

Derivatives & Hedging Trades

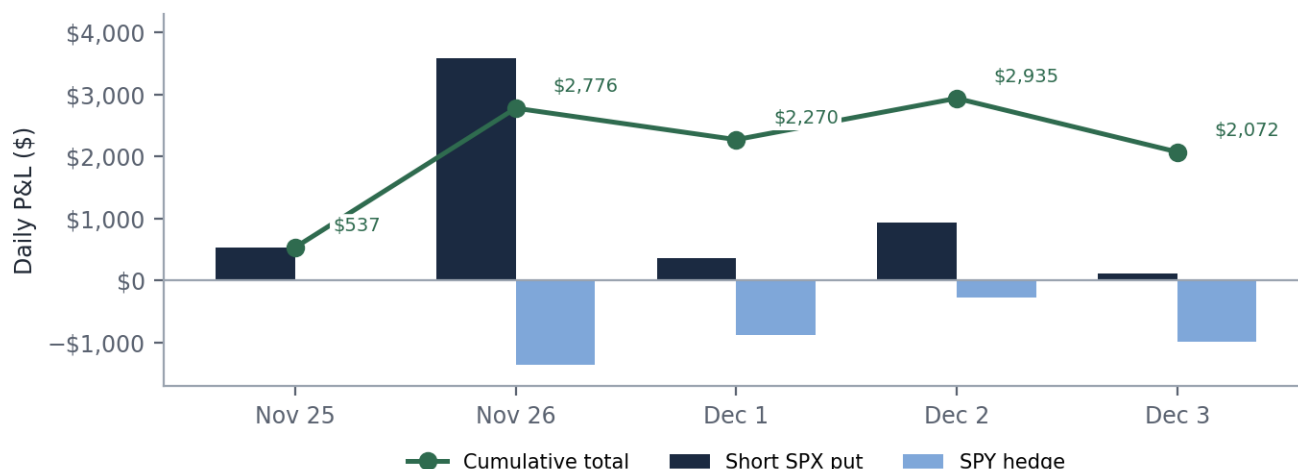
Three hedged positions run in a paper-trading account for FIN 330 (Derivatives) at UW–Madison, Fall 2025: a daily delta hedge of a short index put, a MicroStrategy-versus-bitcoin pair trade, and an inverse-ETF hedge. Each was logged trade by trade and reconciled to the P&L.

3 hedged trades logged	+\$7,368 combined paper P&L	−0.54 option vs. hedge P&L correlation (delta hedge)
----------------------------------	---------------------------------------	--

Trade	Structure	Window	Net P&L
Delta hedge	Short 1 SPX Dec-18-25 6600 put; SPY re-hedged daily	Nov 24 – Dec 3, 2025	+\$2,072.02
Pair trade	Short 120 MSTR vs. long 528 BTCO ($\approx 1.5\times$ notional)	Sep 24 – Nov 17, 2025	+\$4,809.96
Inverse-ETF hedge	Long 8,758 SH vs. long 500 SPY, dollar-matched	1 day	+\$485.80
Combined			+\$7,367.78

1 • Delta hedge on a short SPX put

I sold one SPX December 6600 put and held a short SPY position sized to the put's delta each day. Because one SPX point is about ten SPY points, the hedge was $INT(\text{put delta} \times 100 \times 10)$ shares: 344 short on day 0, trimmed to 164 as the index rallied and the put's delta fell from -0.34 to -0.16 .



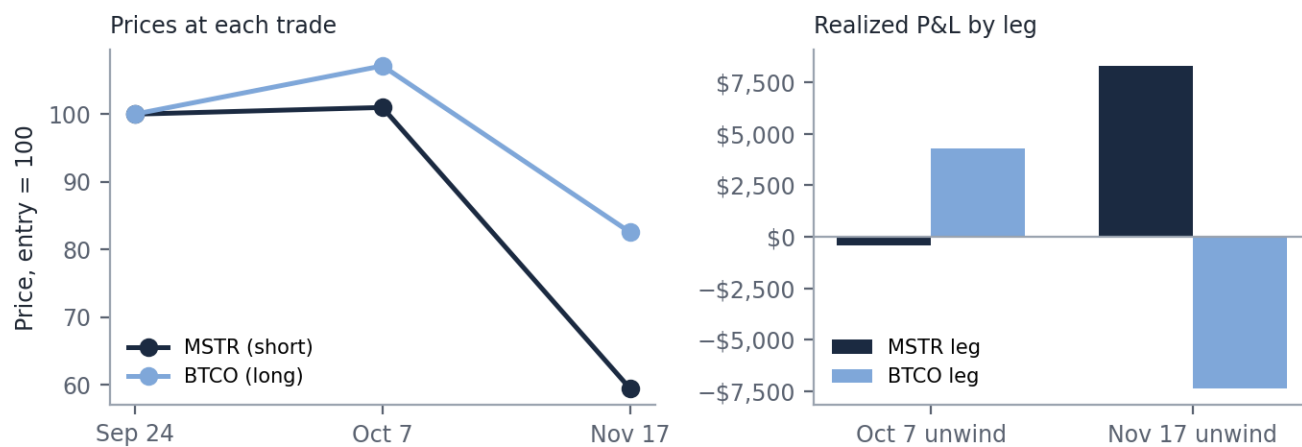
The put earned \$5,540 as it lost value; the SPY hedge gave back \$3,468 as SPY rose 2.3%. The two legs moved against each other (correlation -0.54), which is the hedge working. The \$2,072 residual reflects time decay and a large one-day drop in the put (Nov 26) that the prior day's delta did not fully capture: the gamma and volatility exposure a once-a-day hedge leaves open.

What I took from it

A delta hedge removes direction, not risk. The largest single-day P&L came from a jump the hedge ratio could not anticipate, which is why rebalancing frequency, gamma and vega belong in the plan, not just the starting delta.

2 · MSTR vs. spot-bitcoin ETF pair trade

The thesis was relative value: MicroStrategy traded at a premium to the bitcoin it holds and moves with roughly 1.5× bitcoin's beta. I shorted 120 MSTR at \$333 (\$39,960) and bought 528 BTCO at \$113.50 (\$59,928), a 1.5× notional ratio, then unwound half on October 7 and the rest on November 17.



Leg	Entry	Oct 7 (½ closed)	Nov 17 (closed)	Realized P&L
Short MSTR	120 @ \$333.00	60 @ \$336.31	60 @ \$198.00	+\$7,901.40
Long BTCO	528 @ \$113.50	264 @ \$121.60	264 @ \$93.69	-\$3,091.44
Net				+\$4,809.96

MSTR fell about 40% from entry while BTCO fell about 17%, so the premium compressed and the short leg outearned the long leg. The first half-unwind also locked in a BTCO gain before November's drawdown. Net return was about 12% of the MSTR short notional.

3 · Inverse-ETF hedge (SH vs. SPY)

I bought 8,758 SH (−1× S&P 500) and 500 SPY, about \$330,000 per leg, to see how cleanly a −1× ETF offsets its benchmark. Over one session SPY lost 0.12% (−\$390.00) and SH gained 0.27% (+\$875.80), a net of +\$485.80. The gap is tracking error from daily rebalancing and the ETF's own pricing, small relative to notional but not zero.

Across the three trades

Sizing drove every result: delta sets the hedge, beta sets the pair ratio, and dollar-matching sets the inverse-ETF test. Each log recomputes P&L from the fills, so the numbers can be traced line by line in the accompanying workbook.

Paper-trading account used for coursework; no real capital. Account identifiers removed. Prices are the recorded fill or mark prices from the original logs.