



CIO BRIEF

Inflation Collars in Infrastructure

Bounded protection for CPI-linked revenues with fixed-rate debt

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Executive Summary

Infrastructure investors and regulated asset operators frequently assume that CPI-linked revenues provide genuine inflation protection. They do not. Not once fixed-rate debt and **the timing of the next regulatory reset are** factored in.

The trap is structural:

- Revenues escalate with CPI under regulatory building blocks.
- Debt costs are fixed because the capital structure was locked in during low-rate years.
- The asset appears to benefit from high inflation: coverage improves, cashflow rises.
- Then the regulator claws it back in the next determination by resetting allowed returns, adjusting WACC assumptions, and normalising what it sees as an inflation windfall.

High inflation is a deferred liability, not a benefit.

This paper sets out a practical hedge overlay used to manage this risk: a bounded inflation collar with annual reset and an optional contingent forward-starting component aligned to the next regulatory determination.

The objective is not to hedge inflation broadly. The objective is to hedge the tail outcomes where inflation translates into regulatory value destruction, without paying swap premium for outcomes that can be tolerated inside the band.

1. The Structural Problem Infrastructure Keeps Missing

In regulated infrastructure (water, electricity networks, gas networks, toll roads, ports with indexed tariffs), the revenue framework is typically CPI-linked by design. The regulator's logic is straightforward: CPI indexation preserves real returns and keeps the operator financially neutral across inflation outcomes.

In practice, that neutrality breaks down because the balance sheet does not behave like the regulatory model.

The mismatch

- Revenues and regulated asset base metrics adjust with CPI, directly or indirectly.
- Debt costs do not adjust, where the debt stack is fixed-rate bonds issued during the 2016 to 2019 low-rate window.
- Inflation spikes create a short-term uplift in cashflow and coverage ratios. Boards and investors typically interpret this as an earnings tailwind.
- Regulators notice the same uplift. In the next determination, they reset allowed returns using current market conditions and normalise what they view as inflation-driven over-earnings or embedded financing advantage.

The real risk is not that inflation hurts cashflows today. It is that inflation creates cashflow today that becomes a regulatory haircut tomorrow.

That is a hedgeable exposure. But only if the structure matches how the regulatory mechanics actually land.

2. Why Vanilla Approaches Fail Here

Before setting out what works, it is worth being precise about why the standard alternatives do not.

Alternative	Why It Looks Right	Where It Breaks Down
Vanilla inflation swap	Direct CPI exposure; simple hedge accounting narrative	Pays for moderate outcomes that do not require protection; expensive at long tenors; settles on cumulative logic misaligned to annual regulatory mechanics
Inflation-linked debt issuance	Creates natural hedge; debt service rises with CPI	Cannot refinance existing fixed-rate bonds without crystallising MTM losses; market thinner with wider spreads; does not address deferred reset risk
Do nothing	No execution costs; no CSA obligations; operationally simple	High-inflation clawback is unmitigated; rating agencies and risk committees will ask the question; not a defensible position once the risk is quantified

3. The Practical Answer: A Bounded Inflation Collar Overlay

A collar is not exotic. It is simply bounded protection:

- Buy protection above a high strike (a cap on inflation).
- Fund it by selling protection below a low strike (a floor on inflation).
- Between the strikes, the hedge does nothing. That is intentional.

The design philosophy keeps natural exposure where it is tolerable and insures only the tails. The participation range is not a bug. It is the core of the design.

Conceptual structure

- Buy an inflation cap: protection if CPI prints above the cap strike.
- Sell an inflation floor: payment obligation if CPI prints below the floor strike.
- Select strikes so that the premium received from selling the floor broadly funds the cap premium, targeting zero or near-zero net cost at inception.

The trade being made explicit: protection against a likely bad outcome (high inflation leading to regulatory clawback) in exchange for exposure to a lower-probability but painful outcome (deflation or persistently low inflation). That trade can be rational if the downside state is genuinely remote relative to the business.

4. Case Study: Regulated Australian Utility (Anonymised)

Client profile

A regulated Australian utility with CPI-linked allowed revenue under a five-year regulatory determination. The asset carried a large fixed-rate bond stack issued in the late 2010s, with maturities extending across the next determination periods.

The original internal belief

"Inflation is good for us. Revenues rise with CPI and debt is fixed."

The reality

High inflation improved coverage in the current period, but created a deferred regulatory reset risk that would claw back the perceived benefit in the next determination, reducing allowed returns and contracted revenue.

The hedge objective

Not to hedge CPI. To hedge the outcome that matters: inflation above a threshold where the regulator's reset mechanics turn into a material clawback. Structured to match the timing and measurement of the actual exposure.

5. Structure Parameters

The overlay was designed around three principles: only hedge the extremes; reset annually to match how inflation interacts with the regulatory mechanics year by year; calibrate notional to the economic damage, not to the headline debt balance.

One-year tenors were chosen to align CPI fixing conventions and avoid compounding basis between annual resets. Collars can be implemented as *zero-cost collar strips on annual CPI swaps*.

Component	Mechanics
Annual Cap	Utility receives: Notional x max(actual CPI - 4.5%, 0). Pays out when inflation exceeds the cap strike.
Annual Floor	Utility pays: Notional x max(2.0% - actual CPI, 0). Triggered only when inflation falls below the floor strike.
Net Collar Payoff	Cap receipt minus floor payment each year. Inside the 2.0%-4.5% band: zero movement in either direction.
Reset Frequency	Annual. Each year treated independently. Cumulative settlement avoided because the underlying regulatory exposure is annual, not cumulative.
Notional Calibration	Set to the economic damage from the regulatory clawback at the cap strike, not to the headline debt balance.

The formal payoff definitions are straightforward. Let X_t denote the year-on-year CPI rate at time t , N the notional, K_{cap} the cap strike, and K_{floor} the floor strike.

Annual cap payoff (received by the utility):

$$\text{CapPayoff}_t = N \times \max(X_t - K_{cap}, 0)$$

Annual floor payoff (paid by the utility):

$$\text{FloorPayoff}_t = N \times \max(K_{floor} - X_t, 0)$$

Net collar payoff each year:

$$\text{NetPayoff}_t = \text{CapPayoff}_t - \text{FloorPayoff}_t$$

Inside the band where $K_{floor} \leq X_t \leq K_{cap}$, the net payoff is zero. The notional is then calibrated so that the cashflow received when inflation is high offsets the economic impact of the regulatory clawback, not to match any arbitrary balance sheet line.

6. Annual Reset vs Cumulative Settlement

This is one of the most consequential design decisions and where many structured solutions fail.

The cumulative approach and why it underperforms

A cumulative collar pays on accumulated inflation since inception. The problem is that the underlying exposure is not cumulative CPI. It is the annual interaction between CPI and the regulatory building blocks and the way that feeds into future determinations. Each year’s inflation reading independently influences allowed returns; it is not the cumulative CPI that drives the regulator’s adjustment. A cumulative structure therefore creates tracking error against the actual risk.

Annual reset: what was used here

Each year is treated independently. If inflation prints above the cap strike in 2024, there is a payout for 2024. The counter resets. If it prints above the cap strike again in 2025, there is a payout for 2025.

This improves hedge effectiveness for regulatory outcomes but can be modestly more expensive than cumulative structures. In this case, that extra cost was justified by the alignment with the true exposure.

7. Year-by-Year Scenario Analysis

The collar was stress-tested across three scenarios to confirm it behaved appropriately across the range of plausible inflation outcomes.

Scenario	CPI Outcome	Collar Behaviour	Net Effect on Asset
A: High Inflation	Averages ~5%+ YoY	Cap triggers; annual payouts received	Clawback exposure offset; NPV loss reduced
B: Moderate Inflation	3% to 4% YoY	Inside the band; no payment either way	No unnecessary premium paid; hedge inactive
C: Low Inflation / Deflation	Below 2% floor	Floor triggers; utility pays out	Operating underperformance compounded; accepted trade-off

Scenario B is the most important to note: the collar doing nothing in the middle range is not a failure. It is the design working correctly. Most outcomes land here and there is no reason to pay long-dated CPI premium to hedge them.

8. The Contingent Forward-Starting Component

A structural problem in regulated infrastructure is that the real economic impact often materialises in the next determination period, not the current one. Paying now for protection against a future event that may or may not crystallise is expensive and inefficient.

The overlay therefore included a forward-starting collar for the subsequent regulatory period, activated only if the risk actually materialised.

Activation logic (illustrative)

- If the next regulatory determination includes a CPI-related clawback above a defined materiality threshold, a second collar becomes effective for the new regulatory period.
- If the determination does not include such a clawback, the forward component expires with no value and no premium loss beyond what was paid for the option to activate.

This follows the same design logic as contingent forwards in cross-border M&A: do not pay for protection unless the trigger event occurs. Reduce dead premium. Tie the hedge activation to the actual realised outcome.

9. Collateral and CSA Realities

Boards and CFOs focus not just on economic outcomes but on collateral and liquidity implications. A collar overlay typically has materially different CSA behaviour compared to a vanilla long CPI swap.

- It is closer to zero cost at inception.
- Exposure is bounded within the strikes.
- MTM volatility is generally lower than a linear swap.

Key CSA terms typically negotiated

- Practical two-way thresholds.
- No independent amount where this can be justified by credit quality and bilateral exposure.
- A sensible minimum transfer amount to avoid operational noise.
- Transparent CPI fixing methodology to reduce model disputes at settlement.

The governance point worth embedding clearly: if the hedge becomes significantly in-the-money, collateral posting is not a failure. It is the hedge working in the exact scenario it was built for. Boards that have not been briefed on this connection will reliably misread it.

10. Implementation Friction: The Real Work

These structures do not fail because the maths is hard. They fail because the institution cannot execute through its stakeholders: The analytical work is usually the smaller part.

Stakeholder	The Friction and How to Address It
Regulator	Initial challenge: if revenues are CPI-linked, why hedge inflation? The correct response: this hedge addresses the mismatch between CPI-linked revenues and fixed liabilities across regulatory resets, not CPI exposure per se.
Auditor / Hedge Accounting	The question is predictable: can you hedge an outcome dependent on a future regulatory determination? You can, if the exposure is highly probable, the methodology is disciplined, and effectiveness testing is robust. Specialist hedge accounting input is worth the cost.

Stakeholder	The Friction and How to Address It
Bank Counterparty	Forward-starting and contingent components attract complexity premiums. Competitive bids, independent valuation pressure, and willingness to walk away are the only effective responses.
Board and CFO	CSA collateral posting is often misread as the hedge failing. It is the hedge working in the scenario it was built for. Clear governance documentation from the outset removes this ambiguity.

11. Where This Structure Applies

This is not a niche solution. The structure is applicable wherever the following conditions are present:

- CPI-linked regulated or contracted revenues, or CPI-indexed tariff escalation mechanisms.
- Fixed-rate debt locked in during a low-rate period.
- A reset mechanism: regulatory determination, concession reset, or benchmark recalibration.
- A meaningful gap between today's cashflow benefit and tomorrow's reset haircut.

In practice that describes most regulated infrastructure in some form. Water, energy networks, gas distribution, toll roads, ports, and airport aeronautical tariffs all share variants of this structure.

12. Practitioner Takeaways

For infrastructure investors, utility CFOs, and treasury leads, the practical conclusions are:

- **CPI-linked revenue is not an inflation hedge if liabilities are fixed. The assumption needs to be tested, not taken for granted.**
- **The real risk is often deferred and embedded in the next reset cycle, not in current-period cashflow.**
- **Hedge design must match the actual exposure mechanics: annual versus cumulative settlement; trigger bands set at the right levels; notional calibrated to economic damage.**
- **Collars work because they are bounded and can be structured at or near zero cost. The participation range is the design, not a limitation.**
- **Execution success is mostly stakeholder management. The regulator, the auditor, the board, and the CSA counterparty all require separate and coherent narratives.**

About Para Bellum Advisors

Para Bellum Advisors is an independent advisory firm specialising in derivatives, collateral, and balance-sheet efficiency for institutional investors. The firm works with lean investment teams managing complex, long-dated portfolios across FX, rates, credit, equity, and volatility risk. Its focus is on structure: how hedges are designed, how capital is consumed, and how portfolios behave under stress.

Para Bellum Advisors is practitioner-led, drawing on decades of experience across trading, structuring, and portfolio management in banks, asset managers, and insurance balance sheets.

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