Index Arbitrage: Event Day Reversion Trading Strategy Analysis

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Abstract

This paper examines Event Day Reversion Trading Strategy within the broader category of index arbitrage strategies, focusing on capturing price movements around index inclusion events for S&P indices. Using data from January 2020 to October 2024, we analyze three specific strategy variants across the S&P 500, S&P MidCap 400, and S&P SmallCap 600 indices: long reversion in MidCap 400 corporate actions, long reversion in SmallCap 600 index reviews, and short reversion in MidCap 400 index reviews. Our findings indicate significant variation in strategy performance, with the short reversion S&P MidCap 400 strategy showing the strongest results (Sharpe Ratio: 3.480, Annualized Return: 43.61%). The long reversion strategies demonstrated more modest but stable returns, with the SmallCap 600 variant achieving an 11.012% annualized return and a Sharpe Ratio of 2.680. The study accounts for practical implementation constraints including transaction costs, market impact, and position sizing limits, providing insights into the real-world applicability of event day reversion strategies in modern markets.

Introduction

Index inclusion events represent significant moments in a company's market presence, often accompanied by substantial price movements and trading volume increases. These events can create temporary price pressures and structural market inefficiencies, potentially offering opportunities for event day reversion trading strategies. This research examines a specific approach to capturing value from these market movements: the Event Day Reversion Trading Strategy.

Analysis focuses on three major S&P indices (S&P 500, S&P MidCap 400, and S&P SmallCap 600) and considers both corporate actions and index reviews as catalysts for inclusion events. The study period from January 2020 to October 2024 encompasses various market conditions, providing a robust testing ground for strategy evaluation. We implement three distinct strategy variants: a long reversion strategy for MidCap 400 corporate actions, a long reversion strategy for SmallCap 600 index reviews, and a short reversion strategy for MidCap 400 index reviews.

The research employs comprehensive data collection methods, including web scraping of S&P Global press releases, historical price data from Yahoo Finance, and SOFR rates for financing calculations. To ensure practical applicability, we implement realistic trading constraints such as position limits (maximum $5,000,000 per trade), volume participation limits (1% of 20-day ADV), transaction costs, and market impact models. Our methodology incorporates sophisticated risk management frameworks, including position-level controls, portfolio-level constraints, and strategy-specific risk mitigation techniques.

This study contributes to the existing literature by providing a detailed examination of event day reversion strategies with a focus on practical implementation challenges and risk-adjusted performance metrics. The results offer insights into the varying effectiveness of reversion strategies across different market capitalizations and event types, while accounting for real-world trading constraints and costs.

Methodology

This study examines Event Day Reversion Trading Strategy, within the broader category of index arbitrage strategies, testing them across various subsets of eligible stocks and holding periods within their respective trading windows.

Trading Strategies

Event Day Reversion Strategy This strategy exploits mean reversion patterns on the effective date of index changes:

- Entry: Open positions on the event day using the close price based on relative stock return performance compared to its index return on the event day
- Direction:
  - Short positions in stocks outperforming their index
  - Long positions in stocks underperforming their index
- Rationale: Capture mean reversion following initial price movements
- Key Feature: Focuses on both long and short opportunities based on relative performance
- Exit: Various holdings periods ranging from 1 trade day post the effective date to 22 trade days were attempted

Data Collection and Preprocessing

Data Quality Issues Initial review of the source data revealed several critical issues requiring remediation:

- Announcement date discrepancies
- Incorrect effective dates
- Inconsistent ticker formatting
- Missing ticker change history
- Incomplete stock population
- Missing data points

Rather than correcting individual errors, a complete rebuild of the dataset using primary sources was done.

Data Sources

1. S&P Global Press Releases **Collection Method**: Custom web scraper analyzing press releases from S&P Global's official website

- URL Structure:
  `https://press.spglobal.com/index.php?s=2429&l=100&year={year}&keywords=%22Set%2Bto%2BJoin%22`

- Parameters:
  - Section ID: 2429 (press release section)
  - Results per page: 100
  - Search keyword: "Set to Join"

Dataset Parameters:
- Time Period: January 1, 2020 - October 25, 2024
- Event Types:
- Index Reviews (Quarterly Rebalances)
- Corporate Actions (Individual Additions)
- Indices Covered: S&P 500, S&P MidCap 400, S&P SmallCap 600

Data Structure:

Column Name	Description	Data Type
Announced	Press release date	Date
Effective Date	Index change implementation date	Date
Index	Target index identifier	String
Action	Addition/Deletion indicator	String
Company Name	Entity name	String
Ticker	Trading symbol	String
GICS Sector	Industry classification	String
Event_Type	Review type identifier	String
N days	Announcement to effective date duration	Numeric

2. Price and Volume Data (Yahoo Finance) Stock Data Collection:

- Source: Yahoo Finance API (yfinance)
- Coverage: All addition events identified in press releases
- Frequency: Daily observations
- Time Window:
  - Start: T-30 trading days from announcement
  - End: T+30 trading days from effective date
- Variables: Open, High, Low, Close, Volume

ETF Data Collection:

- Purpose: Provide liquid hedging instruments
- Coverage:

Index	ETF Ticker	Description
S&P 500	SPY	SPDR S&P 500 ETF Trust

Index	ETF Ticker	Description
S&P 400	IJH	iShares Core S&P Mid-Cap ETF
S&P 600	IJR	iShares Core S&P Small-Cap ETF

- Time Window: January 1, 2020 - October 25, 2024
- Frequency: Daily
- Variables: Open, High, Low, Close, Volume

Each event addition involves a stock and it's respective index (S&P 500, S&P 400, or S&P 600). The applicable index that the stock is joining will be substituted for the ETF that follows the index (SPY, IJH, IJR) in order to have a liquid security that the stock can be hedged against. In order to determine if the stock is overperforming or underperforming its index, the net return is calculated as $R_i - R_{ETF,i} = NR$.

3. Financing Rates

- Source: SOFR (Secured Overnight Financing Rate)
  - Retrieved from FRED database: 'https://fred.stlouisfed.org/series/SOFR'
- Application: Daily financing costs for position holding and shorting costs
- Time Period: January 1, 2020 - October 25, 2024
- Frequency: Daily observations
- Usage: Preferred over Fed Funds Rate due to current market convention

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Mathematical Foundations

Core Metrics and Calculations

Return Calculations Standard Daily Returns

$$R_t = \frac{P_t - P_{t-1}}{P_{t-1}}$$

where:
- R_t = Return for day t
- P_t = Closing price on day t
- P_{t-1} = Closing price on day t-1

First Day Event Day Return
Since announcements provide the exact date that the inclusion event will take place, the first trading opportunity is the event day's open:

$$R_1 = \frac{Close_{t=1} - Open_{t=1}}{Open_{t=1}}$$

Risk and Volume Metrics 20-Day Rolling Volatility

$$\sigma_t = \sqrt{\frac{\sum_{i=t-19}^{t}(R_i - \bar{R})^2}{19}}$$

where:
- σ_t = Volatility estimate for day t
- R_i = Daily return for day i
- $\bar{R}$ = Mean return over the 20-day window

20-Day Average Daily Volume (ADV20)

$$ADV20_t = \frac{1}{20}\sum_{i=t-19}^{t} V_i$$

where:
- V_i = Trading volume for day i

These calculations are done for the ETFs as well.

Strategy-Specific Calculations

Trading Window Parameters

$$n_t = (t_{e+22} - t_e + 1)$$

where:
- t_{e+22} = 22 trading days after the event day - t_e = Effective date of index change
- n_t = Number of trading days in window
- $t \in [t_e, t_{e+22}]$

The end of the trading window can vary if the stock does not exist past a certain point, or if the number of trading days in the folowing month varies from 22.

Return Metrics Daily Strategy Return

$$R_{s,t} = \frac{P_t - P_{t-1}}{P_{t-1}}$$

for $t \in [t_e, t_{e+22}]$

Multi-day Average Return

$$R_{md,t} = \frac{1}{n_t}\left(\frac{P_t - P_C}{P_C}\right)$$

where:
- P_C = Closing price on t_e
- n_t = Days from t_e to current day t
- $t \in [t_e, t_{e+22}]$

These calculations are done for the ETFs as well.

Net Multi-day Average Return

$$NR_{md,t} = R_{i,md,t} - R_{ETF,md,t}$$

where:
- $R_{ETF,md,t}$ = ETF multi-day average return - $R_{i,md,t}$ = stock multi-day average return - $t \in [t_e, t_{e+22}]$

Strategy Implementation

Universe Segmentation The strategy evaluates returns across multiple dimensions to identify optimal trading opportunities. The data pulled provided 679 additions to the in-scope S&P Global indices.

1. **Index Categories**
   - S&P 50
   - S&P MidCap 400
   - S&P SmallCap 600
2. **Event Classifications**
   - Index Review (Quarterly Rebalances)
   - Corporate Action (Individual Additions)
3. **Sector Coverage**
   - Industrials
   - Consumer Discretionary
   - Financials
   - Information Technology
   - Real Estate
   - Health Care
   - Materials
   - Energy
   - Consumer Staples
   - Communication Services
   - Utilities
   - Others
4. **Holding Periods**
   - Minimum: 1 day (open to close)
   - Maximum: 22 trading days
   - Increment: 1 day

Strategy Logic

Long Mean Reversion Criteria The conditions for identifying long mean reversion candidates are as follows:

Define: - N_{mean}: Mean return of the Net (ETF) over each trading day. - S_{mean}: Mean return of the Stock over each trading day. - D: The trading day, where $D = 1$ represents the initial day. - strategy_2_n: Trading day variable (e.g., 1 for day 1, 2 for day 2, etc.). - $R_{md,t}$: average multi-day return of the stock for holding periods $= t \in [t_e, t_{e+22}]$

Initial Long Reversion Candidates (Day 1)

1. Filter for event effective day $D = 1$.
2. Check if $N_{\text{mean}} < 0$, which implies the stock underperformed its respective index ETF, making it a potential candidate for long reversion.

Index-event pair (i, e):

$$\text{Long Candidates on Day 1:} \quad \{(i, e) \mid \text{strategy\_2\_n} = 1,\ N_{\text{mean}} < 0\}$$

Long Reversion Confirmation

1. For days $D > 1$, verify that $R_{md,t} > 0$, indicating a reversion.
2. The day $D > 1$ values should be associated with the initial long candidates.

Thus

$$\text{Confirmed Long Reversion:} \quad \{(i, e, D) \mid D > 1,\ R_{md,t} > 0\} \cap \text{Initial Long Candidates}$$

Short Mean Reversion Criteria The conditions for short mean reversion candidates are as follows:

Initial Short Reversion Candidates (Day 1)

1. Filter for day $D = 1$.
2. Check if $N_{\text{mean}} > 0$, which implies the stock outperformed the ETF, making it a potential candidate for short reversion.

Index-event pair (i, e):

$$\text{Short Candidates on Day 1:} \quad \{(i, e) \mid \text{strategy\_2\_n} = 1,\ N_{\text{mean}} > 0\}$$

Short Reversion Confirmation

1. For days $D > 1$, verify that $R_{md,t} < 0$, indicating a reversion.
2. The day $D > 1$ values should be associated with the initial short candidates.

Thus:

$$\text{Confirmed Short Reversion:} \quad \{(i, e, D) \mid D > 1,\ R_{md,t} < 0\} \cap \text{Initial Short Candidates}$$

Trade Volume Filter

Only consider index-event pairs with sufficient volume:

$$\text{count} \geq i$$

where i is the minimum threshold for count (e.g., $i = 50$).

Performance Evaluation Metrics Each strategy subset is evaluated using distribution metrics on the stock's multi-day average return for holding periods from the close of the event effective date to up to 22 trading days later. The subset to evaluate the stock's multi-day average return is determined by the net multi-day average return:

Metric	Description
Count	Number of trades in subset
Mean Return	Arithmetic average of returns (non-compounded)
Median Return	50th percentile of return distribution
Min/Max Returns	Return boundaries
Standard Deviation	Return dispersion measure
Percentile Analysis	5th, 25th, 50th, 75th, 95th percentiles

Selected Strategy Variants

1. **Long Reversion S&P MidCap 400 Corporate Action Strategy (Strat_2_SP400_CA2D)**
    - Reversion: Long stock
    - Universe: S&P MidCap 400 only
    - Events: Corporate actions only
    - Holding Period: 1 day (post-event effective date: previous close to close)
2. **Long Reversion S&P SmallCap 600 Index Review Strategy (Strat_2_SP600_IR2D)**
    - Reversion: Long stock
    - Universe: S&P SmallCap 600 only
    - Events: Index Reviews only
    - Holding Period: 1 day (post-event effective date: previous close to close)
3. **Short Reversion S&P MidCap 400 Index Review Strategy (Strat_2_SP400_IR7D)**
    - Reversion: Short stock
    - Universe: S&P MidCap 400 only
    - Events: Index Reviews only
    - Holding Period: 6 days (post-event effective date: previous close 6 days prior to close)

Backtesting Framework

The backtesting analysis was conducted on the three selected strategy variants under realistic trading constraints and cost considerations.

This backtesting framework incorporates:
- Realistic position sizing constraints
- Multi-layered cost structure
- Market impact modeling
- Financing considerations - Shorting considerations - Trade-level and portfolio-level performance tracking

Portfolio Constraints

1. Position Limits

- **Maximum Portfolio Exposure**: $5,000,000 per trade
- **Volume Constraints**: Limited to 1% of 20-day ADV

For each security i on day t:

$$Q_{i,t} = min(0.01 * ADV20_{i,t}, V_{i,t})$$

where:
- $Q_{i,t}$ = Trade quantity
- $ADV20_{i,t}$ = 20-day average daily volume
- $V_{i,t}$ = Available volume

2. Position Scaling When multiple trades on the same day cause total exposure to exceed the portfolio cap:

$$\lambda_t = \frac{CAP_{portfolio}}{\sum P_{i,t}}$$

$$Q_{i,t}^{hat} = \lambda_t * Q_{i,t}$$

where:
- λ_t = Scaling factor
- $Q_{i,t}^{hat}$ = Adjusted trade quantity

3. Position Value For long reversion with 1 day holding period:

$$P_{i,t} = Q_{i,t} * C_{i,t-1}$$

where:
- $C_{i,t-1}$ = Previous day's closing price

For short reversion with 6 day holding period:

$$P_{i,t} = Q_{i,t} * C_{i,t-6}$$

where:
- $C_{i,t-6}$ = 6 trade days prior closing price

Cost Models

1. Transaction Costs Fixed cost of \$0.01 per side (\$0.02 round-trip):

$$TC_{i,t} = 2 * Q_{i,t} * 0.01$$

2. Market Impact (Slippage) Measures price impact from large order execution:

$$SI_{i,t} = \alpha * (\frac{Q_{i,t}}{ADV20_{i,t}})^{\beta} * P_{i,t} * \sigma_{i,t}$$

where:
- $\sigma_{i,t}$ = Price volatility
- $\alpha = 0.2$ = Baseline impact parameter
- Conservative estimate for market impact
- Lower values typically observed in liquid stocks
- $\beta = 0.7$ = Impact decay parameter
- Models non-linear relationship between trade size and price impact
- Conservative estimate based on market microstructure research
- Impact calculated separately for entry and exit

3. Financing and Shorting Costs Overnight holding costs based on SOFR plus spread:

$$r_{long} = (\text{SOFR}_t + 0.015) * \frac{1}{365}$$

$$FC_t = r_{long} * \sum P_{i,t}$$

Overnight shorting costs based on SOFR plus spread:

$$r_{short} = (\text{SOFR}_t + 0.01) * \frac{1}{365}$$
$$SC_t = r_{short} * \sum P_{i,t}$$

Performance Measurement

1. Trade-Level Metrics Realized Gain/Loss per Trade

Long Reversion:

$$RGL_{i,t} = Q_{i,t} * (C_{i,t} - C_{i,t-1})$$

where:
- $C_{i,t}$ = Closing price
- $C_{i,t-1}$ = Previous day closing price

Short Reversion:

$$RGL_{i,t} = Q_{i,t} * (C_{i,t-6} - C_{i,t})$$

where:
- $C_{i,t}$ = Closing price
- $C_{i,t-6}$ = 6 trade days prior closing price

2. Portfolio-Level Metrics Daily Net Profit/Loss

$$NPL_t = \sum RGL_{i,t} - \sum TC_{i,t} - \sum SI_{i,t} - FC_t - SC_t$$

Cumulative Performance

$$CNPL_t = \sum_{s=1}^{t} NPL_s$$

All calculations are performed on a daily basis, with costs netted against gross returns to provide accurate performance assessment.

Risk Management

The event day reversion strategy, being algorithmic and quantitative in nature, benefits from clear, systematic risk controls. The primary focus is on managing implementation risks and maintaining strategy efficiency.

Position-Level Controls

1. Volume and Size Limits

- Maximum position size: $5,000,000 per trade
- Volume participation: 1% of 20-day ADV
- Pro-rata allocation for multiple concurrent trades on same day

2. Entry Timing For Long Reversion: - Enter positions at market open on event day - Size based on previous day's closing price - Exit at close based on relative performance to index

For Short Reversion: - Enter positions at close on event day - Size based on closing price - Exit based on holding period target (e.g., 7 days for SP400_IR7D strategy)

Strategy-Specific Risk Controls

1. Long Reversion Risk Management

- Focus on underperforming stocks relative to index on event day
- Implementation during market hours allows for real-time monitoring
- Natural stop-loss through mean reversion target
- Automated position exit at market close

Key metrics monitored: - Relative performance vs index - Intraday volume profile - Real-time P&L tracking - Execution quality metrics

2. Short Reversion Risk Management

- Focus on outperforming stocks relative to index on event day
- Implementation at market close reduces intraday volatility exposure
- Defined holding period based on historical optimization
- Systematic exit procedure

Key metrics monitored: - Borrowing costs and availability - Multi-day performance drift - Sector correlation effects - Volume profile changes

Systematic Controls

1. Data Verification

- Real-time index membership status confirmation
- Corporate action verification
- Price feed validation
- Volume data quality checks

2. Position Monitoring

- Real-time exposure tracking
- Automated compliance with size limits
- Sector exposure aggregation
- Event type diversification metrics

Risk Infrastructure

1. Technology Requirements

- Order management system with real-time position tracking
- Automated execution platform
- Data validation systems
- Performance attribution tools

2. Monitoring Framework

- Real-time position dashboard
- Automated alerts for limit breaches
- End-of-day reporting
- Strategy performance metrics

The risk management framework is designed to be systematic and efficient, focusing on the key risks specific to event day reversion strategies while avoiding unnecessary complexity. The emphasis is on maintaining strategy efficiency while controlling implementation risks.

Strategy-Specific Considerations

1. Long Reversion S&P MidCap 400 Corporate Action Strategy Primary focus: - Event day timing precision - Volume profile monitoring - Relative performance tracking - Exit execution quality

2. Long Reversion S&P SmallCap 600 Index Review Strategy Primary focus: - Liquidity assessment - Implementation shortfall monitoring - Size-adjusted position limits - Index-relative performance

3. Short Reversion S&P MidCap 400 Index Review Strategy Primary focus: - Borrowing cost management - Multi-day holding period risks - Exit timing optimization - Sector correlation effects

The risk management framework is integrated into the systematic trading process, with automated controls and clear monitoring procedures. This approach allows for efficient strategy implementation while maintaining appropriate risk controls without over-engineering the process for what is fundamentally a quantitative, rules-based strategy.

Results

Performance Evaluation Framework

We evaluate the performance of each strategy variant using a comprehensive set of risk-adjusted return metrics, efficiency measures, and portfolio characteristics.

Risk-Adjusted Return Metrics

1. Information Ratio (IR) Measures excess return per unit of risk:

$$IR = \frac{E[R_d]}{\sigma(R_d)}$$

where:
- $E[R_d]$ = Mean daily profit/loss
- $\sigma(R_d)$ = Standard deviation of daily profit/loss

The IR provides insight into the consistency of returns relative to their volatility, with higher values indicating more stable performance.

2. Sharpe Ratio (SR) Annualized measure of risk-adjusted performance:

$$SR = IR \times \sqrt{252}$$

where:
- 252 = Number of trading days per year
- $\sqrt{252}$ = Annualization factor for daily returns

The Sharpe Ratio allows comparison with other investment strategies on an annualized basis.

Portfolio Risk Metrics

1. Maximum Drawdown (MDD) Measures the largest peak-to-trough decline:

$$MDD = \frac{\min(R_d)}{\bar{P}}$$

where:
- R_d = Daily profit/loss
- $\bar{P}$ = Average position size

MDD helps assess downside risk and capital preservation capabilities.

2. Annualized Return (AR) Standardized measure of strategy performance:

$$AR = \frac{R_{total}}{P_{total}} \times \frac{252}{N}$$

where:
- R_{total} = Total profit/loss
- P_{total} = Total position value
- N = Number of trading days

Portfolio Efficiency Metrics

1. Margin Ratio (M) Measures return on deployed capital:

$$M = \frac{R_{total}}{P_{total}}$$

This ratio indicates how efficiently the strategy generates returns relative to the capital employed.

2. Turnover Ratio (T) Indicates portfolio rotation frequency:

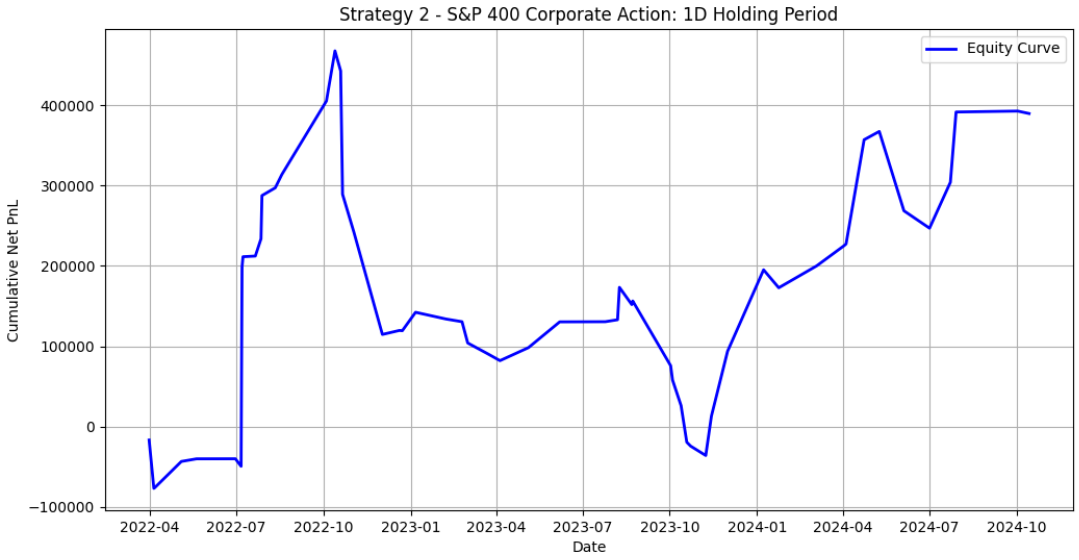
$$T = \frac{\bar{P}}{P_{total}}$$

Lower turnover typically indicates more efficient capital utilization and lower transaction costs.

These metrics provide a multi-dimensional view of strategy performance:
- Risk-adjusted return quality (IR, SR)
- Downside risk management (MDD)
- Absolute performance (AR)
- Capital efficiency (M, T)

Strategy Performance Analysis

1. Long Reversion S&P MidCap 400 Corporate Action Strategy (Strat_2_SP400_CA2D)

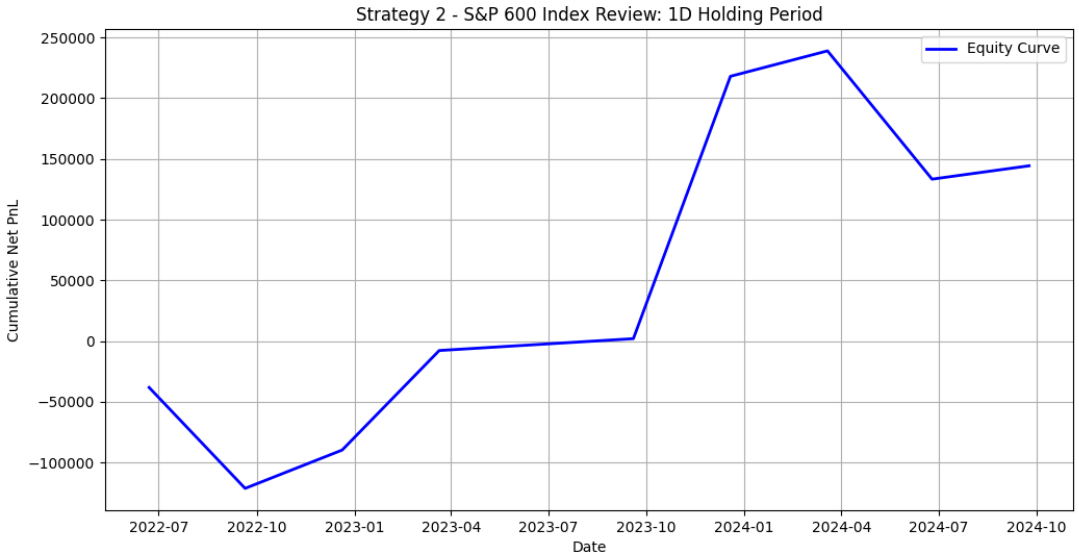


Metric	Value	Interpretation
Information Ratio	0.116	Modest risk-adjusted return
Sharpe Ratio	1.845	Modest risk-adjusted performance
Max Drawdown	-9.369%	Moderate downside risk
Annualized Return	1.91%	Positive but modest return
Margin	0.42%	Thin profitability per trade
Turnover	1.78%	Low portfolio rotation
Total Open/Close Trades	60	Low trade frequency

The Long Reversion S&P MidCap 400 Corporate Action Strategy (Strat_2_SP400_CA2D) demonstrates modest but stable performance characteristics. With an Information Ratio of 0.116 and a Sharpe Ratio of

1.845, the strategy shows some ability to generate risk-adjusted returns, though at relatively conservative levels. The annualized return of 1.91% suggests limited alpha generation, while the margin of 0.42% per trade indicates thin profitability on individual positions. The strategy's maximum drawdown of -9.369% represents moderate downside risk, though this should be considered in the context of the low turnover ratio of 1.78% and limited trade frequency of 60 total trades. These metrics suggest a conservative strategy that might benefit from increased position sizing or more aggressive trade selection criteria, particularly given the relatively stable nature of corporate action events in the mid-cap space.

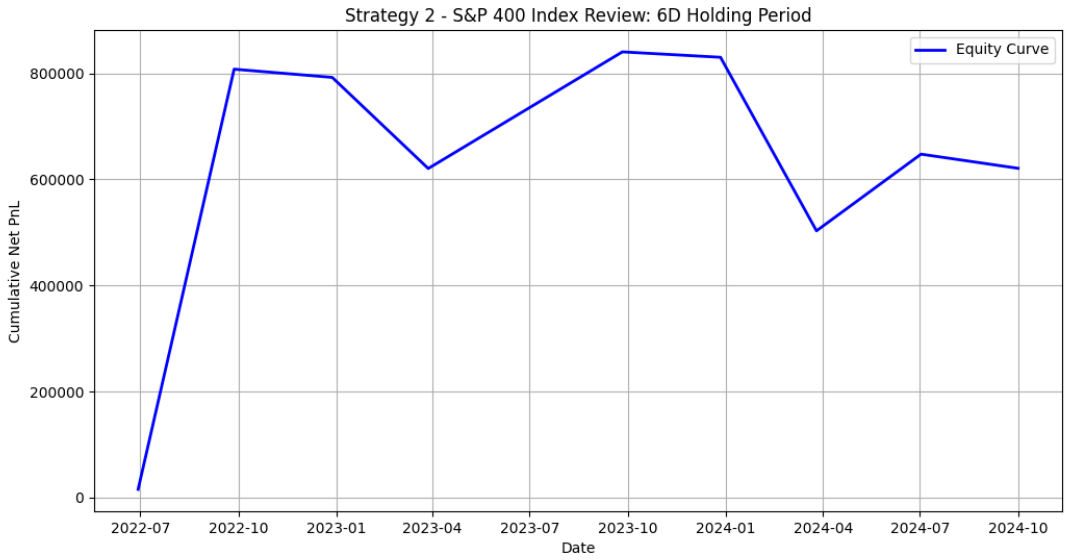
2. Long Reversion S&P SmallCap 600 Index Review Strategy (Strat_2_SP600_IR2D)



Metric	Value	Interpretation
Information Ratio	0.168	Moderate risk-adjusted return
Sharpe Ratio	2.680	Strong risk-adjusted performance
Max Drawdown	-2.58%	Low downside risk
Annualized Return	11.012%	High return
Margin	0.393%	Low profitability per trade
Turnover	11.11%	Relatively low portfolio turnover
Total Trades	90	Relatively low trade frequency

The Long Reversion S&P SmallCap 600 Index Review Strategy (Strat_2_SP600_IR2D) exhibits markedly stronger performance characteristics. The strategy achieves an impressive Sharpe Ratio of 2.680 and an annualized return of 11.012%, suggesting effective capture of mean reversion effects in the small-cap segment. The notably low maximum drawdown of -2.58% indicates robust risk management and consistent performance, particularly noteworthy given the typically higher volatility associated with small-cap stocks. While the margin per trade remains modest at 0.393%, the higher turnover ratio of 11.11% and increased trade frequency of 90 trades contribute to the superior overall returns. The strategy's Information Ratio of 0.168 suggests consistent outperformance relative to its risk level, making it an attractive candidate for portfolio inclusion, especially given its focus on the traditionally less efficient small-cap market segment.

3. Short Reversion S&P MidCap 400 Index Review Strategy (Strat_2_SP400_IR7D)



Metric	Value	Interpretation
Information Ratio	0.219	Strong risk-adjusted return
Sharpe Ratio	3.480	Strong risk-adjusted performance
Max Drawdown	-7.38%	Low downside risk
Annualized Return	43.61%	High return
Margin	1.55%	Moderate profitability per trade
Turnover	11.11%	Relatively low portfolio rotation
Total Open/Close Trades	55	Low trade frequency

The Short Reversion S&P MidCap 400 Index Review Strategy (Strat_2_SP400_IR7D) emerges as the strongest performer among the three variants. With a remarkable Sharpe Ratio of 3.480 and an Information Ratio of 0.219, the strategy demonstrates superior risk-adjusted performance. The annualized return of 43.61% is particularly impressive, especially considering the moderate maximum drawdown of -7.38%. The strategy's margin of 1.55% per trade indicates strong individual trade profitability, while maintaining a reasonable turnover ratio of 11.11%. Despite the lower trade frequency of 55 trades, the strategy's performance suggests effective capture of short-term overreaction effects in mid-cap stocks during index reviews. The longer holding period of 7 days appears to allow sufficient time for price normalization while managing transaction costs effectively. The strategy's robust performance metrics suggest it could be a candidate for increased capital allocation, though careful consideration should be given to the scalability of short positions in the mid-cap space.

Comparison

The comparative analysis reveals a clear hierarchy in strategy effectiveness, with the short reversion approach in mid-caps showing the strongest results, followed by long reversion in small-caps, and finally long reversion in mid-cap corporate actions. This pattern suggests that market inefficiencies may be more pronounced in certain segments and event types, particularly in the short-term overreaction to index review announcements. The variation in performance across these strategies also highlights the importance of market segment selection and event type specificity in index arbitrage strategy design.

Conclusion

This study provides a comprehensive examination of Event Day Reversion Trading Strategy across different market segments and event types within the S&P index universe. Through rigorous analysis of 679 index additions from January 2020 to October 2024, we demonstrate that systematic exploitation of temporary price pressures around index inclusion events can generate significant risk-adjusted returns when properly implemented.

The research reveals several key findings. First, short reversion strategies appear to be more effective than long reversion approaches, as evidenced by the superior performance of the Short Reversion S&P MidCap 400 Index Review Strategy (SR: 3.480, AR: 43.61%). This suggests that markets tend to overreact more consistently on the upside during index inclusion events, creating more reliable opportunities for mean reversion through short positions. The strategy's success with a 7-day holding period also indicates that price normalization processes occur over multiple trading sessions rather than immediately.

Second, market capitalization and event type significantly influence strategy effectiveness. Small-cap stocks show stronger reversion patterns during index reviews compared to mid-cap stocks during corporate actions, as demonstrated by the Long Reversion S&P SmallCap 600 Index Review Strategy's superior performance (SR: 2.680, AR: 11.012%) relative to its mid-cap corporate action counterpart (SR: 1.845, AR: 1.91%). This aligns with theoretical expectations of greater market inefficiencies in less liquid market segments and more predictable behavior during scheduled index reviews versus individual corporate actions.

Third, the implementation framework developed in this study demonstrates the practicality of these strategies under realistic trading constraints. By incorporating position limits, transaction costs, market impact modeling, and financing considerations, we show that the strategies remain profitable even with conservative execution assumptions. The relatively low turnover ratios (1.78% - 11.11%) and moderate trade frequencies (55-90 trades) suggest that these strategies could potentially accommodate larger capital allocations while maintaining performance characteristics.