

Overnight Dip Buying and Gap-Up Morning Breakouts in Nasdaq-100 Futures: A Five-Year Study

Author: duediligence.fyi · Due Diligence Financial Tools Suite · research paper · updated October 14, 2026 (Version 3.7)

Note on data. Every result in this paper was backtested on real historical market data (CME 1-minute NQ and ES futures bars, 2010–2026, cross-checked against a second data source), not on simulated or generated prices. The results are hypothetical backtests after costs and do not guarantee future results.

Abstract

This study tests two fully rules-based, long-only intraday strategies in E-mini Nasdaq-100 (NQ) futures using five years of CME 1-minute data (October 2021 – September 2026). The **Overnight Dip Buy** places a limit order at the prior New York session low during the overnight session. The **Morning Trend Breakout** buys a breakout of the first trading hour, but only on gap-up days in an uptrend. Rules were designed on 2021–2024 and checked on 2025–2026, and on a second market (E-mini S&P 500, ES) with no changes. Both are published in the Due Diligence Financial Tools Suite as NinjaTrader 8 strategies with matching chart studies and as TradingView Pine Script strategies; the NinjaTrader logic reproduces every trade in this paper.

On NQ, the Overnight Dip Buy with its default 0.1R target won 90% of 197 trades and earned +\$26,484 on four Micro contracts after costs ($t = 4.57$); a 0.2R target won 77% and earned +\$32,002 ($t = 3.62$). The Morning Trend Breakout, with entries until 11:30am, won 75% of 153 trades and earned +\$29,458 ($t = 4.33$). Both were profitable in the held-out period, in the 2022 bear market, and on ES. Their daily results were uncorrelated ($\rho = -0.03$), so running both produced +\$55,942 with a maximum drawdown of −\$3,316, an annualized Sharpe ratio of 2.63 and profitable months 87% of the time. The main caveats are that the strategies were selected from about 250 tested variants, both are long only, and profits depend on wide stops that make single losses large.

Version 3 (September 2026) adds a Daily Playbook that trades NQ every full session: the two setups first, then a 3pm momentum trade on days neither fires. Over five years it made 1,237 trades, won 79.6% and returned +\$75,084 on 4 MNQ after costs, including +\$25,810 in 2025–26. Version 3 also hardens live order handling in the NinjaTrader add-ons.

Version 3.3 (September 2026) tests about 25,000 Asia, London and New York session rules on NQ, ES, gold (GC) and crude (CL). One passed: the London Dip, a buy limit at the Asia-session low during London hours on NQ uptrend days. It won 80% of 214 trades and made +\$3,012 on one MNQ after costs, including the held-out 2025–26. Gold and crude produced no rule worth shipping.

Version 3.4 (September 2026) re-tests every method on 2010–2021 data the study had never seen. The Overnight Dip Buy held up; the Morning Breakout, London Dip and 3pm filler lost money before 2021, so most of the profit reported below comes from 2022–2026. A range filter for the Dip Buy (trade only when the prior New York range is at least its 20-day average) was profitable in every period on NQ and ES and is on by default from Version 3.4.

How did we discover this? (quick answers)

Where does the data come from? Five years of CME 1-minute bars for NQ and ES (Databento, Sep 2021 – Sep 2026), front-month contract each session, cross-checked against NinjaTrader exports (99%+ of bars matched).

How were the methods found? By elimination. A first idea (an Asia-session breakout built on 10 weeks of data) failed over five years, so every later idea had to pass three gates: profitable on Oct 2021 – Dec 2024 (design), still profitable on Jan 2025 – Sep 2026 without changes (test), and profitable on ES with the same settings. About 250 variants were tried; two passed.

Why these two? Scanning overnight behaviour around the prior day's levels showed that dips to the prior New York low usually bounced before the US open (the Overnight Dip Buy). Scanning the day session showed that opening-range breakouts were weak on their own but strong on gap-up days in an uptrend (the Morning Trend Breakout). Both fit patterns in the academic literature: overnight drift and intraday momentum.

How were the settings chosen? Each setting was picked in the design years, then kept only if nearby values also worked. Later changes had to help on both NQ and ES: exiting at 8:25am (the 8:30 data releases caused most losses), the 0.1R target (highest Sharpe ratio), and the 11:30am cut-off. Changes that helped one market but hurt the other were rejected.

Where does the strategy make its decisions?

Time (ET)	Overnight Dip Buy	Morning Trend Breakout
4:00pm	Records the 9:30–4:00 high and low (half-days skipped)	Records the 4:00pm close for the 20-day average
6:00pm	Trades tonight only if price opens inside that range	—
6:00pm–3:00am	Limit buy at the prior low; cancelled if the prior high trades first	—
8:25am	Closes any open trade	—
9:30am	—	Trades today only if in an uptrend and gapping up
10:30am–11:30am	—	Buys the first 1-minute close above the 9:30–10:30 high
3:55pm	—	Closes any open trade

Stops and targets are set at entry and never moved: 0.8R stop and 0.1R target for the Dip Buy, range low and +0.5× range for the Morning Breakout.

Where do the Model 2 warnings come from? From the path of every historical trade: the share of trades that ended as losses after moving 25–50% of the way to their stop. Rules that acted on those warnings were tested and lowered results, so Model 2 displays them without changing the exits.

1. Introduction

The question was simple: can a retail trader find a mechanical, repeatable edge in equity index futures outside the busiest part of the US trading day? Many popular trading methods are discretionary and promoted with performance claims that cannot be checked. This study instead

translates every idea into exact rules, tests it on minute-level data with realistic costs, and keeps only what survives data it was not designed on.

The research ran in three stages:

1. **Exploration (10 weeks).** An Asia-session range breakout, designed on July–September 2026, looked profitable (+\$2,910 on 4 MNQ). It lost money on the prior 10 weeks and on the five-year history. That failure shaped the rest of the study.
2. **Five-year search.** About 250 variants across overnight, London and daytime setups were tested on 2021–2024, and each candidate was then checked on 2025–2026.
3. **Cross-market validation.** The two survivors were run unchanged on five years of ES data.

Two strategies passed all three stages. This paper documents their rules, results and weaknesses.

Related literature

Both strategies sit inside well-documented patterns, which makes them more plausible than a pattern found by search alone.

Overnight returns. A large share of US equity index returns has historically accrued outside regular trading hours (Cliff, Cooper & Gulen, 2008; Kelly & Clark, 2011). Lou, Polk & Skouras (2019) show overnight and intraday returns are driven by different investor clienteles. Boyarchenko, Larsen & Whelan (2023) document an "overnight drift" in S&P 500 futures and link it to dealer inventory risk. The Overnight Dip Buy, which buys weakness overnight and exits before the US open, is consistent with this drift, and the failure of its short-side mirror (Section 7) fits an upward, asymmetric effect.

Intraday momentum and opening ranges. Gao, Han, Li & Zhou (2018) find that the first half-hour return of the S&P 500 ETF predicts the last half-hour return; Baltussen, Da, Lammers & Martens (2021) attribute part of this intraday momentum to hedging by options dealers. Holmberg, Lönnbark & Lundström (2013) find opening-range breakouts profitable in crude oil futures. The Morning Trend Breakout combines an opening-range breakout with a trend condition related to time-series momentum (Moskowitz, Ooi & Pedersen, 2012).

Event days. Lucca & Moench (2015) show that US stocks earned large excess returns in the 24 hours before FOMC announcements. Neither strategy filters event days; this is left for future work.

Backtest overfitting. Testing many variants inflates the best result (White, 2000; Bailey, Borwein, López de Prado & Zhu, 2014). Bailey & López de Prado (2014) propose deflating the Sharpe ratio for the number of trials, and Harvey, Liu & Zhu (2016) argue for a t-statistic hurdle near 3 when many factors are tested. The NQ results clear that bar ($t = 4.57$ and 4.33); the ES results (2.49 and 1.98) do not, which is why ES is treated as confirmation rather than independent proof.

Retail outcomes. Most individual day traders lose money (Barber, Lee, Liu & Odean, 2014; Chague, De-Losso & Giovannetti, 2019), and retail traders in zero-days-to-expiry options have lost money on average (Beckmeyer, Branger & Gayda, 2023). This motivates the conservative execution assumptions here and the options results in the Model 2 section.

2. Data

All results use one-minute OHLCV bars from CME Globex (Databento dataset GLBX.MDP3, schema ohlcv-1m) covering every NQ and ES contract from September 2021 to September 2026.

Item	Detail
Markets	NQ (E-mini Nasdaq-100), ES (E-mini S&P 500)
Period	Oct 21, 2021 – Sep 21, 2026 (about 1,270 overnight sessions and 1,216 day sessions per market)
Contract selection	The most-traded outright contract in each session (front month by volume)
Time zone	US Eastern; the overnight session runs 6:00pm – 9:30am, the New York session 9:30am – 4:00pm
Cross-check	Overlapping bars matched NinjaTrader exports on 99% of closes and 99.9% of highs
Results reported in	Micro contracts: 4 MNQ (\$2 per point each) and 4 MES (\$5 per point each)

Both strategies use only levels from the current or prior session, so contract rolls do not distort them.

3. Methodology

Each strategy was replayed bar by bar with the same order logic as its NinjaTrader 8 implementation, so the backtest and the live code make identical decisions. A second replay, written directly from the final NinjaTrader chart study, matched this backtest on every Dip Buy night on both markets and every ES Morning trade; on NQ it added one Morning trade after the Thanksgiving 2024 break (+\$134).

- **Fills.** Market entries fill at the next bar's open plus 1 tick. Limit entries fill only when price trades through the limit. Stops fill at the stop (or the bar's open if price gapped past it) minus 1 tick. Time exits fill at the bar close minus 1 tick.
- **Conservative ordering.** When a bar touches both the stop and the target, the stop is assumed to fill first.
- **Costs.** \$1.50 per Micro contract round trip, plus the slippage above.
- **Design and test periods.** Rules were chosen using October 2021 – December 2024 (design). January 2025 – September 2026 (test) was used only to accept or reject a finished rule.
- **Cross-market check.** Accepted rules were run on ES with no changes to any parameter.
- **Significance.** For each strategy, the t-statistic of mean profit per trade tests whether the average trade differs from zero.
- **Holidays.** A New York session that closes early (for example the day after Thanksgiving) is not used as a prior range or in the 20-day average, and the Morning Breakout does not trade on those days.

One limitation of this process matters for everything that follows: about 250 variants were tested across the study. Even with a held-out period, some of the reported performance is likely due to selection.

4. Strategy 1: Overnight Dip Buy

Buying NQ at the prior day's low during the overnight session won nine trades in ten with the default target (three in four with the larger one) and was profitable in the design period, the test period and on ES.

Rules.

1. Record the prior New York session (9:30am–4:00pm) high and low. The range between them is R.
2. At the 6:00pm open, price must be inside that range. If price trades above the prior high before the setup triggers, there is no trade that night.
3. Place a limit buy at the prior low from 6:00pm to 3:00am. One trade per night, long only.
4. Stop: 0.8R below entry. Target: 0.1R above entry (version B, the default) or 0.2R (version A). Any open trade is closed at 8:25am, before 8:30am economic releases.

Rationale. Dips below the prior day's low during thin overnight trading often reflect temporary selling rather than new information, and NQ has tended to drift upward overnight. Requiring that price did not first break the prior high filters out nights that are already stretched.

Results. The setup triggered on about one night in six (197 of roughly 1,270 NQ nights). Both versions take the same entries; only the exit differs.

4 Micro contracts, after costs	NQ · B (0.1R, default)	NQ · A (0.2R)	ES · B (0.1R)	ES · A (0.2R)
Trades	197	197	194	194
Win rate	89.8%	76.6%	88.1%	75.3%
Break-even win rate	77.5%	62.9%	81.1%	66.2%
Average win / loss	+\$245 / –\$844	+\$438 / –\$740	+\$117 / –\$501	+\$224 / –\$438
Net profit	+\$26,484	+\$32,002	+\$8,416	+\$11,641
Design (2021–24) / test (2025–26)	+\$11,498 / +\$14,986	+\$11,408 / +\$20,594	+\$2,692 / +\$5,724	+\$5,342 / +\$6,299
Profit factor	2.57	1.94	1.73	1.55
t-statistic of mean trade	4.57	3.62	2.49	2.34
Maximum drawdown	–\$2,188	–\$2,910	–\$2,103	–\$2,427
Sharpe ratio (daily P&L)	1.94	1.56	1.09	1.03

The **break-even win rate** is the win rate needed to make zero given the average win and loss. Version B clears it by about 12 percentage points on NQ and 7 on ES; version A by 14 and 9.

How trades end. For version A, 68% of trades reached the target, 27% were closed at 8:25am, and 5% hit the stop. The 8:25am exits are the main source of losses. Moving the exit from 9:25am to 8:25am raised NQ profit from +\$30,930 to +\$32,002 and cut the average loss from –\$839 to –\$740. Version B's smaller target reduced trades still open at 8:25am to 7%, and any such trade is always a loss, since a 0.1R bounce would already have hit the target.

Which target. The package defaults to version B because it had the higher Sharpe ratio, profit factor and t-statistic and the smaller drawdown on both markets. Version A earned about 21% more on NQ and 38% more on ES, so it remains a one-setting switch for traders who accept deeper swings.

Risk. The stop is wide: the median stop was about 204 NQ points (\$1,630 on 4 MNQ), and the largest was \$8,856. Profitable NQ years: 5 of 6 for both versions (version A lost –\$808 in the short October–December 2021 sample; version B lost –\$46 in 2024).

5. Strategy 2: Morning Trend Breakout

Buying a breakout of the first trading hour, only on gap-up days in an uptrend, won 75% of trades on NQ and 72% on ES and was profitable in every calendar year on NQ.

Rules.

1. Trend filter: yesterday's 4:00pm close must be above the average of the last 20 closes.
2. Gap filter: today's 9:30am open must be above yesterday's 4:00pm close.
3. Mark the 9:30–10:30am high and low. Buy at market after the first 1-minute close above the high, up to 11:30am (12:00pm in the first version; see Section 7). One trade per day, long only.
4. Stop: the range low. Target: the signal price plus half the range width. Any open trade is closed at 3:55pm.

Rationale. A gap up in an established uptrend signals demand arriving before the open. When price then clears the first hour's high, the move often continues far enough to reach a modest target before the session's midday lull. The two filters remove about five of every six days, including most of the 2022 bear market.

Results.

4 Micro contracts, after costs	NQ	ES
Trades	153	158
Win rate	74.5%	71.5%
Break-even win rate	56.4%	63.5%
Average win / loss	+\$464 / -\$600	+\$206 / -\$358
Net profit	+\$29,458	+\$7,142
Design (2021–24) / test (2025–26)	+\$20,580 / +\$8,878	+\$4,983 / +\$2,159
Profit factor	2.26	1.44
t-statistic of mean trade	4.33	1.98
Maximum drawdown	-\$3,428	-\$2,908
Sharpe ratio (daily P&L)	1.83	0.87

61% of NQ trades reached the target, 26% were closed at 3:55pm, and 13% hit the stop. The median stop was \$998 on 4 MNQ, about 60% of the Dip Buy's.

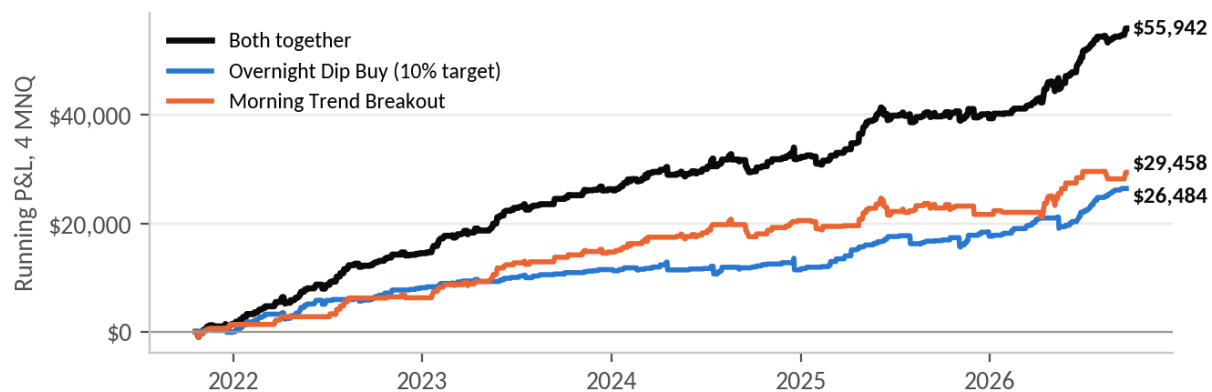


Figure 1 · Replay of both strategies, 4 Micro contracts, Oct 2021 – Sep 2026

The Dip Buy's win rate was stable, at 81–98% in every full year on NQ and ES with the default target. The Morning Breakout's win rate on NQ fell from 84–86% in 2022–2023 to 66–71% in 2024–2026, although it remained profitable in each of those years. On ES, the Morning Breakout lost –\$1,564 in 2025, and its ES t-statistic of 1.98 is borderline on its own.

6. Running both together, and a buy-and-hold comparison

The two strategies make money at different times, so combining them cut risk more than it cut return. Their daily profits were uncorrelated ($\rho = -0.03$ on days either traded; $\rho = -0.16$ monthly), and they never hold a position at the same time.

Figure 2 · NQ replay, Oct 2021 – Sep 2026, trades dated by CME trading day (interactive chart in the online version of this paper; the table below carries the same numbers).

NQ, Oct 2021 – Sep 2026	Dip Buy 0.1R (4 MNQ)	Morning Breakout (4 MNQ)	Both combined	Buy and hold 4 MNQ
Net profit	+\$26,484	+\$29,458	+\$55,942	+\$94,118
Maximum drawdown	–\$2,188	–\$3,428	–\$3,316	–\$48,212
Net profit ÷ max drawdown	12.1	8.6	16.9	2.0
Annualized Sharpe ratio (daily P&L)	1.94	1.83	2.63	0.56
Profitable months	82% (49 of 60)	63% (38 of 60)	87% (52 of 60)	55% (33 of 60)
Worst month	–\$1,340	–\$2,226	–\$2,168	–\$15,824
2022 result (NQ fell about 33%)	+\$8,094	+\$4,914	+\$13,008	–\$44,675
Time in the market	about 620 hours	about 420 hours	about 1,040 hours (3.5%)	100%

Buy and hold made more money in total, because NQ roughly doubled over the period. It did so by sitting through a drawdown about 15 times larger than the combined strategies'. Per dollar of drawdown, the combined strategies earned about eight times more. With the 0.2R Dip Buy target, the combination earned +\$61,460 with a –\$3,752 drawdown and a Sharpe ratio of 2.34. On ES, the default combination earned +\$15,558 (drawdown –\$2,821, Sharpe 1.38) against +\$48,470 for holding 4 MES (drawdown –\$25,805, Sharpe 0.55). Buy-and-hold figures use a back-adjusted continuous series, so they include the cost of rolling contracts.

7. Robustness and rejected hypotheses

Most ideas tested in this study failed, and the failures are as informative as the two survivors.

Neighbouring settings. Both strategies stayed profitable when their parameters moved. For the Dip Buy, targets of 0.1R, 0.15R and 0.2R, and exits at 8:25am or 9:25am, were all profitable on NQ and ES. For the Morning Breakout, 30- and 60-minute opening ranges, targets of 0.5× and 0.75×, with or without the trend filter, and with or without the gap filter were tested with the stop at the range low. All 16 combinations were profitable in both the design and test periods. A result that holds across nearby settings is less likely to be a fitting accident.

The mirror image fails. Selling the first overnight break above the prior day's high, the short-side twin of the Dip Buy (tested with a 0.1R target and 0.8R stop), lost money in the test period (−\$5,927 on 4 MNQ) and had a worst year of −\$10,732. This asymmetry suggests part of the Dip Buy's edge comes from NQ's upward drift rather than a symmetric mean-reversion effect.

Rejected strategies (five-year NQ results, 4 MNQ, after costs):

Idea	Trades	Win rate	Net profit	Why rejected
Asia-session range breakout (9:00–9:30pm)	1,250	38%	−\$6,412	Profitable only in 2026, the period it was designed on
London breakout of the overnight range	955	42%	−\$8,922	Lost in 5 of 6 years
Return to prior-day point of control	548	49%	−\$9,676	Lost in 4 of 6 years
Fade 2σ moves back to VWAP	2,306	26%	−\$16,984	Lost every year
Fade a failed 6–7pm breakout	1,166	21%	+\$7,262	About \$6 per trade; losing streaks up to 19
Fibonacci “optimal trade entry” method from a popular video	168	37%	+\$2,130	Too few trades, lost in 3 of 6 years
Trendline break with trailing trendline stop (15-min, day session)	505	45%	+\$40,355	Without its 5 best days, only +\$4,693; negative on ES without them

Win rate is not the goal. Many rejected setups reached 75–85% win rates by using small targets and wide stops, yet still lost money because each loss erased several wins. The two accepted strategies were chosen on expectancy, the average profit per trade, and on consistency across years and markets. Their high win rates are a by-product.

Improvements tested for the final package. Before the two methods were packaged together, each candidate change was re-run on both markets over all five years (4 Micro contracts, after costs). A change was adopted only if it helped on NQ and ES; changes that helped one market and hurt the other were treated as likely curve-fitting.

Change tested	NQ	ES	Decision
Morning last entry 11:30am instead of 12:00pm	Sharpe 1.64 → 1.83; net +\$27,558 → +\$29,458	Sharpe 0.82 → 0.87; drawdown -\$4,303 → -\$2,908	Adopted
Dip Buy default target 0.1R instead of 0.2R	Sharpe 1.56 → 1.94; drawdown -\$2,910 → -\$2,188; net -17%	Sharpe 1.03 → 1.09; drawdown -\$2,427 → -\$2,103; net -28%	Adopted as default; 0.2R kept as an option
Dip Buy stop 0.6R or 1.0R instead of 0.8R	Sharpe 1.58 / 1.41 (was 1.56)	Sharpe 1.11 / 1.27 (was 1.03)	Rejected: markets disagree
Skip nights with the widest or narrowest 10% of prior ranges	Net -5% to -41%	Net -54% to +18%	Rejected
Morning target 0.75× range instead of 0.5×	Net +\$32,040 but drawdown -\$4,442	Test period -\$78; drawdown -\$5,188	Rejected
Morning 30-minute opening range	Sharpe 0.83	Sharpe 0.21	Rejected
Size each trade to a fixed dollar risk (up to 10 contracts)	Dip 0.2R net \$32,002 → \$20,534; Sharpe 1.56 → 1.34	Dip 0.2R net \$11,641 → \$5,091	Rejected; fixed size plus an optional maximum-risk skip instead
Trade ES alongside NQ	Portfolio Sharpe 2.63 → 2.49	Daily correlation with NQ 0.52	Not adopted: ES is an alternative market, not an add-on

The 11:30am cut-off removed 23 late NQ breakouts that lost -\$1,900 between them; on ES the 15 removed trades roughly broke even (+\$65), and dropping them cut the drawdown by a third. It helped NQ in both the design and test periods but lowered ES design-period profit by \$647. Because it was chosen after the test period had been seen, it adds slightly to the selection bias discussed below. Risk-based sizing failed because it cut size on the widest-range nights, which produced a large share of the profit: skipping the widest 10% of nights alone removed 30% of NQ profit.

Model 2 extensions: early warnings, more trades and options

Model 2 of the Due Diligence Financial Tools Suite adds visual zones and early warnings, and tests three extensions. The warnings are informative, but none of the early-exit rules beat the original exits on both markets.

Early warning of a stop-out. The share of trades that ended as losses rises sharply once a trade moves against the entry (4 Micro contracts, after costs):

Trade state	NQ share lost	ES share lost
Any Dip Buy trade (0.1R target)	10%	12%
Dip Buy 30% of the way to its stop	43%	47%
Dip Buy 50% of the way to its stop	63%	67%
Dip Buy still open at 5:00am	58%	65%
Any Morning Breakout trade	25%	28%
Morning 25% of the way to its stop	45%	48%
Morning 50% of the way to its stop	69%	76%

Acting on these warnings did not pay for the Dip Buy. Exiting at 50% of the stop distance cut NQ profit from +\$26,484 to +\$16,734 and the Sharpe ratio from 1.94 to 1.21 (ES: +\$8,416 to +\$6,064); exiting at 3:00am or 5:00am also lowered results on both markets, because many deep dips still recovered. For the Morning Breakout, a stop at the middle of the opening range lowered NQ profit by 15% (Sharpe 1.83 to 1.70) but cut its drawdown from −\$3,428 to −\$2,316, and improved ES on every measure (Sharpe 0.87 to 1.20). The suite therefore shows warnings as information and keeps the mid-range stop as an optional defensive setting.

More trades. The two methods together average about 70 trades a year per market. Every way of adding trades lowered quality: removing the Morning gap filter doubled its trades but cut the NQ Sharpe ratio from 1.83 to 1.17 and turned ES negative in the test period; a daytime version of the Dip Buy (9:30am–1:00pm) reached a Sharpe ratio of only 0.84 on NQ ($t = 1.91$); allowing a second Dip Buy after a winning trade added about 25 trades a year and helped ES (Sharpe 1.09 to 1.20) but hurt NQ (1.94 to 1.32). The cleanest route to more trades is running both markets, about 140 trades a year, with a combined Sharpe ratio of 2.49 and roughly twice the risk.

Options translation. The Morning Breakout signals were replayed as QQQ and SPY call options. No historical options prices were available, so option values were modelled with Black-Scholes using implied volatility equal to 1.1 times trailing 20-day realized volatility, a 2-cent half-spread and \$0.65 commission per contract per side, with underlying moves taken from NQ and ES. At-the-money 0DTE calls lost money (QQQ: 50% winners, −\$60 per contract per trade), consistent with the retail 0DTE literature. Calls about 2% in the money with 2–5 days to expiry kept most of the edge (QQQ 2DTE: 69% winners, +\$56 per contract per trade; 5DTE: +\$51), while SPY was weaker (+\$14 at 2DTE) and the 2025–2026 test period was close to break-even for both. The Overnight Dip Buy has no ETF-options equivalent because QQQ and SPY options do not trade overnight. These option results are model-based and should be treated as indicative only.

Candle Range Theory (CRT). CRT, a concept from ICT trading education, marks one candle's range, waits for the next candle to raid its high or low, and trades only after price closes back inside. Written as exact rules and tested on the article's suggested windows, CRT had no edge on its own:

CRT setup (5 years, 4 Micro contracts)	Trades/yr	NQ net	ES net	t (NQ)
4-hour candles 1–5am / 5–9am, far-end target	113	–\$4,634	–\$6,443	–0.39
4-hour candles 1–5am / 5–9am, 50% target	80	+\$3,521	–\$4,442	0.56
1-hour candles 1–2am / 2–3am	115	–\$7,066	–\$4,507	–1.34
1-hour candles 7–8am / 8–9am	103	–\$2,356	–\$4,700	–0.36
1-hour candles 9:30–10:30 / 10:30–11:30	92	–\$29,436	+\$1,713	–2.22
Dip Buy + CRT close back above, stop under the raid	28	+\$2,646	–\$1,949	0.91
Dip Buy + CRT close back above, original stop	28	+\$14,682	+\$2,331	3.59

The Overnight Dip Buy already is a daily bullish CRT: the prior New York session is the range candle and the overnight dip below its low is the raid. The only difference is timing: the Dip Buy buys at the low, while CRT waits for a 15-minute close back above it. That confirmation raised the NQ win rate from 90% to 94% by skipping 58 of 197 nights: 28 that bounced to the target before any 15-minute close and 30 that never closed back above the low before 3:00am. Together those nights held 45 winners and 13 of the 20 losers. On the 139 nights both versions traded, CRT entered a median 8.5 points higher, cutting the average win from \$264 to \$172. Net profit fell 45% on NQ and 72% on ES, and the simulated evaluation pass rate fell from 86% to 81%. CRT confirmation is therefore included as an optional setting, off by default.

Daily Playbook: a trade every session (Version 3)

No single every-day rule kept its edge in testing. A playbook that trades the two setups first and adds a 3pm momentum trade on the remaining days does keep it on NQ: it trades 100% of full sessions and wins 79.6%.

The search. We tested about 2,400 versions of 15 setup types. They included CRT on the Asia range, the prior day and 1-, 2- and 4-hour candle pairs, plus overnight drift, gap fills, range fades, opening-range breakouts, trend and momentum rules. Each was tuned on 2021–24 only, then checked unchanged on 2025–26 and on ES. Tiny targets pushed win rates to 75–90%, but almost every daily rule lost money in 2025–26 or on ES.

Setup (best 2021–24 NQ version)	Days traded	Winners	NQ 2021–24	NQ 2025–26	ES 2021–24	ES 2025–26
Trend regime (last 10 days' direction)	100%	63%	+\$23,711	+\$4,706	+\$1,636	+\$2,665
Overnight drift (buy every night)	100%	69%	+\$9,107	–\$13,940	–\$10,112	–\$2,607
Opening-range breakout (30 min)	100%	37%	+\$66,266	–\$17,550	+\$19,619	–\$15,546
Late-day momentum, every day	95%	72%	+\$24,860	–\$7,851	+\$4,369	–\$10,784
Gap fill at 9:30	95%	58%	+\$17,172	+\$21,324	–\$4,199	+\$4,338
CRT: Asia range (8pm–midnight)	79%	75%	–\$1,943	+\$22,601	–\$688	–\$8,208
CRT: prior New York day	74%	22%	+\$23,980	+\$26,146	+\$4,696	+\$5,587
Quarter-level dip buy (night)	28%	84%	+\$13,054	–\$3,022	–\$439	+\$590
CRT 4-hour: 1–5am / 5–9am	22%	64%	+\$4,057	+\$197	–\$326	–\$2,424
CRT 4-hour: 2–6am / 6–10am	16%	85%	+\$6,377	+\$2,860	+\$155	–\$471

4 micros, after costs. Only the 10-day trend rule stayed positive in all four columns, with 63% winners and a thin edge. The one CRT lead is the prior-day sweep and reclaim: it made money in all four columns but only 22% of trades won.

The 3pm rule. On a day when neither the Dip Buy nor the Morning Breakout traded, at 3:00pm trade in the direction price has moved since the 6:00pm open. The target is $0.05 \times \text{ATR}$ and the stop $0.5 \times \text{ATR}$, where ATR is the average 6pm–5pm range of the last 20 full sessions. The trade is flat by 4:00pm. It follows the intraday-momentum findings of Gao, Han, Li & Zhou (2018) and Baltussen, Da, Lammers & Martens (2021).

NQ, 4 MNQ after costs	Days traded	Winners	5 years	2021–24	2025–26	Worst drawdown	Months up
Dip Buy + Morning Breakout only	27%	83%	+\$55,012	+\$31,832	+\$23,180	–\$3,316	87%
3pm momentum (days the others skip)	73%	78%	+\$20,072	+\$17,442	+\$2,630	–\$5,439	65%
Daily Playbook (all three)	100%	80%	+\$75,084	+\$49,274	+\$25,810	–\$5,225	80%

The 3pm trade adds the most days but the least edge. It made +\$10,864 in 2022 but only +\$236 in 2025. Its average win is +\$134 against an average loss of –\$381, and 3 of 891 trades hit the stop. On ES it lost –\$5,294 in 2025–26, so the scripts turn it off for ES and MES by default.

Filters tested in Version 3.

- **Fed decision days:** the Morning Breakout was weak on them (NQ: 6 trades, –\$176; ES: 7 trades, 43% winners, –\$1,652). The 3pm trade on NQ was strong (32 trades, 97% winners, +\$2,826). The samples are small, so this is a caution, not a rule.
- **Volatility regime:** measured by the trade's own ATR, it gave no consistent 3pm filter. On NQ in 2025–26 the trade made money in high- and low-volatility periods but lost in normal ones.

Every trade is in the workbook sheets "Playbook Summary", "Daily Playbook NQ/ES" and "3pm Momentum NQ/ES".

Version 3.1: choosing the mode. Mode 1 with a second Dip entry after a target made the most on NQ, so it is the default. The second entry buys the prior New York low once more before 3:00am, if the prior high has not traded. It adds about 40% more Dip trades at nearly the same win rate. Turning the Morning Breakout off raises the win rate but gives up about \$61,000 over five years. Figures are for 1 NQ, with 1 tick of slippage and \$4 commission.

Trade mode (NQ, 1 contract)	Trades/day	5 years	Winners	2025–26	Last 90 days	Worst drawdown
1 Playbook: Dip + Morning, 3pm if neither (default)	1.08	+\$187,352	79.7%	+\$59,346	+\$20,259 (83%)	–\$14,570
2 Dip + 3pm (Morning off)	1.07	+\$125,812	80.2%	+\$42,181	+\$20,244 (86%)	–\$17,170
3 One trade per day	1.00	+\$168,176	79.4%	+\$56,930	+\$22,588 (84%)	–\$13,633
4 One per method (3pm whenever flat)	1.31	+\$163,417	79.0%	+\$44,432	+\$23,405 (80%)	–\$16,466

Each mode was backtested as the strategy runs it: second Dip entry on (off in mode 3), at most 3 trades a day. For comparison, V3 without the second Dip entry made +\$182,133. On ES the 3pm trade is off by default, so there modes 1, 3 and 4 trade only the Dip Buy and Morning Breakout.

A live NinjaTrader run from Jun 26 to Sep 24, 2026 (1 NQ) showed 51 trades, 82.35% winners and +\$14,875. The replay of the same stretch had 82.5% winners but 63 trades. The difference is warm-up: the Morning and 3pm legs need 20 sessions of history, so the scripts now recommend loading 120 days.

Version 3: live execution controls

A live NinjaTrader log showed that execution, not the rules, caused orders to stay open. Version 3 fixes the causes in the add-ons. None of these changes alter the backtest results above.

What the log showed.

- **History and live were mixed.** Every event before "Enabling NinjaScript strategy" came from NinjaTrader re-running the past month when the strategy was switched on. Those were not live orders.
- **Orders survived a disable.** Cancelling entry and exit orders on disable was switched off. The orders were good-till-cancelled, so leftovers could stay on the account for days.
- **Re-enabling orphaned orders.** With "wait until flat" start-up, a re-enabled strategy does not own the previous run's orders or position.
- **Too little history.** About 30 days were loaded, but the Morning Breakout needs 20 New York closes, so it skipped every day for a month.

Control added in Version 3	What it does
Day orders	Orders expire at the end of the CME trading day instead of staying until cancelled.
Single time exit	The 8:25am, 3:55pm and 4:00pm exits are sent once, not on every bar.
Order watchdog (live)	Cancels a stop or target still working after the position is flat. Cancels a Dip entry left outside its window. Resends a time exit that has not filled within 3 minutes.
Going-live check	Compares the strategy's position with the account's and flags working orders the run did not place. It can optionally cancel them.
Debug log	Tags every event DD LIVE or DD HIST: orders, fills, positions, skips, and results in points and dollars. It writes to the Output window and a daily file.
Status box	Shows live or history, position, working orders, today's profit and loss, what each setup is doing, and any warnings.

Operating rules for live trading.

1. Under Tools → Options → Strategies, cancel entry and exit orders when a strategy is disabled.
2. Flatten before disabling, and never re-enable with a position open.
3. Run the Daily Playbook alone, not beside the separate Dip Buy or Morning Breakout strategies.
4. Load 90 days of 1-minute data on the CME US Index Futures ETH session, with the time zone set to Eastern.

The scripts were not compiled on our build machine; NinjaTrader compiles them on import. Live fills and slippage may differ from the backtest's assumptions.

Version 3.2: data checks

Two checks from the September 28, 2026 audit apply to the whole suite. The research bars matched bars exported from NinjaTrader on 99.1% (NQ) and 99.7% (ES) of minutes to the tick. A live NinjaTrader performance report (51 trades, 82.35% winners) agreed with the research on win rate and largest win.

Version 3.3: Asia, London and New York sessions in NQ, ES, gold and crude

Of about 25,000 session rules tested on NQ, ES, gold (GC) and crude (CL), one new setup passed every check: the London Dip on NQ, with 80% winners over 214 trades and profit in both periods. Gold and crude produced nothing worth shipping.

Data and tests. GC 1-minute bars cover Oct 2021 – Sep 2026 (1,230 sessions). CL covers Oct 2023 – Sep 2026 (729 sessions), so its held-out period starts in April 2025. Sessions were Asia (6pm–2am ET), London (2–8am) and New York (NQ/ES 9:30–4:00, GC 8:20–1:30, CL 9:00–2:30). Fills and costs follow Section 3, at \$1.50 per micro contract (MNQ, MES, MGC, MCL). A rule had to profit in both periods, reach $t \geq 2$, trade about every two weeks or more, and sit on a plateau of profitable neighbouring settings.

What failed. Opening-range breakouts, sweeps and reclaims, and momentum rules lost money after costs in all four markets. The scan did re-find the Overnight Dip Buy (ES, NQ) and the Morning Trend Breakout (NQ), a sign that it detects real edges. Gold's best rules sat on narrow ridges: buying London dips lost in all 324 variants, and selling the Asia high was profitable in both periods in only 27%. In crude, at most about one variant in ten profited in both periods, and Wednesday 10:30 inventory-report breakouts lost in every variant.

London Dip rules. (1) Asia range = the 8pm–2am ET high and low. (2) Trade only when the prior 4pm close is above its 20-day average. (3) At 3am price must be inside the Asia range. (4) Buy limit at the Asia low from 3:00 to 7:00am; skip the night if the Asia high trades first. (5) Target $+0.3 \times \text{range}$, stop $-1.5 \times \text{range}$, flat at 8:00am.

London Dip, 1 micro, after costs	Trades	Win (design / held-out)	Avg trade	Net design / held-out	t
NQ, target 0.3 (default)	214	83% / 75%	+\$14.07	+\$1,717 / +\$1,294	3.01
NQ, target 0.2	214	87% / 88%	+\$10.31	+\$820 / +\$1,387	2.50
ES, target 0.3	215	80% / 79%	+\$5.23	+\$502 / +\$622	1.95

Robustness. In a 5,184-variant neighbourhood on NQ, all 432 variants with a 3:00am start and the 20-day filter were profitable, and 94% were profitable in both periods (median t 2.24). The rule needs both conditions: a 2:00am start or a 50-day average removed the edge. Buying at 3:00am and selling at 8:00am on the same uptrend days earned +\$5.05 a trade against +\$14.07, and downtrend nights lost −\$7.65 a trade. A separately written bar-by-bar implementation reproduced all 214 NQ trades exactly. Only 12% of London Dip days are Dip Buy days, and daily results are uncorrelated ($p = 0.04$).

Risk. The average win is +\$41 and the average loss −\$96 per MNQ; the median stop is 96 NQ points. NQ was profitable in every calendar year 2021–2026, but 2026 so far has 68% winners, and August 2026 was the worst month (−\$324 per MNQ).

Session hit rates. New York took out at least one side of the London range on 94–100% of days, and London one side of Asia on 86–96%. After London broke one side, New York closed in that direction only 46–53% of the time. These rates describe range expansion, not direction, and ship as the Session Map study.

Candle Range Theory. CRT trades a candle whose range is swept by the next candle, which then closes back inside. We tested 528 CRT rules on the four markets: 1-hour and 4-hour candles (CME and New York alignment) and the daily candle swept intraday. None passed. NQ's best, a 4-hour setup with 76% winners (t 2.3), worked only at one exact timing and failed on ES; the classic stop just past the sweep left no profit after costs. As an optional confirmation on the London Dip, keeping its wide stop, CRT helped on NQ: a 5-minute close back above the swept Asia low with the 0.3 target won 82% of 191 trades (+\$2,338, maximum drawdown −\$227), and a 15-minute close with the 0.2 target won 91% of 128 trades (+\$1,510, −\$258). That is 22–32% less profit than the standard rule, for about half its drawdown. The option ships off by default.

Version 3.4: sixteen years, and a range filter for the Dip Buy

Version 3.4 (September 2026) re-tests every method on data this study had never seen: NQ and ES 1-minute bars from January 2010 to October 2021 exported from NinjaTrader, plus YM (2012–2026) and RTY (2017–2026). Prices are the real, unadjusted contract prices; the nights on which the continuous series switches contract are left out. Because a fixed \$1.50 micro commission weighs far more when NQ traded near 2,000 than near 20,000, the periods are compared in basis points of price per trade, after an E-mini commission of \$4.50 a round trip.

Average per trade, basis points	NQ 2010–15	NQ 2016–Oct 21	NQ Oct 21–Sep 26	ES 2010–15	ES 2016–Oct 21	ES Oct 21–Sep 26
Overnight Dip Buy	+5.5	−2.2	+10.0	+4.2	+0.9	+4.6
Dip Buy + CRT 15-min	+1.0	+0.7	+7.3	+2.7	+1.6	+2.5
Morning Trend Breakout	−3.8	+0.8	+14.3	−5.7	−2.5	+4.6
London Dip	−1.1	−2.3	+4.2	−1.7	−0.3	+2.4
3pm Momentum (every day)	−1.8	−0.3	+1.2	−3.2	−1.2	+0.2
Daily Playbook, mode 1	−1.1	−0.7	+4.9	−2.6	−1.1	+1.4

What held. The Overnight Dip Buy made money on ES in every period and on NQ in two of three (it lost in 2016–2021), winning 80–90% of trades throughout. The Session Map and Prior Day Levels statistics stayed within a few points of their published values in every market.

What did not. The Morning Trend Breakout, the London Dip and the 3pm filler lost money on NQ and ES before 2021; year by year, their gains are concentrated in 2022–2026. The 2021–2024 design and 2025–2026 held-out split could not reveal this, because both halves come from the same market period.

The search. We tried 199 single-condition filters and 104 alternative settings, choosing only on 2010–2021: a candidate had to be profitable, and better than the unfiltered rule, in both 2010–2015 and

2016–2021 on both NQ and ES. Nothing rescued the Morning Breakout, London Dip or 3pm filler. For the Dip Buy, requiring the prior New York range to be at least its 20-day average passed once the minimum-trades rule was relaxed from 35% to 25% of trades (a one-third slice cannot keep 35%). The evidence for it comes from checks not used to choose it: every threshold from 0.8 to 1.5 times the average improved every period on both markets; it improved 2021–2026 (NQ +18.6 against +10.0 basis points a trade, ES +8.6 against +4.6); and it helped on YM and RTY. It does not raise the win rate; it roughly doubles the profit per trade with about 40% as many trades.

Overnight Dip Buy, per micro	2010–15	2016–Oct 2021	Oct 2021–Sep 2026
NQ · V3.3 defaults	+\$332 229 trades, 88%	–\$757 279 trades, 80%	+\$6,526 281 trades, 88%
NQ · V3.4 defaults	+\$346 80 trades, 88%	+\$143 102 trades, 76%	+\$5,379 107 trades, 87%
ES · V3.3 defaults	+\$458 249 trades, 88%	–\$42 299 trades, 86%	+\$2,859 276 trades, 88%
ES · V3.4 defaults	+\$516 86 trades, 91%	+\$570 97 trades, 88%	+\$2,225 99 trades, 87%
Daily Playbook (mode 1), per micro	2010–15	2016–Oct 2021	Oct 2021–Sep 2026
NQ · V3.3 defaults	–\$2,028 1323 trades, 73%	–\$3,008 1512 trades, 74%	+\$18,650 1322 trades, 80%
NQ · V3.4 defaults	–\$360 246 trades, 65%	–\$127 323 trades, 68%	+\$12,725 260 trades, 80%
ES · V3.3 defaults	–\$384 368 trades, 73%	–\$1,196 504 trades, 74%	+\$4,631 428 trades, 82%
ES · V3.4 defaults	–\$378 218 trades, 62%	–\$533 309 trades, 67%	+\$3,991 256 trades, 77%

Per micro contract after \$1.50 commission; trades and win rate under each result. V3.3 defaults: second Dip entry on, 3pm on for NQ. V3.4 defaults: range filter on, second Dip entry on, 3pm off.

Changes in Version 3.4. The range filter is on by default in the Dip Buy strategies and chart studies; quiet nights show STAY AWAY with the reason. The 3pm filler is off by default on every market. The Morning Breakout and London Dip keep their defaults and are labeled in their status boxes. The filter's strategy logic was checked with a bar-by-bar replica: it made the same decision as the research on every night of 2010–2026 except one warm-up night, and a TradingView-style version (with the 30-minute average) agreed with it on all 1,273 nights of 2021–2026 and on 3,414 of 3,419 nights of 2010–2021.

What it means. The five-year results in this paper are faithful simulations, but most of their profit came from 2022–2026. Treat the Dip Buy as the core method, and size the Morning Breakout and London Dip knowing they lost money over 2010–2021.

Version 3.6: a conditions gauge for the Dip Buy

Can a trader be warned ahead of time about good and bad stretches? We tested eight measures known before each session or month: the 20-day average New York range as a percent of price and its one-year percentile, the distance from the 50- and 200-day averages, the drawdown from the 52-

week high, the 20-day return, and each setup's own result over the previous one and three months. Levels were set on 2011–October 2021 only (the thirds of that period) and then checked on November 2021–September 2026.

One measure held up for the Overnight Dip Buy in both periods and on both markets: the average New York session range over the last 20 sessions, as a percent of price. Quiet is below 1.00% on NQ and 0.755% on ES; Active is from 1.31% on NQ and 1.035% on ES. In every period and market, Dip Buy trades in Quiet conditions were near break-even and trades in Active conditions earned the most; the ordering Quiet, Normal, Active held in all four cases.

Dip Buy, average per trade (basis points after E-mini costs)	Quiet	Normal	Active
NQ · 2011–Oct 2021 (levels set)	-0.4 60 trades, 80%	+0.3 34 trades, 74%	+11.0 85 trades, 85%
NQ · Nov 2021–Sep 2026 (checked)	-23.0 3 trades, 33%	+4.3 30 trades, 87%	+20.7 73 trades, 89%
ES · 2011–Oct 2021 (levels set)	-0.1 51 trades, 84%	+3.1 49 trades, 86%	+15.6 79 trades, 94%
ES · Nov 2021–Sep 2026 (checked)	-0.9 16 trades, 69%	+4.3 32 trades, 91%	+16.6 50 trades, 90%

In the twelve months to October 2026, Dip Buy signals in Active conditions made \$10,460 of the setup's \$11,357 at four micros per market; signals in Quiet conditions lost \$250. No measure separated good from bad months for the Morning Breakout in both periods. Version 3.6 shows the gauge as a Conditions line in the Dip Buy status and alerts. It describes the market, not the next trade, and it changes no signal.

Version 3.7: the QQQ/SPY converter

The ETF overlay converts futures prices to QQQ and SPY prices with a ratio. Users had to recalibrate it often, so we measured how the ratio behaves on the 4:00pm closes of October 2025 to September 2026 (234 NQ and 235 ES sessions; QQQ and SPY daily closes). The ratio is not constant: it falls by about 0.015% a day as the futures carry runs down (an implied carry of 4.0% a year on NQ and 3.9% on ES) and jumps by 0.7–1.0% (about \$5–7 of QQQ) at each quarterly contract roll.

Error after holding a calibration (median, ETF dollars)	1 day	5 days	10 days	20 days
NQ → QQQ, one fixed ratio	\$0.12	\$0.56	\$1.14	\$2.31
NQ → QQQ, carry-adjusted (V3.7)	\$0.12	\$0.14	\$0.18	\$0.19
ES → SPY, one fixed ratio	\$0.13	\$0.63	\$1.27	\$2.56
ES → SPY, carry-adjusted (V3.7)	\$0.14	\$0.16	\$0.23	\$0.26

Version 3.7 pairs only futures and ETF bars with the same timestamp (a delayed futures feed can no longer be matched with a real-time ETF price), takes the median of the last 30 pairs, carries the ratio forward with the futures carry and resets at the roll. With no ETF data at all, a model of the form $\text{base} \times e^{\text{carry} \times \text{time to expiry}}$, fitted on the first half of the year and tested on the second, was within a median \$0.14 of QQQ (90th percentile \$0.56) and \$0.21 of SPY (90th percentile \$0.68). Version 3.7 also adds an end-of-day export to the NinjaTrader strategies (Daily Playbook, Dip Buy, Morning Breakout, London Dip): every bar, every setup decision with its reason, every order and fill with slippage, and

every closed trade with the signal that opened it, written as CSV files for each trading day. It only observes; no trading rule changed.

8. Limitations

- **Selection bias.** About 250 variants were tested. A held-out period and a second market reduce, but do not remove, the chance that the survivors are partly luck. Live results should be expected to be weaker than the replay.
- **Long-only in a rising market.** NQ roughly doubled over the sample. Both strategies profited in 2022, but only partly because they avoided many trades that year: the Morning Breakout's trend filter allowed just 14 trades in 2022. A long, grinding bear market remains an untested scenario.
- **Large single-trade risk.** The Dip Buy's median stop is about 204 NQ points. Losses are infrequent but large: about 1.7 times the average win with the 0.2R target and 3.4 times with the 0.1R target, so a short run of bad nights can erase weeks of gains. The largest single loss on 4 MNQ was $-\$2,910$ (0.2R) and $-\$2,150$ (0.1R); on 2 full-size NQ contracts the same trades cost five times as much.
- **Execution assumptions.** Slippage of one tick and \$1.50 per contract are reasonable for Micro contracts in normal conditions. Overnight liquidity is thinner, and fast markets around news can produce worse fills, especially on stops.
- **Short sample by trade count.** About 200 trades per strategy is enough for the t-statistics above, but not to measure how the strategies behave in rare events. The Morning Breakout's ES result ($t = 1.98$) is borderline on its own.
- **Declining win rate.** The Morning Breakout's NQ win rate fell from the mid-80s (2022–2023) to 66–71% (2024–2026). This may be noise or an early sign of decay.
- **No live track record yet.** All results are simulated. The next step is a forward test in a simulation account using the Due Diligence NinjaTrader strategies (DipBuyDueDiligence and MorningBreakoutDueDiligence) or their TradingView versions, with the chart studies alongside to compare each live trade with the rules.

Version 3.3 selection. The London Dip is one survivor of about 25,000 session variants. Its plateau, held-out profit and exact re-run reduce the chance that it is luck but do not remove it, and it rests on 214 trades.

9. Conclusion and further research

Version 3.4 narrows these conclusions. On sixteen years of data the Overnight Dip Buy is the durable method, and more so with the V3.4 range filter; the Morning Breakout, London Dip and 3pm filler made their money in 2022–2026 and lost it before 2021.

Two simple, fully mechanical long-only strategies in NQ futures showed positive, statistically significant expectancy over five years, held up in a period they were not designed on, and transferred to ES without changes. Run together with the default settings, they were profitable in 87% of months with a maximum drawdown about one-fifteenth that of buying and holding.

The broader lesson of the study is methodological. The first strategy, designed on ten weeks of data, looked convincing and failed completely over five years. Popular discretionary methods, once written

as rules, showed little or no edge. Only testing on data a strategy has not seen separated the two survivors from roughly 250 alternatives.

Version 3 answers a practical request: a trade every session. On NQ the Daily Playbook achieves it at 80% winners and +\$25,810 in 2025–26, but the extra trades come from a 3pm momentum rule whose edge has faded. The two original setups still earn most of the return. Version 3.3 tested the route of adding markets: ported to gold and crude, neither the Dip Buy nor the Morning Breakout logic survived costs. The only new rule that passed is the London Dip on NQ.

Further research:

- Forward-test both strategies in simulation for at least 30 trades each and compare fills with the replay.
- Test markets that do not move with NQ (10-year note, euro, Russell 2000) and a longer CL history; gold and crude failed in Version 3.3.
- Look for a filter that avoids the widest-stop nights without cutting the profitable wide-range nights; plain risk-based sizing lowered returns (Section 7).
- Add filters for scheduled news (CPI, FOMC, payrolls) and test whether skipping those sessions improves results.

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Citations follow APA 7th edition. Each entry was checked against the journal or SSRN record and the RePEc/IDEAS listing in October 2026; the DOI links resolve to the original paper (SSRN for working papers).

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Data sources and definitions

- **Market data:** Databento, CME Globex MDP 3.0 (GLBX.MDP3), 1-minute OHLCV bars for all NQ and ES futures contracts, September 2021 – September 2026, and for GC (2021–2026) and CL (2023–2026) in the Version 3.3 session study. Cross-checked against NinjaTrader 8 historical data exports.
- **Contract values:** Micro E-mini Nasdaq-100 (MNQ) \$2 per index point; Micro E-mini S&P 500 (MES) \$5 per index point; tick size 0.25 points for both (CME Group contract specifications).
- **Trade data:** every trade behind this paper, with entry, stop, target, exit and P&L, is in the companion workbook DueDiligence_5yr_Trade_Data.xlsx (both Dip Buy targets, Morning entries until 11:30am, NQ and ES).
- **Software:** Due Diligence Financial Tools Suite. NinjaTrader 8: strategies DipBuyDueDiligence and MorningBreakoutDueDiligence with chart studies DipBuyMarkersDueDiligence and MorningBreakoutMarkersDueDiligence. TradingView: Pine Script strategies for both methods. All use the default settings in this paper.
- **Break-even win rate:** $\text{average loss} \div (\text{average win} + \text{average loss})$.
- **Profit factor:** $\text{total profit from winning trades} \div \text{total loss from losing trades}$.
- **t-statistic:** $\text{mean profit per trade} \div (\text{standard deviation of trade profit} \div \sqrt{\text{number of trades}})$.
- **Maximum drawdown:** largest fall in cumulative profit from a previous peak.
- **Annualized Sharpe ratio:** $\text{mean daily profit} \div \text{standard deviation of daily profit} \times \sqrt{252}$, using all business days including days with no trade.

This paper describes personal research on historical data for educational purposes. It is not investment advice. Futures trading carries substantial risk of loss.

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