

RESEARCH PRESENTATION · NEGATIVE RESULT

Donchian ODTE

A Methodological Case Study of a Negative Result

4-Year OOS · Full-Population Databento Validation · 3,146 strict trades

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Donchian 0DTE Strategy — v5

Full-Population Direct Validation · 2023-03 → 2026-05

—\$84K to —\$130K

per year, per contract (bootstrap 95% CI, revoff)

Strategy does NOT survive real execution. Negative result; methodological case study.

3,216

strict trades measured

0%

P(profitable, any policy)

3 of 3

policies negative

The 0DTE Opportunity (and the trap inside it)

0DTE volume has exploded — but published BS-priced backtests systematically overstate edge

50%+

of daily SPX
options volume

Source: CBOE 2024

\$2.5T+

notional traded
daily in 0DTE

Compared to \$0 in 2018

~85%

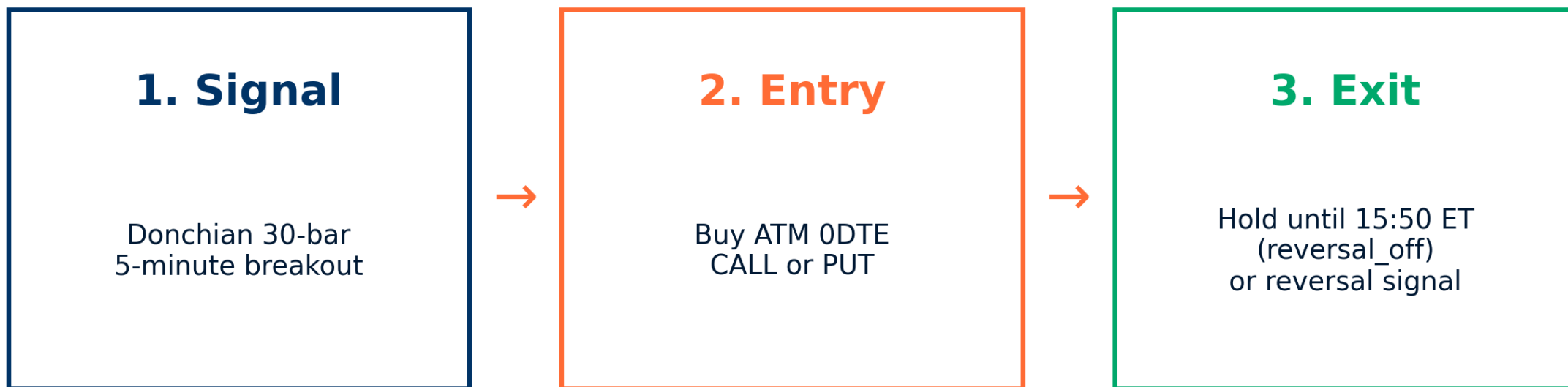
BS under-prices
ATM entry premium

Real / BS $\approx 1.85\times$

THE TRAP

BS-priced 0DTE backtests look profitable (we got +\$80K, +\$50K, +\$32K under successive v1-v4 calibrations). Real execution PnL, measured directly per-trade, is $-\$107K$. The trap is in the calibration methodology.

Strategy in 3 Steps

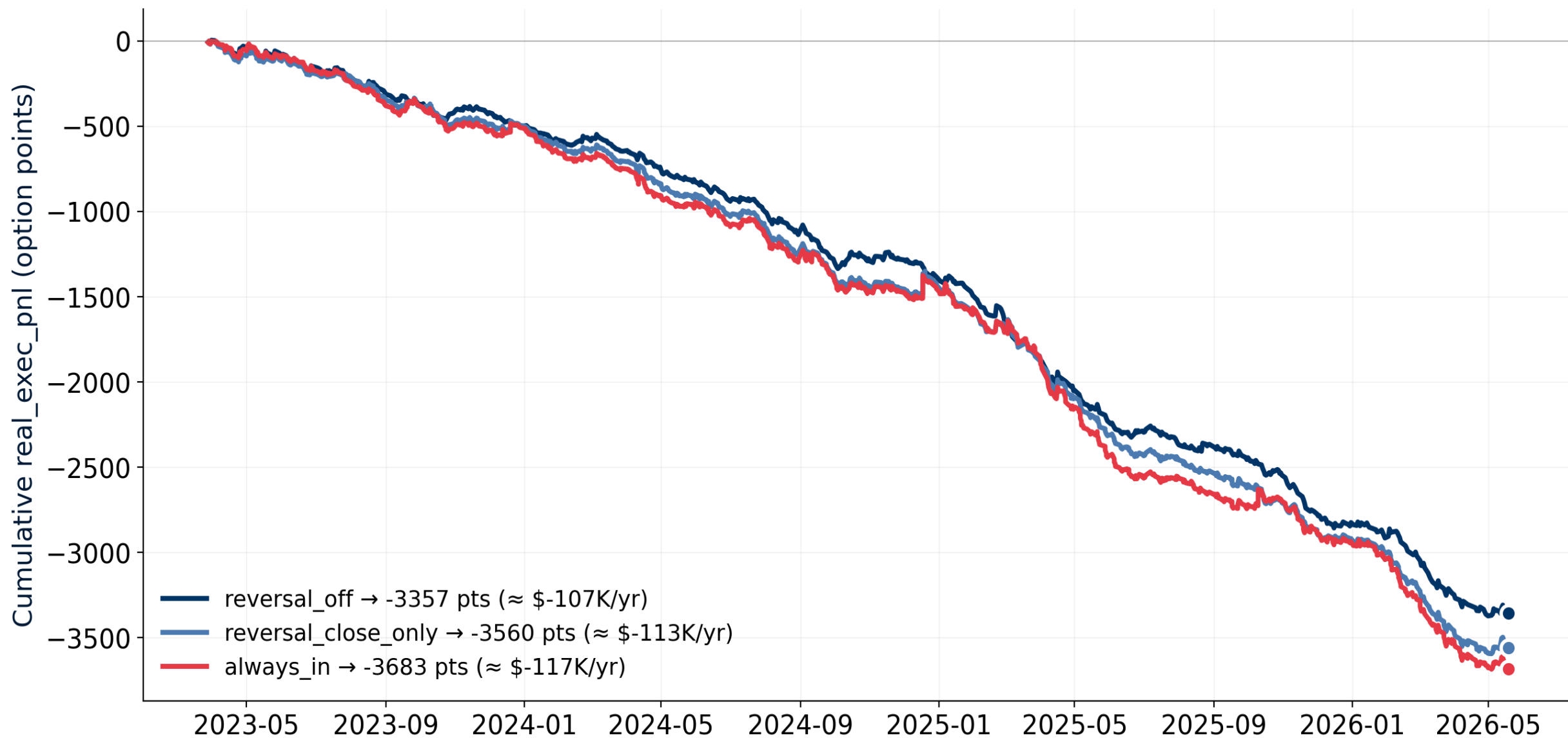


Each trading day: 0 or 1 trade · Hold time: ~4-6 hours · No overnight risk

Three exit policies tested in parallel: always_in, reversal_off, reversal_close_only

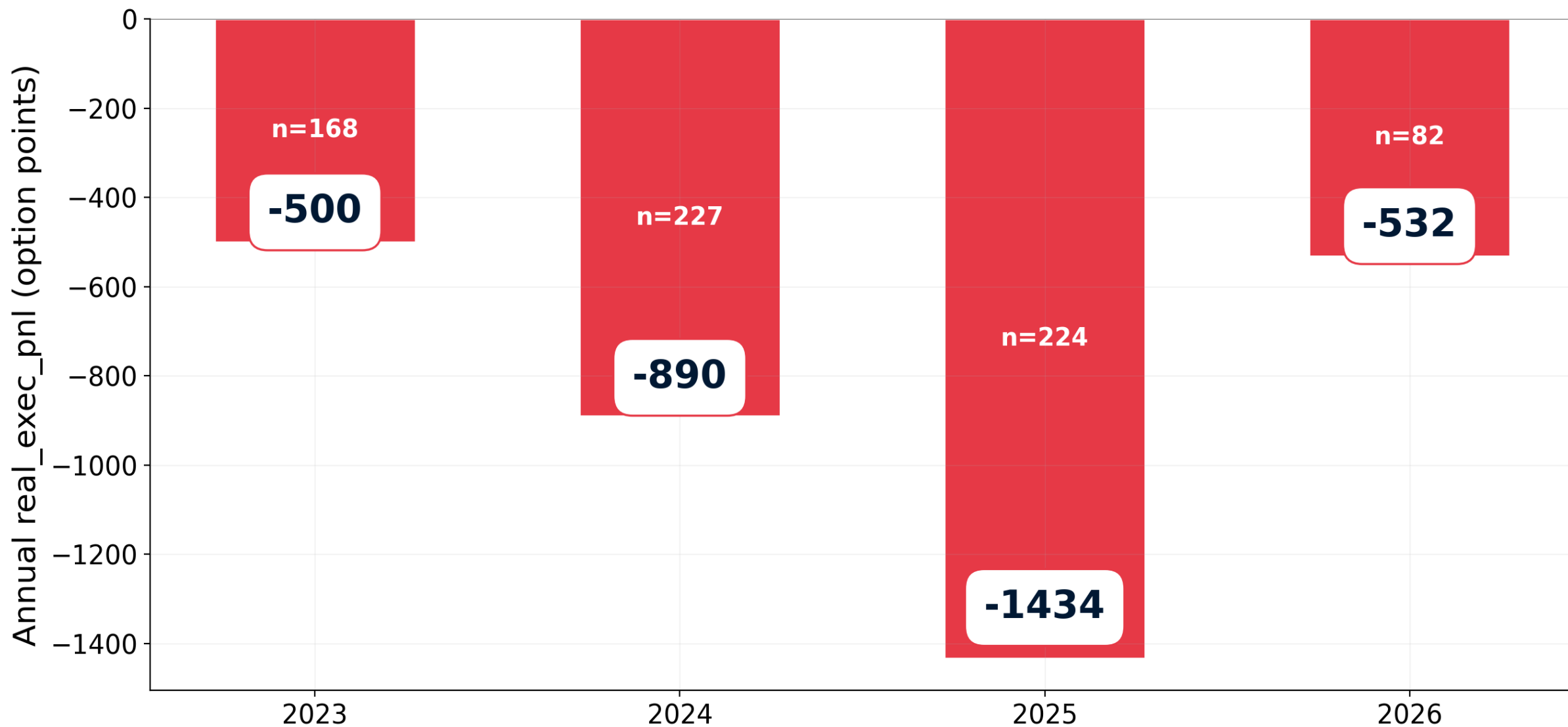
Cumulative Real-Executable PnL — All Three Policies Descend

Direct measurement, 3.14-yr Databento-coverage window, no extrapolation



Annual PnL (revoff) — Per-Trade Loss Growing Over Time

Worsening per-trade real exec loss: -\$3 → -\$3.9 → -\$6.4 → -\$6.5 (pts/trade)



2023 / 2026 are partial years (Databento coverage window)

Per-Trade Win Rate (revoff)



Annual Return vs SPX Buy & Hold

All three policies underperform a passive SPX position by >\$100K/yr (CI strictly below 0)



Lessons learned (v1 → v5 progression)

Each successive version removed a layer of bias. v5 is the first to produce the truth.

Version	Calibration approach	revoff headline
v1 (Phase 4)	global ratio 0.571, NaN counted valid	+\$80K/yr
v3	strict + constant 0.302	+\$50K/yr
v4	strict + per-tier 0.192 (tier-stratified)	+\$32K/yr
v5 (this work)	full-population direct per-trade measurement	−\$107K/yr

Headline progression is monotone toward the truth as each bias is removed.

The mechanism: BS under-prices entry (~85%) × strict filter excludes 100%-loss expired-worthless trades.

What Went Wrong: Two Compounding Biases

v3 / v4 stratified-sample calibration mechanically over-stated the headline PnL

Bias 1: BS pricing under-prices entry

$VIX1D \times BS(\sigma) \approx 0.55 \times \text{real ATM ODTE premium}$
Real entry / BS entry ratio $\approx 1.85\times$

When SPX moves favorably, the model
OVER-reports realized gain because it
under-counts the entry premium.

Bias 2: Strict filter rejected losers

v3 / v4 filter `real\_mid\_exit >= 0` &
`bid not NaN` excluded ALL expired-worthless
trades (NaN bid → no market for worthless option).

27% of revoff = 100% losers were silently
removed from calibration → ratio biased UP.

v5 fix: Full-population direct measurement — every trade, every quote, no extrapolation.

Result: −\$107K/yr instead of +\$32K. Strategy does not survive real execution.

Why It Doesn't Work: the mechanism

Three independent reasons, each measurable from the data

1. Signal has no SPX-level edge

Donchian 5-min breakout on SPX produces $-1,172$ SPX pts over 4yr (revoff).
Bootstrap 95% CI crosses zero; $P(>0) = 18\%$. The signal itself is statistically null.

2. Spread cost eats the (theoretical) BS edge

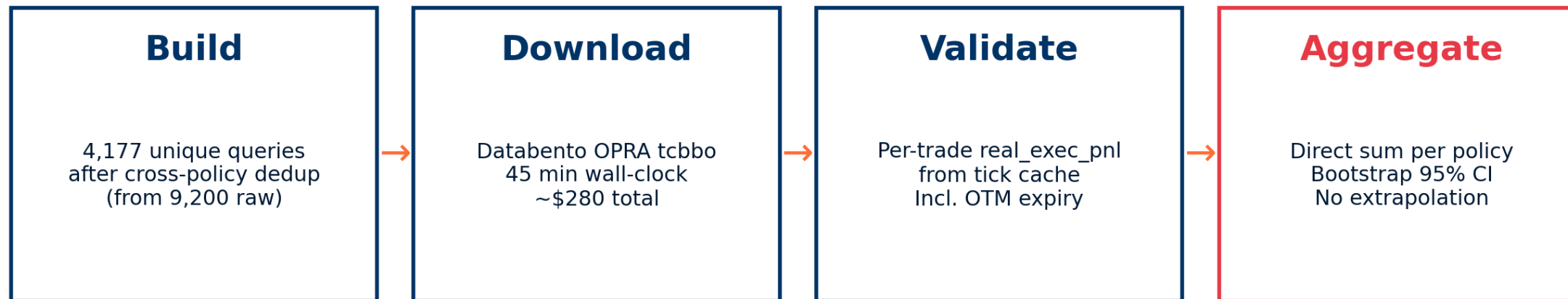
Entry+exit round-trip $\approx 8\%$ of premium for ODTE ATM.
BS pricer with VIX1D-as- σ under-prices ATM entry by $\sim 85\%$, masking the spread cost.

3. OTM expiry locks in 100% loss

27% of revoff trades expire OTM. Each loses the entire entry premium ($\sim -\$10/\text{trade}$).
v3 / v4 strict-filter silently excluded these from calibration $\rightarrow$ upward bias.

Phase 6: Direct Measurement

Every trade · Every quote · No stratified sample · No extrapolation



Policy	n_strict	Real PnL (pts)	\$K/yr	Bootstrap 95% CI
reversal_off	701	-3,357	-\$107K	[-\$129K, -\$84K]
reversal_close_only	1,179	-3,560	-\$113K	[-\$137K, -\$87K]
always_in	1,336	-3,683	-\$117K	[-\$143K, -\$89K]

All three policies negative. All three CIs strictly below zero. $P(>0) = 0\%$.

Risks & Limitations (v5)

- **Recommendation** Do NOT deploy capital. All three policies show statistically significant negative real-execution PnL.
- **Negative result** v5 bootstrap 95% CIs entirely below zero — not borderline; not 'inconclusive'.
- **Coverage gap** 22% of OOS (2022-05 to 2023-03-27) is pre-Databento and unvalidated.
- **Post-hoc selection** Strategy choice (reversal_off best of three) was post-hoc in v1; relative ordering retained but ALL policies negative.
- **Liquidity assumption** Numbers assume buy-at-ask / sell-at-bid on every trade. Real broker fills in fast moves may be worse.
- **Methodological value** Project value is the protocol (full-pop direct measurement) and the documented biases — NOT a deployable strategy.

v5 supersedes v3 / v4. Recommend: pre-registered walk-forward on a fresh window before any deployment.

Recommendations

What to do next — for this strategy, for related research, for capital allocators

Do NOT deploy capital on this strategy in any of the three policies.

M1

**Pre-registered
walk-forward**

Define holdout window in advance;
full-population validation;
if positive there, deploy small.

M2

**Replicate the protocol on
other ODTE long-option papers**

Wang (2026) and others — test how
widespread the stratified-sample
bias is.

M3

**Apply protocol to
grid-search of variants**

Different lookbacks, timeframes,
signal types — using v5 full-
population validation from start.

VALUE EXTRACTED

Full-population direct measurement protocol (~\$280 / 4,600 trades) + documented selection-bias mechanism

Q & A

Thank you for your time

Get in touch

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