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X-LNG CASE STUDY · MAY 2025

Valuing DES-Long Flexibility

$8.6M

what a right worth $0 at today's curve earns across 1,000 simulated paths; $13.3M in stressed markets

Two books · identical but for one optional contract

3 × 1,000 paths · regular, high and low volatility

Per-path re-optimisation · full portfolio each time

Two books, one optional contract

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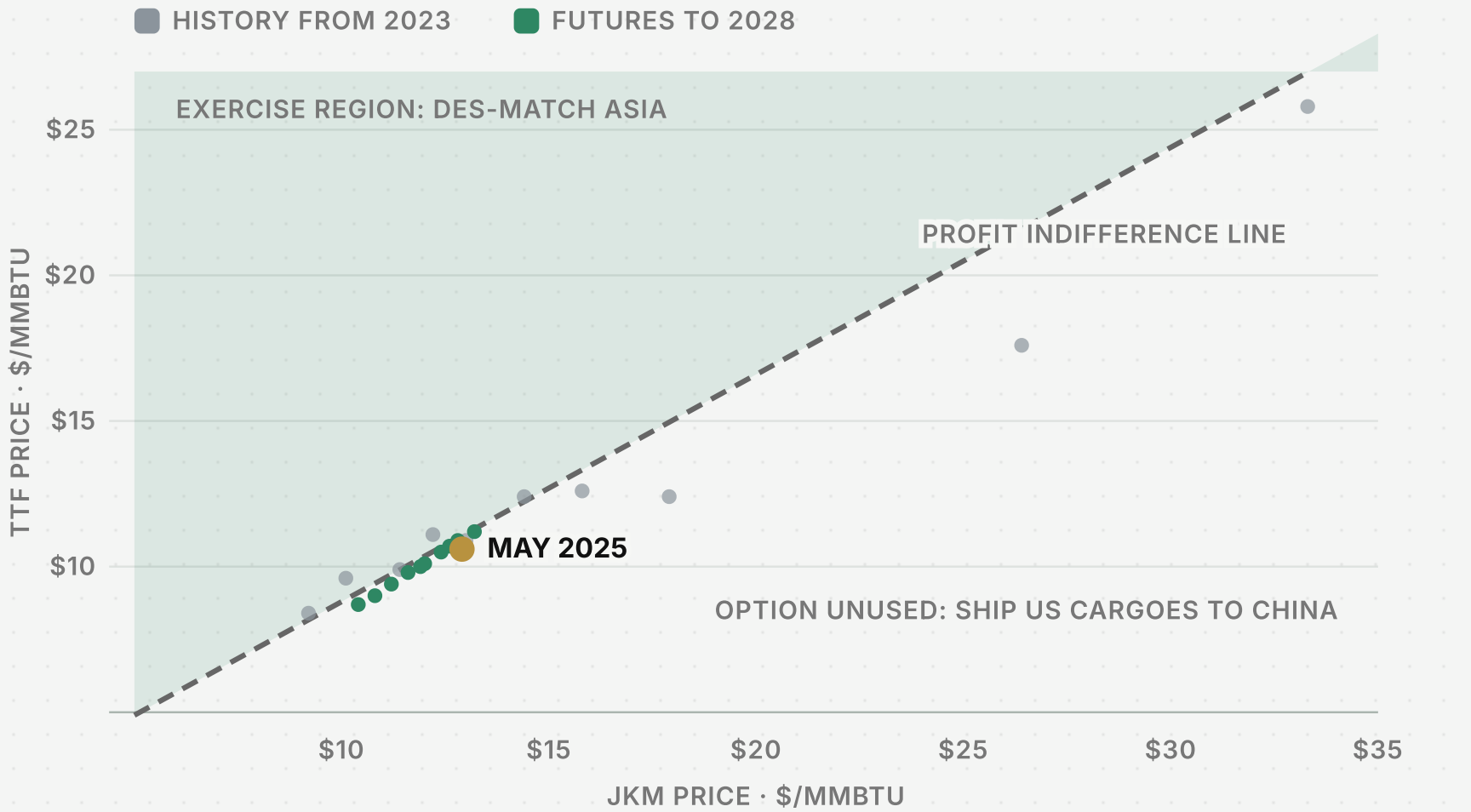
Identical in every respect except the right to source six DES-Long cargoes in Asia

24	9	24	+6
FOB-Long cargoes from the US	DES-Long cargoes into NWE	demand: 6 DES-Short Asia, 18 NWE	optional DES-Long Asia cargoes in the flex book

Fleet: 2 × 174K vessels, horizon 2026 to 2027, curves from 21 May 2025. The Asia contract is modelled as **pure optionality: used only when the whole book profits.** Indexations are deliberately set so all six cargoes start out of the money, with the most profitable one just at the money.

At the curve, the option is invisible

Decision boundary in JKM-TTF space: history, futures and today all sit outside



BOUNDARY TRACED FROM THE ENGINE RUN · PRICE-ONLY VIEW, BEFORE SHIPPING AND VOLUME LOSSES

EXERCISING ALSO DEPENDS ON SHIPPING COSTS, BOIL-OFF LOSSES AND VESSEL AVAILABILITY

Both books produce the same plan and the same profit to the dollar: $188,895,430, with no Asia cargo matched. That is where most valuations stop.

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01

Under simulation

Three thousand price paths, each one re-optimised for both books

Simulation lifts both books, one further

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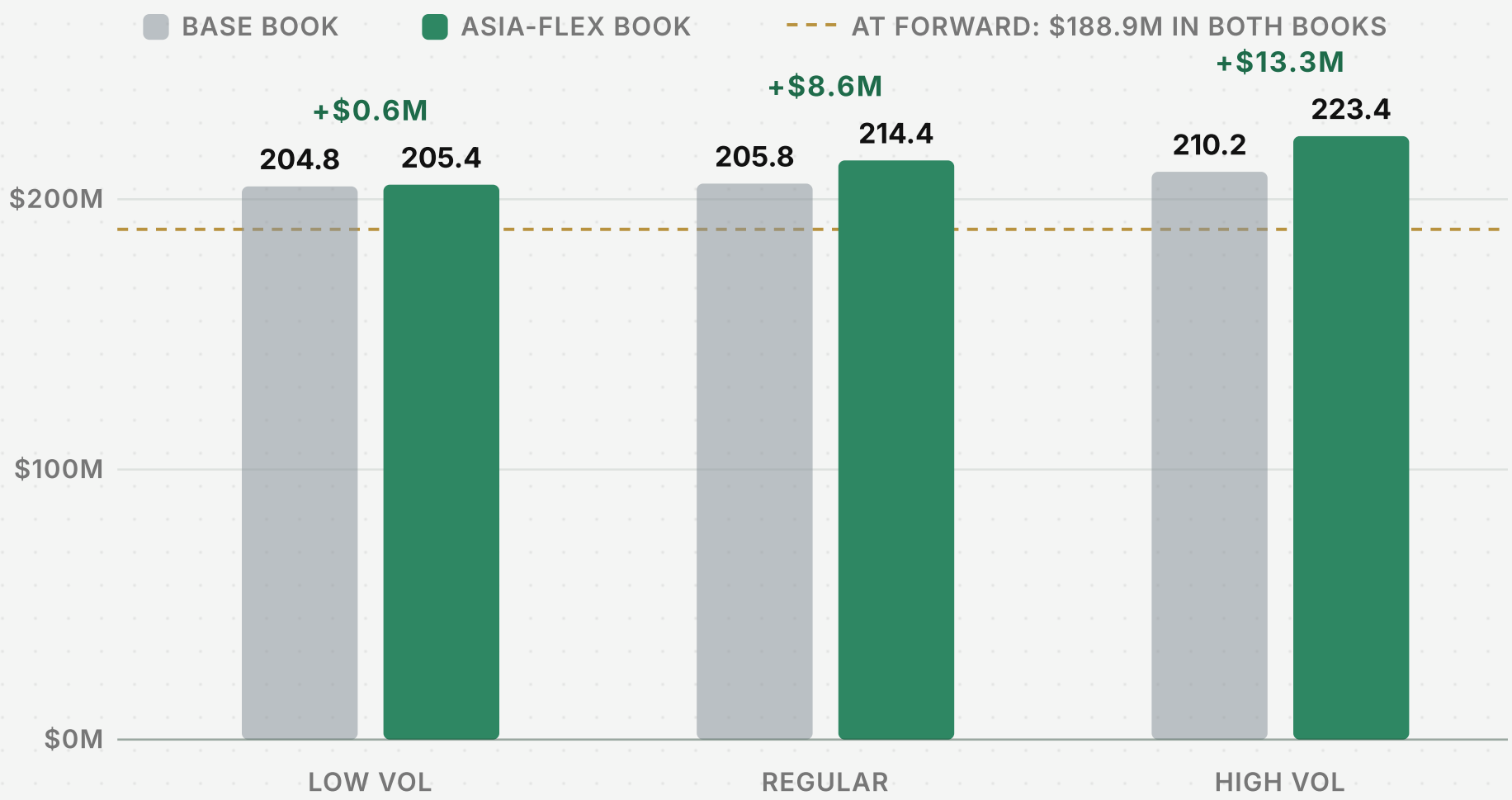
Mean Monte Carlo profit per volatility regime



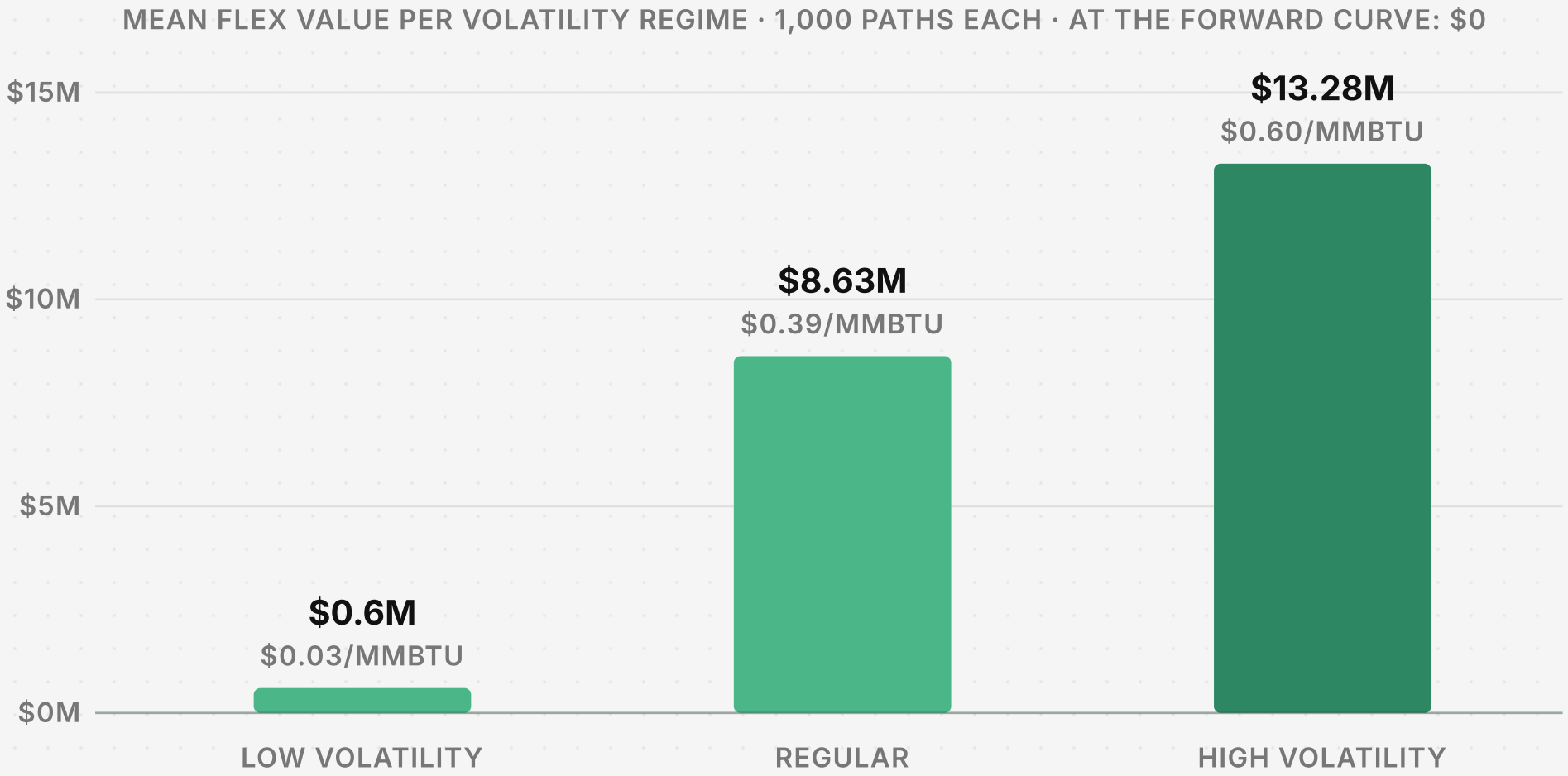
MEAN MC PROFIT $M · 1,000 IDENTICAL PATHS PER REGIME · PER-PATH RE-OPTIMISATION

EXACT MEANS: 204.8 / 205.4 (LOW) · 205.8 / 214.4 (REGULAR) · 210.2 / 223.4 (HIGH) $M

The base book rises above its forward value on its own; the Asia-Flex book rises further, and the gap between them is the option.

Volatility is what the right is worth

Mean flex value per regime, absolute and per MMBtu



A factor of twenty between the calm and the stressed market: an option that looks worthless today is a volatility position.

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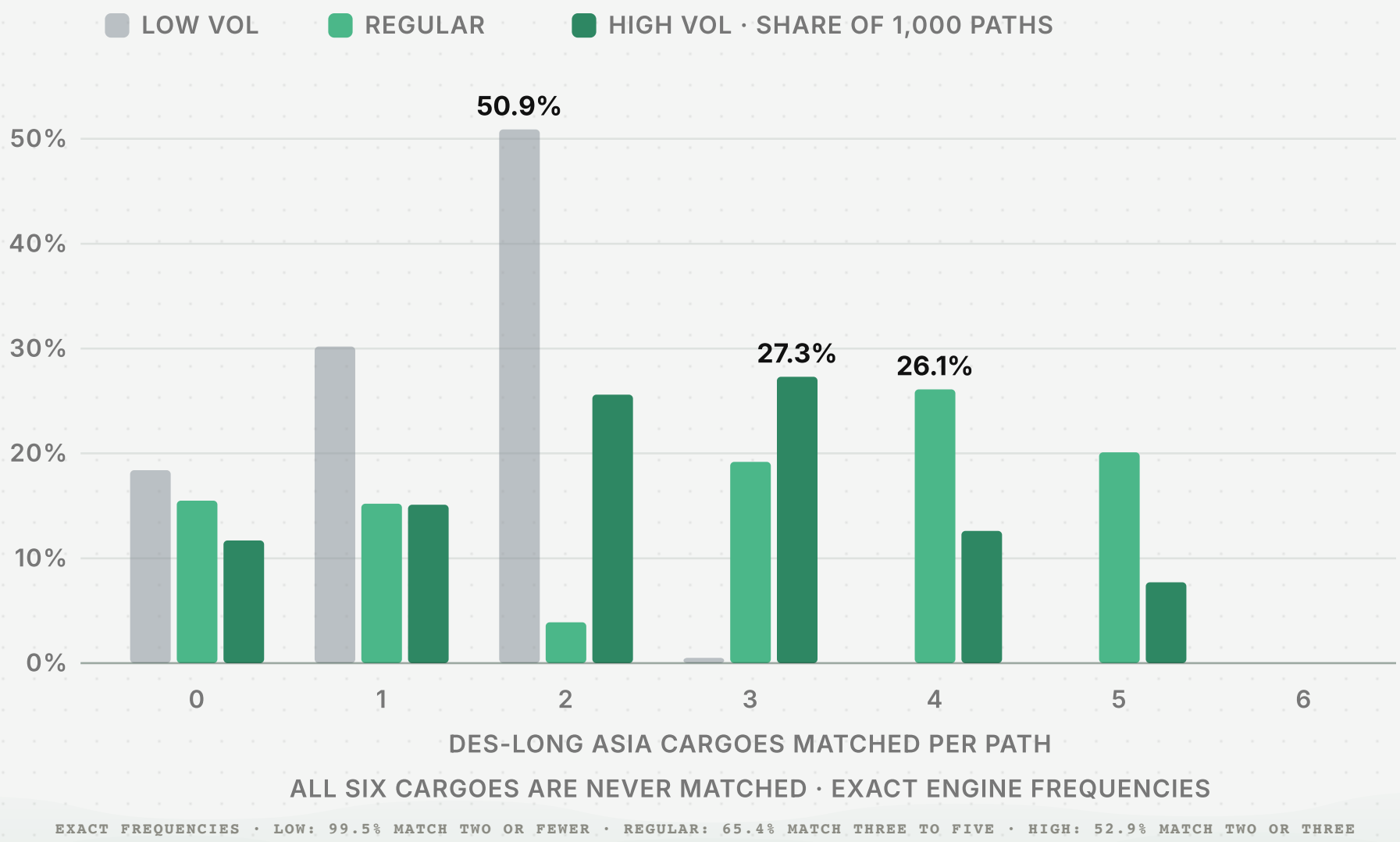
THE VERDICT

An option worth nothing at the curve is worth $8.6M in regular markets: and $13.3M in stressed ones.

Extrinsic value is invisible to a forward-curve check and visible to a simulation. That difference decides whether a flexibility clause gets defended or traded away for free.

How often the option actually fires

Matched Asia cargoes per path, by volatility regime



EXACT FREQUENCIES · LOW: 99.5% MATCH TWO OR FEWER · REGULAR: 65.4% MATCH THREE TO FIVE · HIGH: 52.9% MATCH TWO OR THREE

Calm markets rarely go beyond two; regular volatility clusters at three to five. All six cargoes are never matched at once.

Takeaways

What the out-of-the-money right is worth

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✓ **Zero at the curve is not zero**

Both books earn exactly $188,895,430 at forwards with no Asia cargo matched; across simulations the clause is worth $8.6M in regular markets.

✓ **Volatility is the value driver**

$0.6M under low volatility against $13.3M under high, $0.03 against $0.60 per MMBtu: optionality pays when the market becomes hard to plan for.

! **Price spreads alone misprice the option**

Shipping cost differentials, boil-off volume losses and vessel availability all move the exercise threshold, and exercising re-optimises the whole book.

Modelled with X-LNG

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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 rights before you concede them

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