment	No hedge accounting discontinuation when layering on new quarterly forwards
Cross-asset netting	Not permitted	Natively supported	Natural offsets (e.g. USD commodity cost vs USD revenue) recognised within the hedge relationship
Dynamic portfolios	Operationally burdensome	Built into the model	Rolling hedging programmes no longer require constant re-documentation
Commodity extension	Not applicable	Under active IASB consideration	Energy, metals, and agricultural commodity hedgers could benefit if scope is extended
IAS 39 macro hedge carve-out	Still permitted (EU only)	Will be replaced	Corporates using the carve-out should begin transition planning

10. The Future (continued): Engagement, Dates and Outlook

Why Commodity Corporates Should Engage Now

The IASB has stated that feedback on the exposure draft will inform whether RMA is extended beyond interest rate risk to **energy and commodities**. If commodity-exposed corporates do not participate in the consultation, the model may be finalised in a form that works for banks but not for the operational realities of physical commodity hedging, basis risk, grade differentials, location spreads, and seasonal procurement patterns.

Industry bodies such as the European Association of Corporate Treasurers (EACT) and individual corporates should submit responses highlighting how portfolio-level hedge accounting would reduce compliance costs while better reflecting economic substance.

Key Dates and Action Items

- **31 July 2026:** Exposure draft comment deadline and preliminary fieldwork responses due
- **30 November 2026:** Final fieldwork responses due (submitted confidentially to FI@ifrs.org)
- **Q1 2026 onwards:** IASB post-implementation review of IFRS 9 hedge accounting requirements
- **Action:** Document current hedge accounting operational burden to build the business case for RMA extension to commodities
- **Action:** Engage your auditor on how RMA could simplify effectiveness testing for commodity programmes with basis risk

WHAT COMMODITY-SECTOR RMA COULD LOOK LIKE

If extended, RMA would let a treasurer designate an integrated hedging programme, e.g. Brent swaps, EUR/USD forwards, and EUR IRSs, as a single portfolio-level relationship. CFaR analysis underpins the risk objective. Rebalancing when hedges roll off occurs within the designation, not through de- and re-designation.

This aligns accounting with economic reality. The artificial separation of commodity, FX, and rate hedges into hundreds of designations gives way to a single framework that mirrors how treasury actually manages the book.



ANALYTICS

From exposure identification
to **optimised hedging**,
powered by integrated analytics.

SOURCE

"94% of organisations operate a treasury management system (TMS), but fewer than 40% use it for risk analytics."

PwC Global Treasury Survey, 2025

BUILD YOUR CFAR CAPABILITY →

IASB Risk Mitigation Accounting: Illustrative disclosure and transition

The previous spread introduced the IASB's proposed Risk Mitigation Accounting (RMA) regime, designed to recognise the economic effect of dynamic, portfolio-level hedging programmes that the current IFRS 9 model accommodates only awkwardly. Two practical questions follow for any group considering early adoption when the standard is finalised: what does the disclosure actually look like, and what does the transition cost look like in audit and system terms?

THE DISCLOSURE: WHAT THE FINANCIAL STATEMENTS WILL SHOW

RMA pushes the centre of gravity of hedge disclosure from individual relationships to the risk portfolio as a managed whole. The illustrative note below shows the shape, notional and fair value of the instrument book, the hedged portfolio metric (here, 12-month CFaR), and the period-on-period movement attributed to risk management activity rather than to changes in underlying exposures.

RISK PORTFOLIO	HEDGED METRIC, OPENING	EFFECT OF RISK-MANAGEMENT ACTIVITY	EFFECT OF EXPOSURE CHANGE	HEDGED METRIC, CLOSING
Transactional FX (USD/EUR)	CFaR €82m	(34)	+11	€59m
Commodity input basket	CFaR €164m	(58)	+8	€114m
Floating-rate debt	CFaR €41m	(22)	+3	€22m

Illustrative only. Numbers shown are stylised values for presentational purposes; actual disclosure templates will follow final IASB drafting.

TRANSITION COSTS: WHAT TO PLAN FOR

- **Policy and governance refresh.** The hedge policy that supported designation-by-designation accounting will need re-articulation around portfolio risk objectives; expect a six-to-eight-week board cycle.
- **Treasury system uplift.** CFaR-based metrics must be calculated, retained and version-controlled to the same standard as a general-ledger figure, which most legacy treasury platforms do not currently support without bolted-on analytics.
- **Audit dialogue, started early.** RMA places more weight on the credibility of the underlying risk model; auditors will want to see the back-testing programme, the volatility calibration choices and the governance over model changes before they sign the first opinion.
- **Disclosure rehearsal.** Drafting the note twice on prior-year data, before the standard's effective date, surfaces 80% of the awkward conversations cheaply.

Groups that begin this work in the year before adoption rather than the year of adoption pay roughly half the total transition cost and present a noticeably cleaner first set of disclosures. The asymmetry is large enough that it is worth treating RMA preparation as a programme of work, not an accounting project.

11. Technology and Governance: Building a CFaR Capability

Implementing integrated CFaR requires three pillars: data infrastructure to capture exposures, analytical capability to run simulations, and governance processes to translate insights into decisions. PwC's 2025 Global Treasury Survey found that 94% of organisations operate a TMS, but fewer than 40% use it for risk analytics beyond basic position reporting.

Data and Exposure Capture

Centralised exposure database aggregating FX, commodity, and IR exposures from all subsidiaries. API integration with enterprise resource planning (ERP) and procurement systems for real-time commodity purchase data. Automated position feeds from banking counterparties.

Challenge: 36% of corporates still use manual processes for exposure capture (PwC 2025).

Analytics and Simulation Engine

Monte Carlo simulation with correlated multi-asset paths (minimum 10,000 scenarios). Fat-tail distributions (Student's t or historical bootstrap). Sensitivity decomposition and marginal contribution analysis. Integration with market data providers for real-time vol surfaces and correlation matrices.

Governance and Reporting

Monthly CFaR/EaR dashboard for treasury committee. Quarterly stress test results for board risk committee. Annual policy review incorporating prior-year hedge performance benchmarking. Clear escalation triggers: e.g., if CFaR exceeds 3% of EBITDA, automatic review of hedge programme.

IMPLEMENTATION ROADMAP

- **Phase 1 (Months 1-3):** Exposure mapping and data cleansing, consolidate FX, commodity, IR exposures into a single database.
- **Phase 2 (Months 3-6):** Build correlation matrix; back-test against 2020 Covid, 2022 Ukraine, 2026 Hormuz.
- **Phase 3 (Months 6-9):** Run parallel CFaR alongside existing programme; compare recommendations vs actual.
- **Phase 4 (Months 9-12):** Full go-live, CFaR-driven decisions, board reporting, policy update, ongoing governance.

11. Technology and Governance (continued): AI/ML and Model Governance

AI and Machine Learning in Treasury Risk

74% of treasury teams are expanding AI use (PwC 2025). Machine learning improves cash flow forecast accuracy by approximately 7% (EY). AI-driven scenario generation can stress-test against thousands of plausible geopolitical scenarios, not just the handful that humans can imagine.

However, model governance and explainability remain critical, black-box risk models are difficult to audit and can create false confidence. Regulators increasingly expect model risk management frameworks (SR 11-7 in the US, SS1/23 in the UK) to cover AI/ML models with the same rigour as traditional quantitative models. The most effective approach combines AI-enhanced forecasting with transparent, auditable CFaR methodologies.

12. Communicating CFaR to the Board: From Analysis to Action

The most sophisticated CFaR model is worthless if the board cannot understand, challenge, and act on it. This section translates analytics into governance language.

THE FOUR-SLIDE BOARD PACK

Four elements, each answering a specific question:

1

Risk Appetite Dashboard: "Are we within tolerance?"

Single-page traffic light: current CFaR vs board-approved limit (e.g., €7.8m vs €10m = green). If amber/red, treasury presents remediation at next meeting.

2

Sensitivity Waterfall: "What is driving our risk?"

Waterfall decomposing CFaR by risk factor (EUR/USD €9.8m, Brent €4.5m, TTF €2.1m), with diversification as negative bar.

3

Hedge Efficiency Analysis: "Are we spending wisely?"

Each programme's cost vs CFaR reduction. Optimised: 64% reduction at €1.4m vs 67% at €1.9m, the diminishing marginal return.

4

Stress Test Overlay: "What if the worst happens?"

Three named scenarios (Hormuz Closure, Stagflation, Ceasefire) with EBITDA impact, tail scenarios beyond the 95th percentile.

HANDLING BOARD PUSHBACK

"Why not 99% confidence instead of 95%?"

Hedging the 99th percentile costs 3-4x more and protects against events better addressed by stress testing and balance sheet resilience. Events beyond 95% are presented as stress scenarios for separate board decision.

"Our hedge ratios have worked for 20 years, why change?"

Fixed ratios worked when correlations were stable. Today, oil shocks drive EUR/USD drives ECB policy drives hedging cost, interactions create hidden risks and offsets percentage hedging cannot capture. CFaR shows WHERE hedging delivers most value.

SAMPLE RISK APPETITE STATEMENT

"The Board approves a maximum CFaR of €10m at 95% confidence over a rolling 12-month horizon (approximately 1.1% of budgeted EBITDA). Treasury is authorised to execute hedging within this limit. Any breach or anticipated breach within 30 days must be reported to the Risk Committee within 48 hours with a remediation plan. Limit, confidence and horizon are reviewed annually."

13. From Percentage Hedging to Risk Targets: A Transition Roadmap

Moving from a policy that says "hedge 75% of FX exposure" to one that says "maintain CFaR below €10m" is not just a technical exercise, it requires changes to governance, reporting, decision authority, and organisational culture. This section provides a practical roadmap for making that transition without disrupting existing hedging or creating governance gaps.

PHASE 1: SHADOW MODE (MONTHS 1-6)

Keep existing policy unchanged. Run CFaR analysis in parallel alongside your current hedge programme. This achieves three things:

- **Baseline measurement:** Calculate CFaR under current hedges to establish "where we are today" without changing anything
- **Gap identification:** Compare CFaR-optimal recommendations to actual hedges, where is the current programme over-hedging? Where is it leaving risk on the table?
- **Board familiarisation:** Present CFaR as supplementary information alongside existing reports. Let the board ask questions, challenge assumptions, and build confidence in the metric before it becomes the primary decision tool

Key milestone: Board receives at least two quarterly CFaR reports before any policy change is proposed.

13. Transition Roadmap (continued): Hybrid and CFaR-Primary Phases

PHASE 2: HYBRID POLICY (MONTHS 6-12)

Introduce CFaR as a binding constraint alongside existing hedge ratios. The policy now reads: *"Treasury shall hedge a minimum of 50% of identified FX and commodity exposures, AND maintain integrated CFaR below €10m at 95% confidence."* This dual constraint provides a floor on hedging activity (which satisfies audit and regulatory comfort) while introducing CFaR as the optimisation target.

- **Governance:** Risk Committee formally approves CFaR limit and confidence level
- **Cadence:** Monthly CFaR dashboard to treasury; quarterly to Risk Committee and Board
- **Escalation:** CFaR >80% of limit triggers review; >100% triggers remediation within 5 business days
- **Existing positions:** Grandfather current derivatives; let them roll off naturally and replace with CFaR-informed hedges

Milestone: First CFaR-informed hedge executed; audit signs off on methodology.

PHASE 3: CFaR-PRIMARY POLICY (MONTH 12+)

Remove minimum hedge ratio floors. The policy now reads: *"Treasury shall maintain integrated CFaR below €10m at 95% confidence, using the most cost-effective combination of hedging instruments, natural offsets, and business structure. Hedge ratios are an output of the optimisation, not an input."*

- **Decision authority:** Treasury executes any hedge that maintains CFaR within limit, without per-trade approval
- **Annual review:** CFaR limit re-tested against EBITDA forecast, covenants, and liquidity each budget cycle
- **Model governance:** Annual independent validation; results to Audit Committee
- **Continuous improvement:** Quarterly correlation recalibration; annual methodology review

Milestone: First annual policy review completed under CFaR-primary framework.

13. Policy Transition (continued): Governance and Decision Framework

DECISION AUTHORITY MATRIX

Clear delegation prevents bottlenecks while maintaining oversight. The following matrix assigns authority based on CFaR impact:

ACTION	AUTHORITY	REPORTING
Execute hedge within approved instruments and CFaR limit	Treasury (Head of Treasury)	Monthly dashboard
Use new instrument type not previously approved	CFO approval required	Risk Committee notification
CFaR exceeds 80% of board limit	Treasury review + CFO briefing	Within 48 hours
CFaR exceeds 100% of board limit	Risk Committee convened	Remediation plan within 5 days
Change CFaR limit, confidence level, or horizon	Board approval required	Annual policy review
Change CFaR model methodology or data sources	Audit Committee notification	Annual model validation report

13. Policy Transition (continued): Reporting Calendar and Pitfalls

REPORTING CALENDAR

Monthly (Treasury → CFO)

- CFaR dashboard: current vs limit
- Sensitivity decomposition by risk factor
- Hedge portfolio summary and mark-to-market
- Any escalation triggers breached

Quarterly (CFO → Board / Risk Committee)

- CFaR trend (rolling 4 quarters)
- Stress test results (3 named scenarios)
- Hedge cost vs risk reduction efficiency
- Correlation stability assessment
- Recommendation: maintain, increase, or reduce hedging

COMMON PITFALLS IN TRANSITION

Avoid

- Unwinding existing hedges to hit a new CFaR target
- Treating CFaR as a precise number rather than a range
- Over-engineering the first iteration
- Skipping the shadow period, board trust takes time
- Using CFaR to justify doing nothing

Embrace

- Shadow mode long enough for two board presentations
- Present CFaR alongside existing metrics initially
- Document the “why” for auditors and regulators
- Celebrate early wins (e.g. first identified over-hedge)
- Engage external auditors early to validate the model

The transition from percentage hedging to CFaR-driven risk management is a governance transformation, not a technology project. The analytics are the easy part; the hard part is building institutional confidence, decision frameworks, and reporting cadence that let a board govern risk in dollar terms.

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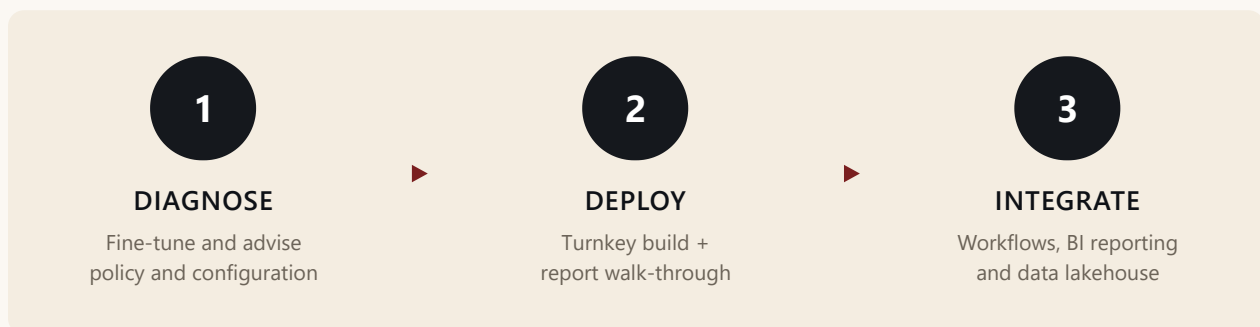
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How Your Treasury Delivers: Diagnose, Deploy, Integrate

A live CFaR programme on your real portfolio in under a week. We combine UnRisk's production-grade derivatives and risk library, already trusted by banks, asset managers and regulators, with practitioner-led diagnostics, a turnkey deployment, and integration into the workflows and BI stack your team already uses.



1 · Diagnose, Fine-Tune and Advise

Exposure discovery, current hedge-programme diagnostic, policy gap analysis, and confidence-level calibration. We map what market data you already have, identify gaps, and recommend the CFaR / EaR configuration that fits your credit profile, liquidity runway and board's risk appetite, before a single line of code is written.

2 · Turnkey Deploy + Report Walk-Through

UnRisk provisioned (cloud API or on-prem), exposures loaded, first Monte Carlo run produced. We walk leadership and treasury through the numbers line-by-line, advise on results, and co-author the refreshed hedging policy, moving from blunt percentage targets to CFaR-based limits with dynamic hedge-ratio adjustment.

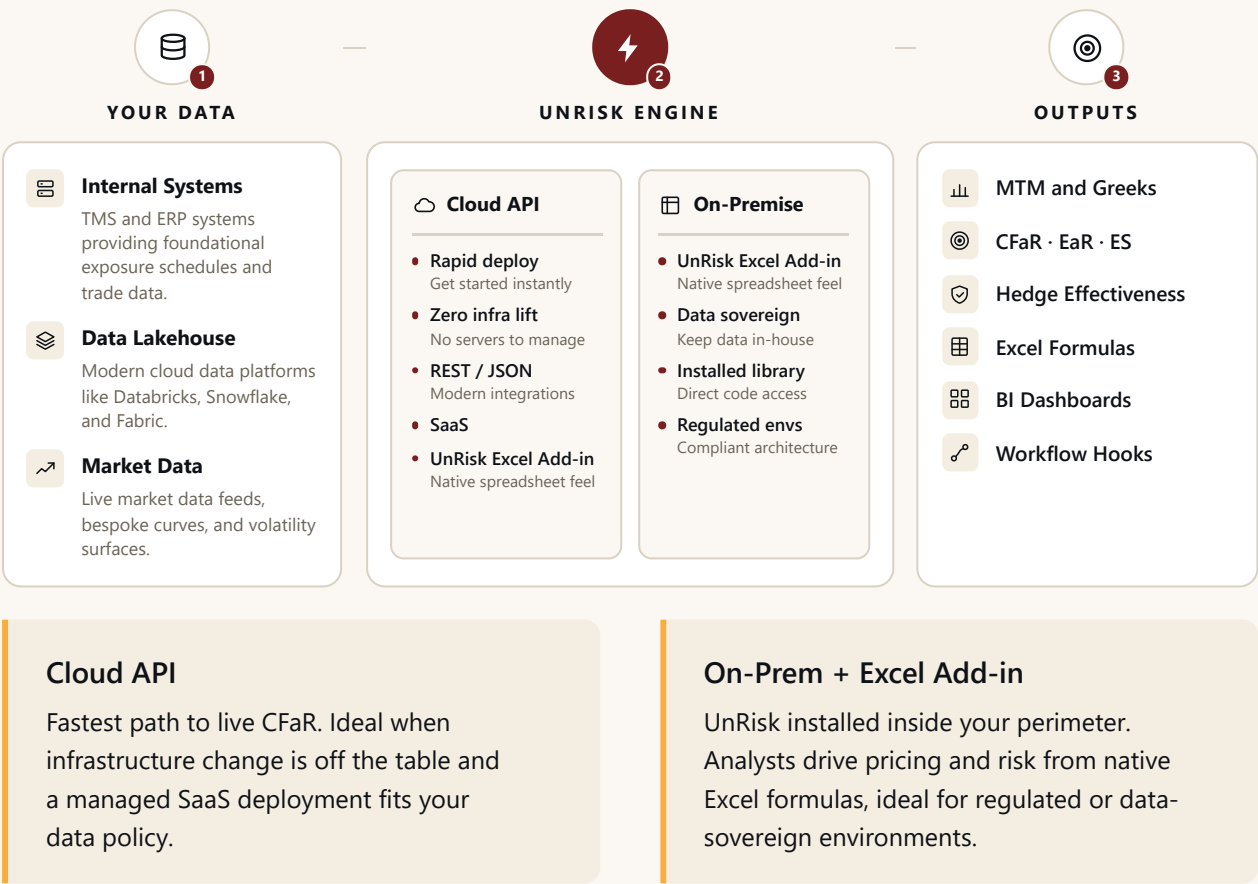
3 · Integrate into Workflows and BI Reporting

Outputs flow into TMS, treasury workflow tools, board-pack automation and BI layers (Power BI, Tableau, Looker). Data lakehouse ingestion, Databricks, Snowflake, Microsoft Fabric, is a standard pattern. Scheduled jobs run MTM, CFaR, hedge effectiveness and ratio optimisation with ASC 815 / IFRS 9 audit trails.

How Your Treasury Delivers (continued)

Data Flow Architecture

How your enterprise and market data connects through the UnRisk Engine to deliver actionable outputs.



Conclusion

The purpose of CFaR and EaR analysis is not to produce a number to target. It is to fundamentally change the conversation about risk, from arbitrary hedge percentages to the dollar value of exposure on financial statements, expressed at a confidence level the board understands and has approved. The real power lies in the sensitivity decomposition and diversification insights that emerge from the analysis.

If the focus of senior management meetings is on current and forecasted gross margins, earnings, cash-flow, and profits, then these should form the basis of the "at risk" measure. A treasury team that can clearly assign the dollar value of FX, commodity, and interest rate risk to financial results, and demonstrate how hedging decisions move the company along the efficient frontier between earnings protection and liquidity, has transformed from a cost centre executing percentage targets into a strategic function protecting shareholder value.

This risk management strategy dramatically changes how treasury speaks to senior leadership. Gone are the days of explaining why hedging 80% of an exposure is better than 75% or 95%. Instead, treasury can present:

- **The sensitivity of earnings to each risk factor:** which currencies, commodities, and rate exposures actually move the consolidated P&L, decomposed by subsidiary and currency
- **The diversification already embedded in the business:** natural offsets between USD revenue and USD-denominated commodity costs, between subsidiary-level FX exposures that partially cancel at group level
- **The efficient frontier between EaR and CFaR:** the optimal trade-off for the company's specific credit profile, leverage, and liquidity requirements
- **The marginal impact of each hedge:** whether an additional FX forward, commodity swap, or interest rate cap moves the portfolio closer to or further from the frontier
- **Where hedging at subsidiary level creates group-level risk:** the counterintuitive cases where well-intentioned local hedging increases consolidated earnings volatility

Consistently applying this methodology, modelling and monitoring EaR and CFaR either as the main risk management process or as a check on an existing policy approach, could prevent your company from being in the news for a double-digit percentage fall in earnings due to unforeseen market rate movements.

How Your Treasury Can Help

Recognised by The Economist Impact, Treasury Today's Adam Smith Awards, and the TMI Awards for Innovation and Excellence, Your Treasury delivers practitioner-led financial risk management advisory for corporates and financial institutions. Our team combines award-winning group treasurer experience with quantitative analytics powered by UnRisk. We work across the full value chain: from exposure identification and sensitivity analysis through instrument valuation, hedge accounting treatment, and board-level risk reporting under both ASC 815 and IFRS 9.



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