EMPIRICAL FINANCE RESEARCH REPORT

Where the De-SPAC Short Works: Lifecycle Decay, Operating Cash Burn, and Squeeze Risk

Lifecycle decay, operating cash burn, and implementable short expectancy

DISCOVERY-ONLY — NOT POPULATION EVIDENCE

Research cutoff: July 26, 2026

Current price histories are survivor-incomplete; all ten mandatory promotion gates remain open.

*All estimates in this draft are **discovery-only**. The current security-history panel fails every mandatory promotion gate in the frozen protocol. The results identify a concrete hypothesis and an implementable test for a new, survivor-complete sample; they do not yet establish a population result or a historically realizable net strategy.*

Abstract

Prior work establishes poor post-combination de-SPAC performance, but a blanket instruction to short every de-SPAC at one arbitrary date is economically incomplete. We study the opportunity as a lifecycle problem. In the current 171-firm discovery panel, short expectancy is broad during the first post-close year: a short entered after trading-day landmark 1 earns a mean gross payoff of 36.30% over six months and 46.01% over one year, with corresponding medians of 45.83% and 66.74%. Capacity-screened second-year event returns also remain positive: across all observations with a raw quote of at least $5 and trailing median dollar volume of at least $1 million, the six-month modeled-net short return averages 12.26%, with a median of 18.96% (q=0.00346). A point-in-time indicator of negative reported operating cash flow identifies the strongest internally coherent subset and separates it from cash-generating peers. Second-year cash burners have a pooled modeled-net mean of 21.18%, a median of 28.89%, and a 78.57% win rate. Their six-month event return, averaged first within entry month, exceeds cash-generating peers by 22.65 percentage points (Newey–West p=0.000040, within-family Benjamini–Hochberg q=0.000558). The cash-burn coefficient remains positive under the raw-quote-controlled Fama–MacBeth and pooled firm-wild tests, but it fails an alternative price basis, firm fixed effects, and a five-signal max-T adjustment. These observations overlap, the cell was selected after inspection, and neither statistic is a portfolio return.

We therefore simulate a fixed-share calendar portfolio that enters at the next open, permits one position per firm, holds 126 sessions, limits each new name to 2.5% of net asset value, charges 50 basis points round trip, and accrues a modeled 10% annual borrow fee on marked exposure. From July 2020 through July 2026, 378 monthly signals produce 102 entries after suppressing repeat signals while the same firm is already held. The portfolio earns an 8.37% annualized return with 12.71% volatility, a 0.70 zero-cash Sharpe ratio, and a 22.90% maximum drawdown. Its mean monthly return is 0.72% (Newey–West p=0.0118; moving-block 95% interval 0.21% to 1.30%). A retrospective 2023-and-later stability period earns 7.03% annualized with a 17.98% maximum drawdown. Because the rule was selected after inspection of the full panel, this chronological result is pseudo-out-of-sample, not validation.

The economic thesis is consequently narrower and more actionable than “de-SPACs fall from $10”: broad short returns are strongest early, capacity-screened returns remain positive during the second year, and negative operating cash flow identifies a selected subset that materially outperforms cash-

generating peers. No broad positive edge is detected after two years. The cash-burn result cannot be promoted until the census, permanent identifiers, inactive histories, terminal values, corporate-action checks, matched controls, observed securities-lending data, and untouched validation are complete.

1. Research question and hypothesis framing

The relevant short-selling question is not whether the average de-SPAC eventually trades below a nominal $10 reference. It is whether a live, tradable de-SPAC has positive subsequent short expectancy at an arbitrary decision date, how that expectancy changes with age, and which observable states distinguish continued deterioration from a squeeze-prone residual population.

This framing produces three testable propositions.

Lifecycle proposition. De-SPAC underperformance should be widespread soon after the legal business-combination close, when speculative valuations first confront operating-company results. If this is true, positive short expectancy should appear at several prespecified post-close landmarks and across month-end entry dates during the first year; it should not depend on one price threshold or one entry day.

Conditional-persistence proposition. Broad underperformance should not remain uniform indefinitely. Survivors become a selected mixture of operating successes, distressed firms, and low-float securities capable of extreme moves. During this later phase, negative point-in-time operating cash flow may identify firms whose operations continue to consume cash and whose equity remains vulnerable. The current cash-burn proposition emerged from the inspected discovery panel. It is a hypothesis to freeze and test on newly acquired or repaired histories, not a prespecified confirmatory hypothesis in this sample.

Implementation proposition. A useful signal must survive fixed-share accounting, overlapping signals, marked-exposure borrow costs, execution costs, concentration controls, and the unbounded loss profile of a short. Positive average event returns alone are insufficient.

The $10 merger reference remains a descriptive state variable. It neither defines inclusion nor supplies the paper's thesis.

2. Data and empirical design

2.1 Current discovery sample

The current confirmed-U.S. working set contains 253 transactions from 2016 through 2025, all originating in one 468-deal secondary academic ledger. A broader 1,656-row discovery union also

retains 1,188 unmatched SPACGraveyard records, but those rows are not verified completed U.S. combinations. An independent local source inventory further identifies a 1,403-record SPACDesk IPO universe containing 624 records labeled completed, plus overlapping boom-era ledgers of 286, 284, and 71 records. Those sources are not additive and their U.S. target status and legal-close evidence remain unadjudicated. The paper therefore treats 253 as a working analytical frame, not the findable population. Only 171 firms have usable discovery price histories after one known wrong-company series is excluded, or 67.6% of that frame.

The missingness is strongly related to terminal status. Only 6 of 37 firms flagged as failed or delisted have usable price coverage (16.2%), versus 76.4% for other firms, a 60.2 percentage-point gap. This imbalance is the most important limitation in the study. Missing failed securities can bias measured short returns either way: downward if omitted equities terminate at low or zero values, and upward if omitted cash takeouts, recoveries, OTC continuations, or squeeze paths are adverse to the short.

SEC work improves but does not resolve identity. Strong Item 2.01 close-filing candidates exist for 159 of 253 transactions, and 198 have some issuer CIK. No security has a dated CUSIP, PERMNO, FIGI, or equivalent permanent identifier. A complete non-overlapping ticker and exchange lineage does not yet exist. The terminal-event work identifies 37 failed/delisted proxies and SEC terminal candidates for 20 firms; four cash terminal values are complete, and four stock-consideration ratios still require successor-security price paths. None of this terminal ledger is yet joined to the return panel.

2.2 Entry clocks and return construction

The lifecycle panel evaluates trading-day landmarks 1, 21, 63, 126, 252, 504, and 756 after legal close. The month-end panel asks the “any point” question: state is measured at the last trading session of each month and execution occurs at the next regular-session open. Forward horizons range from 5 to 756 sessions; the principal trading horizon is 126 sessions.

For an entry price P_0 and exit value P_h, the gross short payoff is

$$\text{Gross short return}(0, h) = 1 - P(h) / P(0).$$

Prices use the available total-return adjustment and are expressed on an original-share-equivalent basis for return continuity across splits. A modeled net event return subtracts 50 basis points of round-trip execution cost and borrow accrued at a 10% annual rate. That rate is a scenario, not observed securities-lending history.

Month-end event observations overlap mechanically: a firm can contribute a new 126-session forward outcome each month. Those rows describe conditional expectancy and support calendar-clustered

inference, but they are not independent trades and cannot be compounded as a portfolio. The calendar portfolio instead suppresses a new signal while the same security is already held.

2.3 Point-in-time operating data

Fundamental signals are built from SEC Company Facts filings and joined only when the filing timestamp is no later than the signal date. Negative operating cash flow is the sign of the latest eligible reported operating-cash-flow duration fact, annualized by its reporting-period length; annualization does not change its sign. Cash-burn coverage is 92.2% of the 8,475 six-month month-end observations and reaches 95.98% in the capacity-screened sample. The analysis also considered negative net income, net margin, cash-to-assets, and liabilities-to-assets. Continuous XBRL measures are transformed to within-month fractional ranks to contain filing outliers. A filing-share market-cap proxy is quarantined because lagged reported shares can be inconsistent with a current reverse-split-adjusted quote.

2.4 Inference

Lifecycle means use firm-block bootstrap intervals. Conditional group comparisons first average within entry month and then use Newey–West inference with six lags. Benjamini–Hochberg false-discovery-rate adjustments are applied within the disclosed fundamental families. Calendar-portfolio monthly means use six-lag Newey–West standard errors and 10,000-draw moving-block confidence intervals.

These corrections address serial dependence and the disclosed Benjamini–Hochberg families; they do not cure post-selection. The cash-burn cell was selected after the discovery surface was inspected, so its p- and q-values describe the strength of the pattern in this panel but are not confirmatory error rates. A later controlled cash-burn audit applies a five-signal firm-wild max-T adjustment, which the cash-burn coefficient does not survive; the headline portfolio contrasts still lack the frozen protocol's additional Romano–Wolf or firm-block adjustment.

3. Unconditional results: the short is a lifecycle trade

The early lifecycle evidence is both economically large and insensitive to a single entry date. At landmark day 1, the mean six-month gross short payoff is 36.30%, the median is 45.83%, and 81.29% of firms are profitable shorts. At 21, 63, and 126 sessions, mean six-month gross payoffs remain 27.25%, 29.54%, and 23.00%; the corresponding medians are 42.52%, 41.06%, and 30.53%. Firm-block intervals exclude zero at each of these four landmarks.

The one-year evidence is similar. Gross short means at landmark days 1, 21, 63, and 126 are 46.01%, 39.08%, 41.40%, and 37.84%; medians range from 52.89% to 66.74%, and win rates range from 82.46%

to 86.55%. These results support the discovery version of broad first-year underperformance without using $10 as an entry condition.

The distribution changes after the first year. A six-month short entered at landmark day 252 still has a positive mean of 16.43% and median of 26.83%, but the lower endpoint of its firm-block mean interval is only 3.03%. The unfiltered recorded mean is -30.94% at landmark day 504 and -30.48% at day 756, while the medians remain positive at 19.11% and 9.97%. Those unfiltered means are not reliable economic estimates: one day-504 NKGen observation enters at $0.001 with trailing median dollar volume near $243, and removing it changes the day-504 mean to +7.93%. The recorded tail documents the need for identity, corporate-action, and tradability checks; it cannot yet be labeled a verified squeeze distribution.

Month-end sampling confirms the lifecycle transition without requiring one landmark. For entries 181–365 calendar days after close, the six-month gross short mean is 21.39%, median 31.14%, and win rate 74.54%. The unfiltered 366–730-day mean of -101.33% is dominated by a zero-volume Nuvo Group/NUVOQ observation at a $0.0001 adjusted entry; removing Nuvo changes that recorded mean to -18.04%, and imposing the basic quote/liquidity proxy changes the modeled-net mean to +1.09%. Beyond 730 days, the six-month unfiltered mean is -14.17% and its firm-block interval is entirely negative. A blanket “short any de-SPAC at any age” rule therefore mixes a broad early effect, a positive but less precise tradable second-year opportunity, and a later sample with no reliable mean edge.

Tradability screens are therefore the relevant evidence. Requiring a raw quote of at least $5 and trailing 21-session median dollar volume of at least $1 million produces a second-year modeled-net event mean of 12.26%, median of 18.96%, and 68.29% win rate; the two-way clustered p-value is 0.00216 and the disclosed-family q-value is 0.00346. Beyond two years, the same screen produces a mean of -5.22%, median of 3.18%, and no reliable positive calendar-balanced expectancy. The opportunity decays, but cash burn is a refinement of the second-year edge rather than a necessary condition for it.

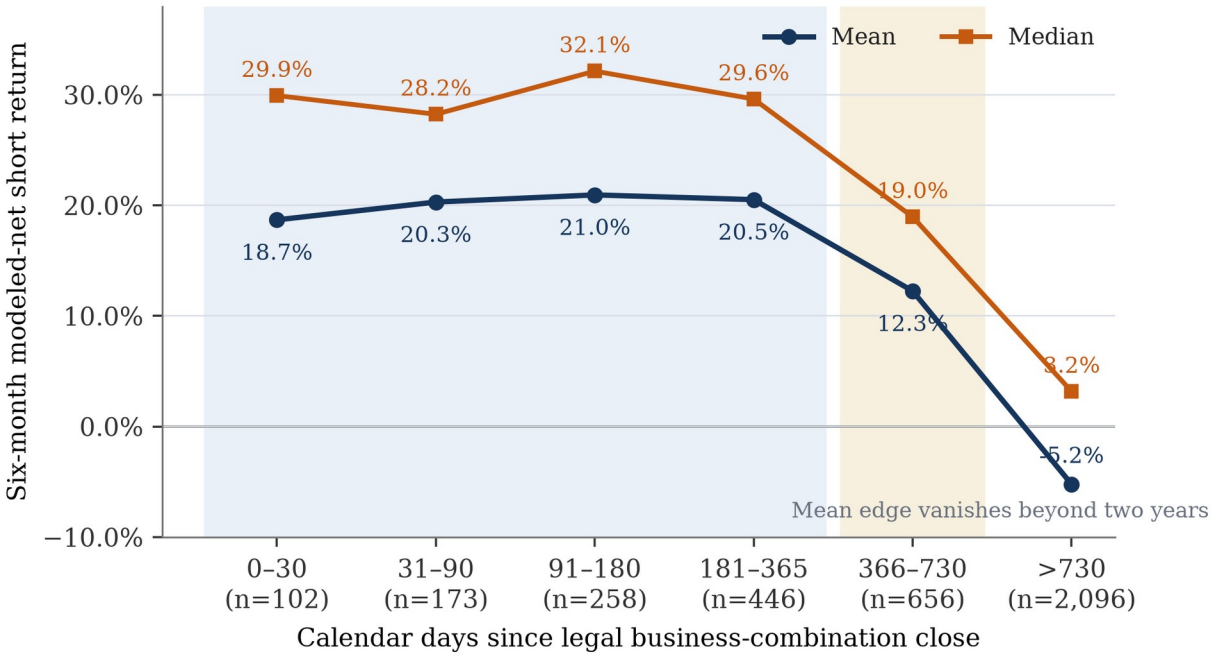

Figure 1. Six-month modeled-net short return by age at entry. The sample requires a raw quote of at least $5 and trailing 21-session median dollar volume of at least $1 million. Returns subtract 50 basis points round trip and a modeled 10% annual borrow fee. Month-end outcomes overlap and are discovery-only; observation counts appear below each age bucket.

Tail risk is material even in the capacity screen. In the second year, the 90th percentile of maximum adverse excursion is 86.27%, and 7.32% of event paths exceed a 100% adverse move before exit. A positive median cannot justify unconstrained position sizing.

4. Cash burn as a second-year separator

The central selected discovery result refines an already-positive second-year capacity sample. Subject to the $5/$1 million capacity proxy, 378 cash-burn observations from 70 firms are compared with 251 cash-generating observations from 32 firms. Both groups are present in 24 entry months.

Cash-burn shorts have a pooled six-month modeled-net mean of 21.18%, a median of 28.89%, and a 78.57% win rate. Averaged first within month, the cash-burn return is 22.41%. Cash-generating peers average -0.25% by month. The bad-minus-good spread is therefore 22.65 percentage points, with a Newey–West standard error of 4.47 percentage points, p=0.000040, and q=0.000558 after the within-family false-discovery-rate adjustment. The spread is positive in 91.67% of contributing months.

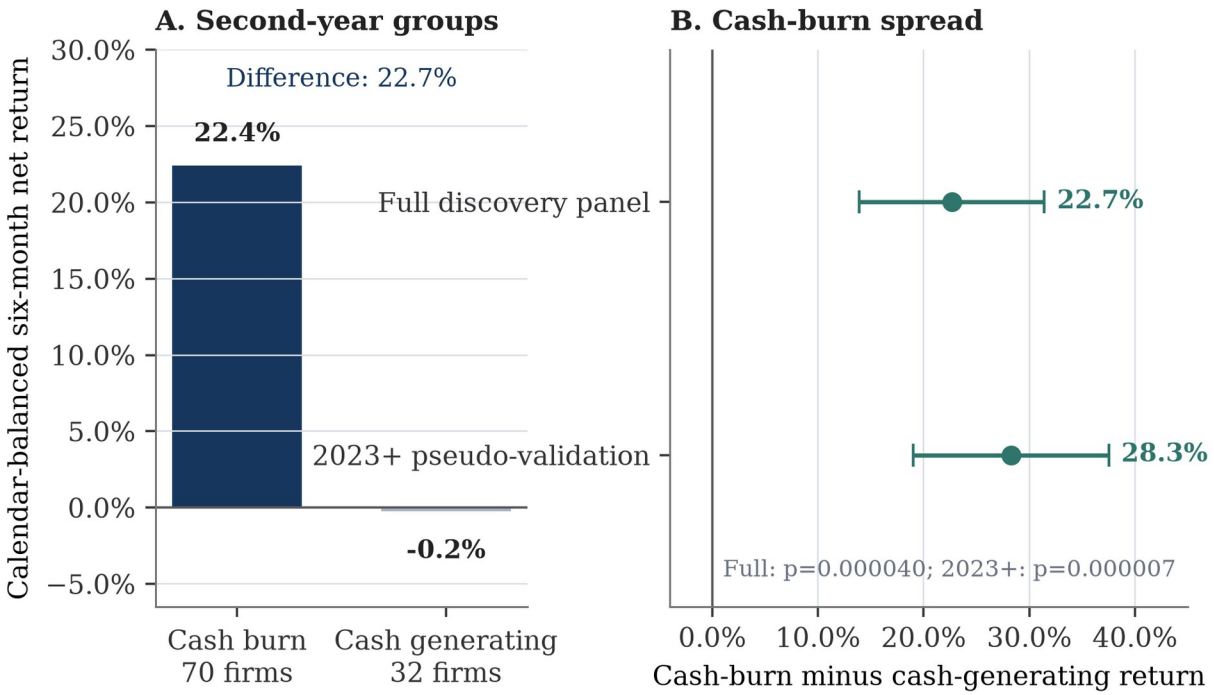

Figure 2. Second-year cash-burn separation in the capacity sample. Panel A reports calendar-balanced group means. Panel B reports the cash-burn-minus-cash-generating spread with normal 95% intervals based on six-lag Newey–West standard errors. The 2023+ split is retrospective pseudo-validation because the signal was chosen after the full panel was inspected.

The selected-cell comparison is unadjusted beyond the age and capacity screens, so we estimate a dedicated post-selected controlled test. The frozen protocol designated original-share-equivalent price as the primary state variable; the raw-quote-controlled model was added in the post-selection cash-burn audit and remains exploratory. That monthly Fama–MacBeth specification conditions on log raw quoted price, 63-session benchmark-adjusted return, log trailing dollar volume, trailing volatility, and lifecycle age. Across 20 eligible months, its cash-burn coefficient is +24.86 percentage points (Newey–West standard error 5.83 points, p=0.000420); 18 of the 20 monthly coefficients are positive. A pooled model with signal-month fixed effects estimates +15.97 points (firm-by-month two-way clustered p=0.0145; 10,000-draw firm-wild p=0.0172). The association is not specification-proof: the pooled original-share-equivalent-price sensitivity and the firm-plus-month fixed-effect model both have positive but insignificant cash-burn coefficients (p=0.135), only 12 firms change cash-burn state, and a five-signal common-sample max-T adjustment yields p=0.251. Cash burn therefore adds information under the exploratory raw-quote observable-state controls, but the evidence does not exclude low price or generic distress and is not multiplicity-complete confirmatory evidence.

The cash-burn rule clearly separates from cash-generating peers in the calendar implementation. At the base 2.5% position cap and 10% modeled borrow rate, it exceeds the cash-generating second-year portfolio by 0.785 percentage points per month (Newey–West p=0.000695, within-comparison-family

q=0.00556; moving-block interval 0.327% to 1.186%). Its paired point-estimate advantage over a second-year original-equivalent-price-at-least-$20 portfolio is 0.584 percentage points per month, while its advantage over a recent-run-up-at-least-50% portfolio is 0.544 percentage points. Those latter comparisons have positive block intervals but do not survive the same false-discovery threshold at 5%.

Importantly, the cash-burn portfolio does not outperform the all-second-year capacity portfolio in a paired test: its monthly difference is -0.013 percentage point (p=0.926). The latter contains many cash-burn names, and portfolio paths are not an additive decomposition because overlap suppression and net asset value differ across simulations. Cash burn is best interpreted as a strong selected separator from cash-generating peers, not as a necessary condition for the second-year edge or evidence that every alternative ranking has been defeated.

5. Calendar-time implementation, borrow, and squeeze risk

Selected candidate rule. At each month-end, identify common shares 366–730 calendar days past legal close whose raw quote is at least $5, whose trailing 21-session median dollar volume is at least $1 million, and whose latest SEC operating-cash-flow fact filed by that date is negative. Enter at the next regular-session open, hold fixed shares for 126 sessions, suppress a new signal while the same firm is held, and size new entries at no more than 2.5% of current net asset value subject to a 100% gross-entry cap. This rule is the selected discovery candidate; it is not a live recommendation and must be frozen before new or repaired histories are inspected.

The base portfolio converts the overlapping event rows into one fixed-share calendar accounting simulation. It enters at the next open, holds fixed shares for 126 sessions, allows at most one active position per firm, and targets 2.5% of current net asset value for each new name. New entry notional is capped at 100% gross, but existing shares are not rebalanced down after an adverse move. Borrow is charged on the average marked short exposure over elapsed calendar days. Idle cash earns zero, and execution costs total 50 basis points round trip.

From July 1, 2020 through July 7, 2026, 378 signals generate 102 accepted trades; 276 are skipped because the same firm is already held. No base-case entry is rejected by the gross-entry cap, and no position remains open at the sample end. The strategy earns a cumulative 62.18%, or 8.37% annualized, with 12.71% annualized volatility and a 0.699 zero-cash Sharpe ratio. Maximum drawdown is 22.90%; the worst daily return is -4.58%, and average loss on the worst 5% of days is 2.02%. It is profitable in 63.01% of months. Mean marked gross exposure is 17.80%, the maximum is 94.05%, mean active positions are 8.51, and the maximum is 31.

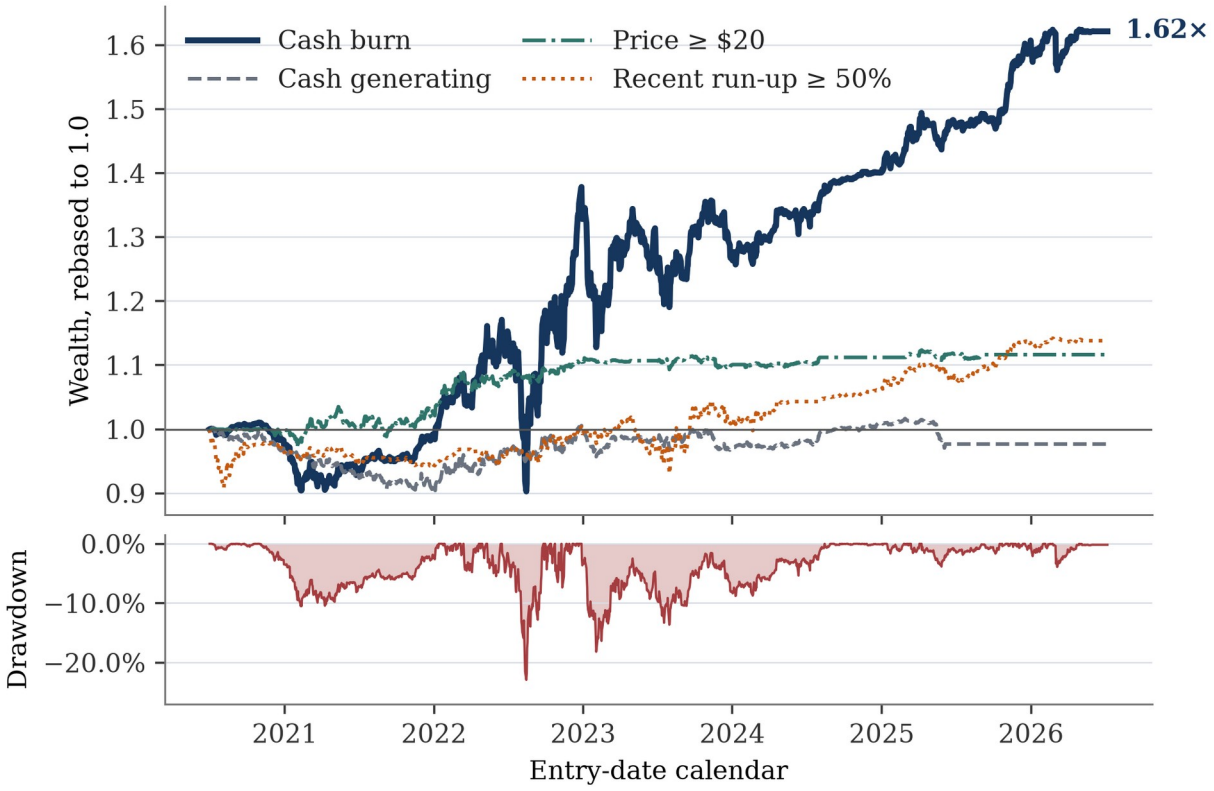

Figure 3. Fixed-share calendar simulations, rebased on July 1, 2020. Each rule uses a 2.5% single-name entry cap, 100% gross-entry cap, 126-session hold, 50 basis points round trip, and modeled 10% annual borrow on marked exposure. The lower panel is the cash-burn strategy's drawdown. Results are discovery-only scenario simulations, not realized returns.

The calendar result is weaker than the pooled 21.18% event return because it cannot restart a six-month short every month in the same security, because position notional is constrained, and because losses expand marked exposure. This is the correct distinction between signal expectancy and portfolio performance.

The annual path is uneven. Calendar returns are -2.45% in the partial 2020 period, 1.29% in 2021, 34.45% in 2022, -4.49% in 2023, 10.43% in 2024, 14.72% in 2025, and 0.89% through July 7, 2026. The strategy is therefore not an annual arbitrage; much of the full-sample wealth is earned in 2022.

Borrow sensitivity is economically informative but not historical evidence. With no borrow charge, annualized return is 10.23%. It is 7.44%, 6.51%, and 5.58% at modeled annual fees of 15%, 20%, and 25%. At 25%, the Newey–West monthly p-value weakens to 0.0593, although the moving-block interval for mean monthly return remains just positive. At 50%, annualized return falls to 0.95% and the monthly mean is not distinguishable from zero. The event-level cash-burn group's average break-even fee is 58.54%, but that statistic should not be confused with portfolio-wide fee tolerance: marked exposure, trade timing, and losses make the portfolio less robust than the average event.

The worst base-case trade demonstrates why sizing matters. The Organogenesis short entered on December 1, 2020 and exited on June 3, 2021 loses 229.51% of its initial notional after modeled costs; the underlying gross short return is -214.59%. A signed-in Koyfin display check matches the local entry open of $5.21 and exit price of $16.39. This verifies the displayed path but does not establish independent upstream vendor provenance. Removing Organogenesis raises, rather than creates, the portfolio return.

6. Relation to the literature

The results fit the post-combination underperformance literature only when event clocks are kept separate.

Gahng, Ritter, and Zhang (2023) buy at the close of the first day trading as the new entity. Their 152-name, 2012–2020 sample reports mean raw long returns of -11.3% at one year and -12.0% at three years, with medians of -26.1% and -39.4%. Huang, Ritter, and Zhang's expanded 451-combination update reports substantially weaker mean raw returns of -46.3% and -57.7%. The current panel's GRZ-like extension has a one-year mean raw long return of -44.86% and median of -65.77% for 171 firms; at three years, 135 firms have a mean of -55.27% and median of -77.47%. The closeness of the means to the expanded Huang estimates is directionally reassuring, but it is not an exact replication. The current entry is a legal-close-relative day-0 proxy, the benchmark is SPY rather than CRSP's value-weighted total-return market, cohorts differ, and inactive histories are incomplete.

Kolb and Tykvova (2016) begin after acquisition completion and report mean and median 12-month market-adjusted buy-and-hold returns of -46%. Jenkinson and Sousa's older completed-acquisition sample reports an approximately -55% average raw return at 52 weeks. Kiesel et al. (2023), by contrast, begin after merger announcement—often before close—and report 12-month Russell-2000 BHAR of -14.10%, with a median of -31.48%. Those estimates support deterioration but do not measure the same tradable post-close short.

Klausner, Ohlrogge, and Ruan's approximately $10 merger-value clock produces a positive 19.1% 12-month raw mean but a negative 19.3% median in their 47-deal sample. That mean-median divergence reinforces the present paper's central point: short opportunities cannot be inferred from a reference price or a typical outcome alone when a few large winners for the long side dominate the mean.

This draft does not call its comparison an exact literature replication. It also never signs an abnormal long return to manufacture a short return, because abnormal buy-and-hold returns can fall below -100% and are not directly tradable short payoffs.

7. Robustness and retrospective stability

The selected event-level cash-burn spread retains its sign when any one close cohort is omitted: in the capacity sample, leave-one-close-year-out spreads range from 19.24 to 34.36 percentage points. Leave-one-entry-year-out spreads range from 18.36 to 28.28 percentage points. Calendar mean returns for the cash-burn group remain positive in each of those audits. These are useful stability diagnostics, but they inherit the original post-selection.

Profit is not created solely by a handful of winning trades. The largest winning trade supplies 3.40% of positive trade P&L, the five largest winning trades supply 14.74%, and the ten largest supply 26.56%. At the firm level, the largest winner supplies 6.81% and the five largest winners 23.47% of positive firm P&L. Excluding the five best firms leaves a 5.72% annualized return and a positive moving-block interval for the monthly mean, although its Newey–West p-value weakens to 0.0552. Excluding the ten best firms leaves a 4.01% annualized return but no longer yields conventional statistical significance.

Losses are more concentrated than gains. The largest losing trade supplies 16.81% of total negative net P&L and the three largest losing trades 45.07%. That asymmetry is consistent with the economics of shorting: diversified small winners coexist with a few squeezes capable of losing more than initial notional.

The event-level capacity sample narrowly fails the frozen no-single-cohort concentration criterion. The 2021 close cohort supplies 51.72% of positive cash-burn payoff mass, just above the 50% ceiling. The calendar portfolio remains positive when that cohort is removed—5.04% annualized, with a 10.49% maximum drawdown—but the monthly p-value is 0.0572. This is evidence of fragility at the confirmatory threshold, not a reason to hide the cohort.

A retrospective chronological split offers a stronger, though still non-confirmatory, check. Training observations must both enter and exit before January 1, 2023; validation entries begin on or after that date. In the 2023-and-later event panel, 228 observations from 50 firms include 42 cash-burn and 11 cash-generating firms across 21 months containing both groups. Cash-burn observations earn a pooled modeled-net mean of 24.12%, median of 29.38%, and 82.56% win rate. Their six-month event-return spread, averaged first within entry month, is 28.26 percentage points (p=0.000007); it is positive in 95.24% of contributing months.

The corresponding fixed-share 2023-and-later cash-burn portfolio accepts 50 entries. It earns 7.03% annualized with 11.41% volatility, a 0.656 Sharpe ratio, and a 17.98% maximum drawdown. Its mean monthly return is 0.602% (p=0.0215; moving-block interval 0.356% to 1.090%). Against the cash-generating portfolio, the paired monthly advantage is 0.629 percentage points (p=0.00834; moving-

block interval 0.373% to 1.097%). Because cash burn was chosen after the full 2017–2026 panel was inspected, this exercise is correctly labeled pseudo-out-of-sample. It shows temporal persistence, not untouched validation.

8. Interpretation

The evidence supports a lifecycle pattern rather than a universal price rule. During the first year, poor outcomes are broad enough that entry timing matters less: several landmarks and arbitrary month-ends produce positive mean and median short payoffs. Capacity-screened second-year event returns also remain positive, although the corresponding all-second-year calendar portfolio is less precisely estimated. After two years, the mean capacity-screen event return is not reliably positive. Separately, the all-age capacity portfolio is unprofitable; a >730-day-only calendar portfolio was not estimated.

Negative operating cash flow provides an economically legible separator. It measures whether operations consumed or generated cash over the latest period reported by the decision date; it does not prove that the firm immediately requires external financing. In the discovery panel, cash-generating second-year firms cease to be attractive shorts, while cash burners continue to deteriorate. The resulting thesis is:

> *Within the survivor-incomplete discovery panel, broad first-year de-SPAC short returns are positive across several entry landmarks. Second-year capacity-screened event returns remain positive on average, and negative point-in-time operating cash flow identifies a selected subset that materially outperforms cash-generating peers. No broad positive edge is detected after two years; position limits and borrow costs determine whether the selected pattern could be executable.*

The evidence does not establish why cash burn predicts returns. Financing needs, dilution, missed forecasts, and operating weakness are plausible channels, but causal attribution requires separate tests.

9. Strict claims ledger

Claim	Current status	Evidence in the discovery panel	What cannot yet be claimed
Broad first-year de-SPAC underperformance	**Supported as discovery evidence**	Positive mean and median gross short payoffs at landmarks 1, 21, 63, and 126 for both six-month and one-year horizons	A survivor-complete population estimate
A de-SPAC can be shorted profitably at any age	**Rejected**	The capacity-screen mean is not positive after two years, and the all-age capacity portfolio loses 23.2%	A universal “always short” rule

Claim	Current status	Evidence in the discovery panel	What cannot yet be claimed
Capacity-screened second-year de-SPACs have positive event expectancy	**Supported as discovery evidence**	Six-month modeled-net mean 12.26%, median 18.96%, q=0.00346	A statistically precise calendar-portfolio return; its monthly p=0.107
Second-year operating cash burn predicts continued underperformance	**Strong selected discovery candidate**	Capacity-screen spread 22.65 pp; controlled Fama–MacBeth +24.86 pp; pooled firm-wild p=0.0172; positive stability tests	Confirmatory significance or necessity: max-T p=0.251, alternative price/firm-FE sensitivities fail, and the rule does not beat the all-second-year portfolio
Cash burn separates second-year outcomes from cash-generating peers	**Supported as discovery evidence**	Base portfolio exceeds cash generators by 0.785 pp per month, q=0.00556	Dominance over every feasible model or ranking
A fixed-share implementation is mechanically profitable under the base scenarios	**Supported conditionally**	8.37% annualized at 10% modeled borrow and 50 bp execution; NAV and trade P&L reconcile to numerical precision	Historically realized net returns
The result survives historically realistic short-sale frictions	**Unresolved**	The point estimate remains positive through 25% modeled annual borrow but monthly p=0.059; 50% nearly eliminates it	Feasible locates, actual fees, recall survival, or capacity
Recent run-up and price add independent predictive information	**Not established**	The continuous state-surface omnibus test is unidentified; basic Fama–MacBeth price and run-up slopes do not survive inference	A price-only or run-up-only primary thesis
The effect is specific to de-SPACs	**Untested**	No matched non-SPAC small-cap placebo panel is complete	Incremental de-SPAC alpha rather than generic distress
Results replicate the published literature exactly	**No**	Current raw means are directionally close to the expanded Huang–Ritter–Zhang estimates	Exact clocks, CRSP benchmark, identifiers, or delisting treatment
SPAC structure causes the return pattern	**Not claimed**	The design is predictive and observational	Causal effects

10. Data required for population promotion

The paper cannot move from discovery to population evidence until the following blocks are completed:

1. **Independent census reconstruction.** Merge at least one additional completed-deal census with the current source, give every candidate a documented disposition, and attach primary evidence of legal close and U.S. operating status.
2. **Permanent security identities.** Resolve dated CUSIP/PERMNO or another security-level identifier and build a non-overlapping ticker, name, exchange, and corporate-action lineage. Ticker strings alone are inadequate.

3. **Survivor-aware prices.** Obtain institutional close-to-terminal histories for at least 95% of the census and at least 90% of failed/delisted firms, with a failure/nonfailure coverage gap no larger than five percentage points. Current coverage is 67.6%, 16.2%, and 60.2 points, respectively.
4. **Terminal-value completion.** Join cash acquisitions, successor-share consideration, OTC continuations, bankruptcies, cancellations, and recoveries to the daily return path. Every terminal case needs a sourced value or explicit lower and upper bound.
5. **Corporate-action validation.** Resolve all 72 flagged split/extreme cases and validate a frozen random sample against a second source, with at least 99% of overlapping closes within 1% after documented adjustment differences.
6. **Observed securities lending.** Acquire point-in-time fee, availability, utilization, recall, and forced-buy-in histories. Current observed borrow coverage is zero.
7. **Matched non-SPAC controls.** Construct point-in-time size, sector, liquidity, price, and recent-return matches to distinguish de-SPAC-specific continuation from generic small-cap distress.
8. **Untouched validation.** Freeze the cash-burn definition, age window, capacity screen, execution rule, sizing, and cost treatment before outcomes on newly recovered or newly elapsed histories are inspected. Use purged rolling-origin evaluation with a six-month embargo.

All ten current mandatory data gates fail. Until they pass, the correct conclusion is not that the opportunity is unusable; it is that the current panel has located a large, internally precise, and economically coherent selected second-year cash-burn pattern whose population magnitude and historical borrow feasibility remain unverified.

11. Conclusion

The redesigned evidence replaces an arbitrary “short 90 days after de-SPAC” rule with a lifecycle thesis. Broad event-level short expectancy is strongest in the first year. Capacity-screened second-year event returns also remain positive, but the all-second-year calendar portfolio is less precise. Negative point-in-time operating cash flow identifies the clearest selected separation from cash-generating peers, and a fixed-share, capacity-screened simulation remains profitable at the base 10% modeled borrow fee while explicitly absorbing loss paths greater than initial notional. At a 25% modeled fee the point estimate remains positive but monthly inference weakens above 5%; at 50% the edge is nearly eliminated. After two years, no broad reliable edge remains.

That is a coherent answer to where the value appears in the current data: first-year breadth, a still-positive capacity-screened second year, and a stronger selected cash-burn versus cash-generating contrast. It is also a falsifiable research program: rebuild the census, recover dead securities and terminal values, attach permanent identifiers and observed borrow, freeze the cash-burn rule, and test it on data that have not already selected the thesis.

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