X-LNG CASE STUDY · OCT 2025

Option Valuation & Regas Slots

$0.20

average extrinsic uplift per MMBtu of cargo cancellation rights at base volatility; $0.45 under stress

Mediterranean utility · cancellable book 2027-2029

3 volatility regimes · 1,000 MC paths each

Premia swept · slot cost x cancellation fee

A cancellable supply-demand book

European power utility · regas slots at OLT Livorno from auctions · January 2027 to December 2029

3
cancellable supply legs · 120% HH formulas

1
cancellable demand leg: Livorno, PSV + $0.25

3
spot outlets: USA (TTF), China (JKM), India (Brent)

$2m
cancellation fee · slot cost $0.50/MMBtu

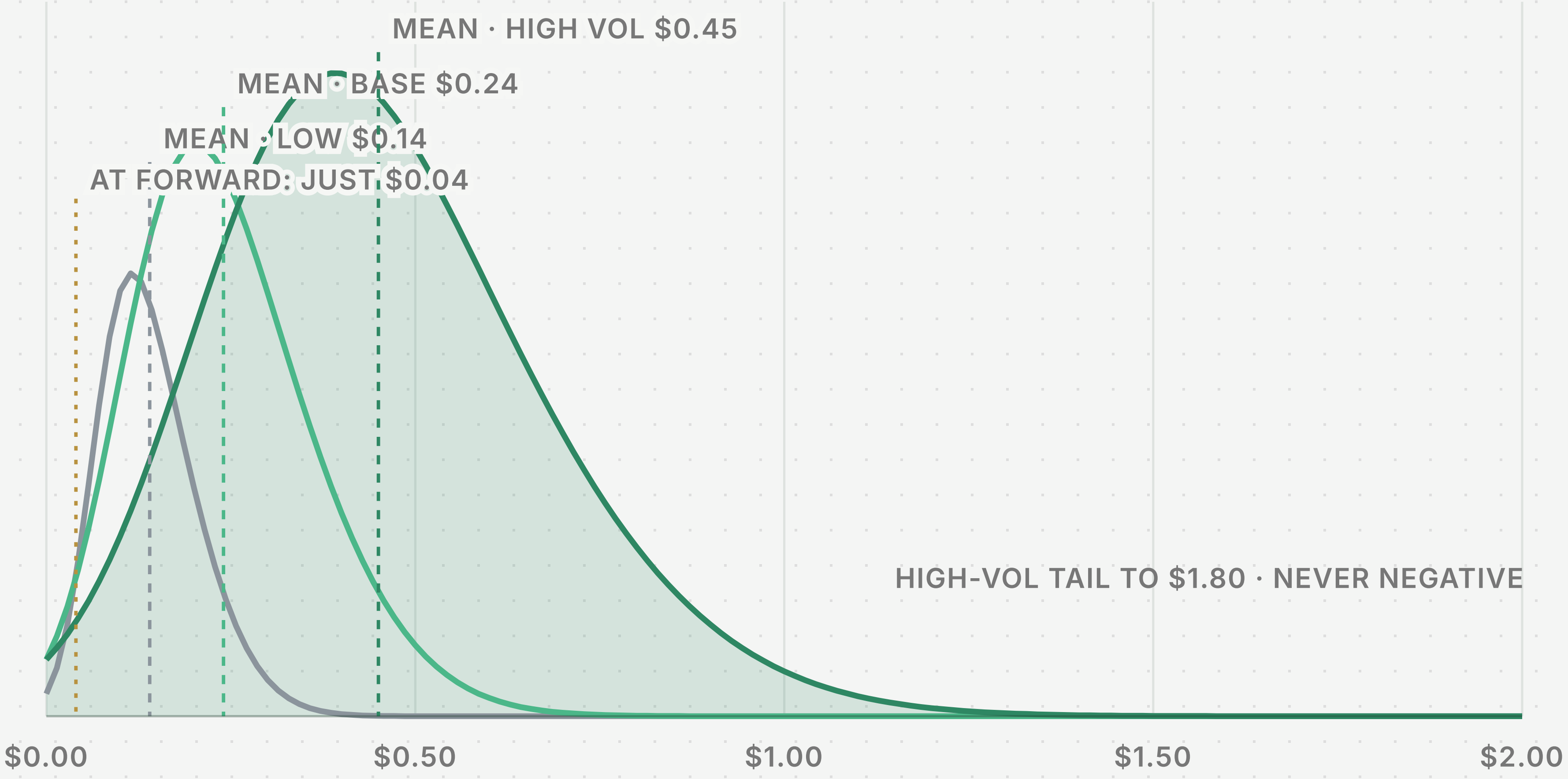
Supply: DES Long Livorno (120% HH + $4), FOB Long USA (120% HH + $2), DES Long NWE Flex (120% HH + $3.80), all cancellable. Demand: DES Short Livorno cancellable, NWE and Spain firm on TTF discounts. **Every cancellation right is an embedded call option**; leaving a regas slot unused costs the slot tariff on the undelivered volume.

Pricing the option

Identical books with and without the call, re-optimised over the same 1,000 paths per regime

The option, priced path by path

The per-path difference between flexible and base IS the option value



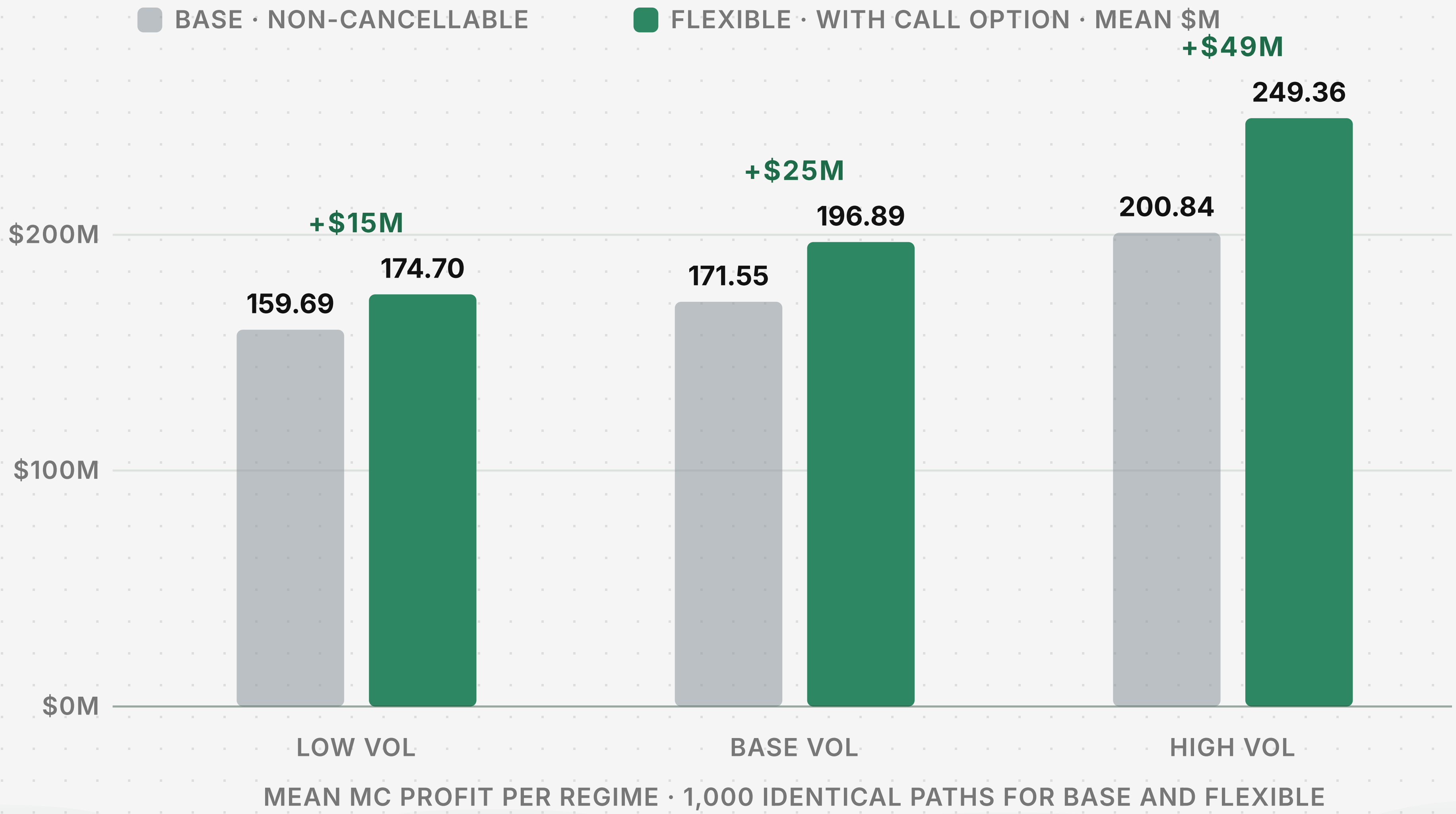
OPTION VALUE PER PATH · $/MMBTU · FLEXIBLE MINUS BASE · 1,000 MC PATHS PER REGIME

CURVE SHAPES ILLUSTRATIVE, ANCHORS EXACT · MEANS $0.14 / $0.24 / $0.45 · MEDIANS $0.12 / $0.20 / $0.38

At the forward curve the option looks almost worthless, $0.04/MMBtu. Across the simulations it averages $0.14 to $0.45, and it never goes negative.

Mean profit rises in every regime

The whole distribution shifts right: thinner left tail, longer right tail

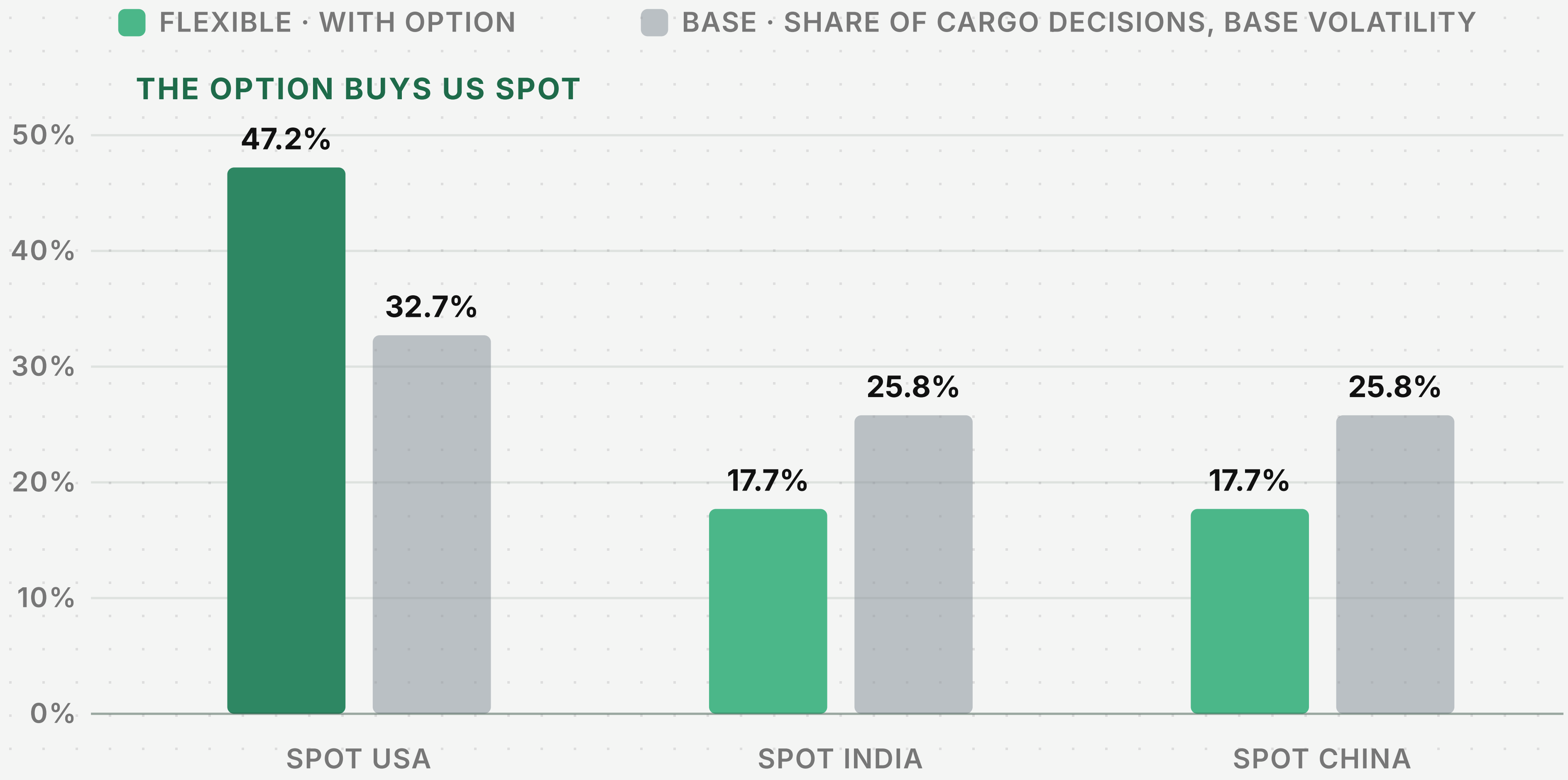


EXACT MC MEANS: 159.69 → 174.70 (LOW) · 171.55 → 196.89 (BASE) · 200.84 → 249.36 (HIGH) · $M

Under high volatility the average uplift roughly doubles to about $49M: stressed markets offer more profitable exercises at wider spreads.

Where the option value comes from

Cancel a costly firm intake, lift cheaper US spot instead



AT HIGH VOL THE US SHIFT PEAKS: 49.0% VS 32.3% · +16.7 POINTS · INDIA -8.9 · CHINA -6.4

SHARE OF CARGO DECISIONS PER SPOT MARKET ACROSS 1,000 PATHS · BASE-VOLATILITY REGIME, EXACT ENGINE SHARES

The base book balances by selling to Asia; the flexible book re-anchors to Atlantic liquidity and keeps India and China as selective outlets.

THE VERDICT

The cargo-level call pays in every regime: $0.14, $0.20 and $0.45 per MMBtu as volatility rises.

Forwards price the option at four cents. Path-by-path valuation shows five to ten times that, doubling under stress: exactly when the right to walk away matters most.

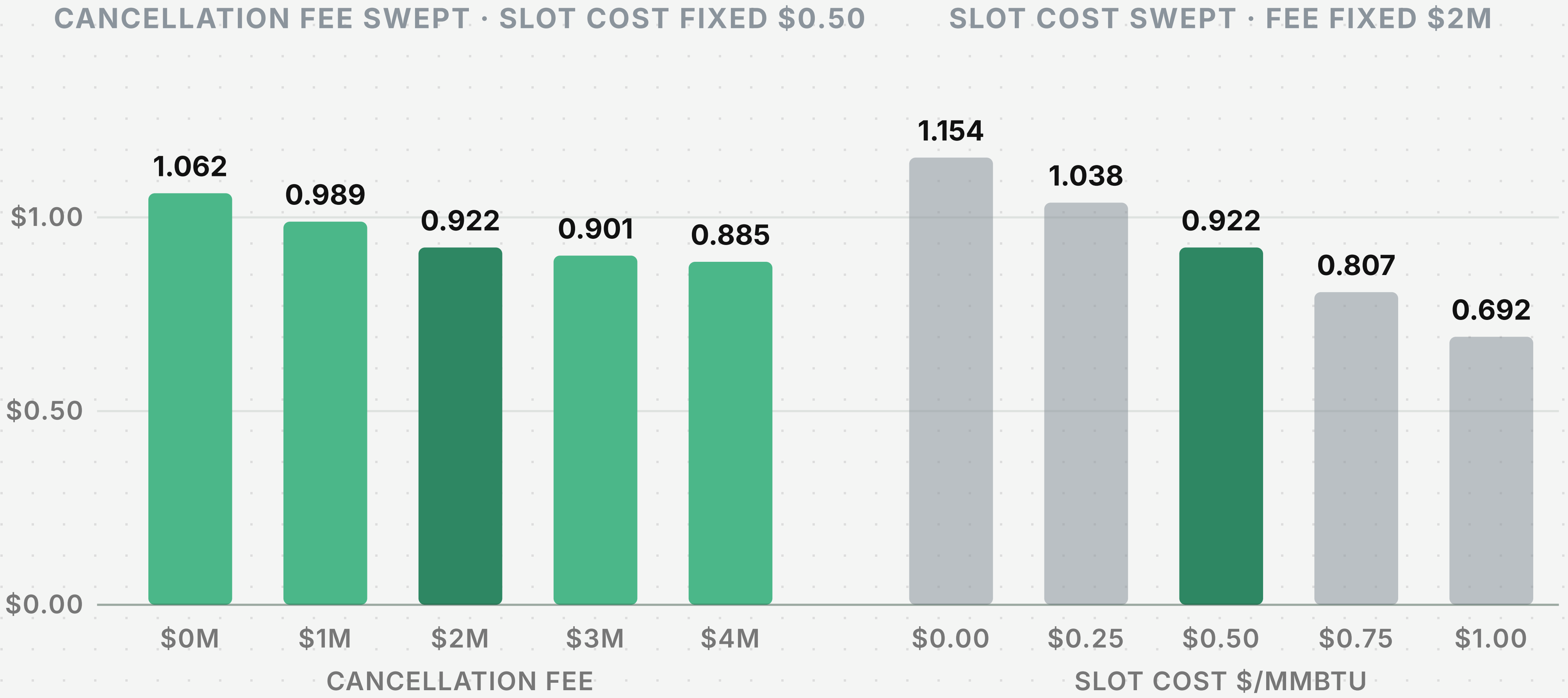
The premia

Slot cost and cancellation fee swept at forward prices

02

Slot costs dominate cancellation fees

Portfolio profit per MMBtu under both premium levers



PORTFOLIO PROFIT $/MMBTU AT FORWARDS · GREEN = BASE CASE $0.50 SLOT / $2M FEE = $0.922

EXACT GRID VALUES FROM THE ENGINE · FULL 5X5 SWEEP IN THE SOURCE STUDY · BASE CASE $0.922/MMBTU

Each +$0.25/MMBtu of slot cost takes about $0.11/MMBtu of profit; each +$1M of fee only about $0.04, tapering to $0.01 beyond $3M. Negotiate the slot tariff first.

Takeaways

What the option is worth, and what it costs

✓ **The call pays in every regime, growing with volatility**
$0.14 / $0.20 / $0.45 per MMBtu at low, base and high volatility; the high-vol uplift is about $49M, roughly double the base case.

✓ **Monetised on the supply side**
US spot lifted in 46 to 49% of decisions against 32 to 33% without the option; the value comes from larger spreads when exercised, not from more exercises.

! **Slot costs dominate cancellation fees**
-$0.11/MMBtu per +$0.25 of slot cost against -$0.04 per +$1M of fee; fees here are deliberately small and illustrative.

Modelled with X-LNG

CALYPSO COMMODITIES

Whole-portfolio optimisation for LNG books

1

Your world goes in

Contracts, vessels, charter rates, prices, spot assumptions and constraints, the full book, not a slice.

2

One optimal plan comes out

Feasible, P&L-maximising and constraint-compliant, re-solved for every scenario in minutes.

3

Every number checks out

Each result can be recalculated by hand, transparency your risk committee can audit.

Cloud-based, any portfolio size · built and advanced daily by ~25 mathematicians, physicists and computer scientists.

Value the options already in your contracts

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