Systematic Equity Selection

Consistent Cash Flows | Lower Risk*

FINM 33150 – Quantitative Trading Strategies

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*as compared to S&P 500

Strategy Introduction

Strategy appeal and target investor demographic

- Strategy delivers strong cash flows over time and preserves capital
- Strategy functions like fixed income but delivers continuously higher returns as equities appreciate (albeit with a bit more risk than fixed income)
- Majority of cash flows receive capital gains tax treatment unlike fixed income
- Targeted towards investors that:
  - Are already invested in equities
  - Have medium risk appetites
  - Need cash flows protected from inflation that receive preferential tax treatment

  e.g., high W2 earners putting children through college

Strategy Introduction

Philosophy of the strategy

- The stock market has an upward drift over time
- Positive earnings growth is rewarded with an increase in company valuation and attracts further investment
- Companies with positive earnings growth tend to exhibit upward price momentum
- When companies have lower earnings, they tend to have lower valuations which provides an opportunity for the value factor to take effect

Strategy Introduction

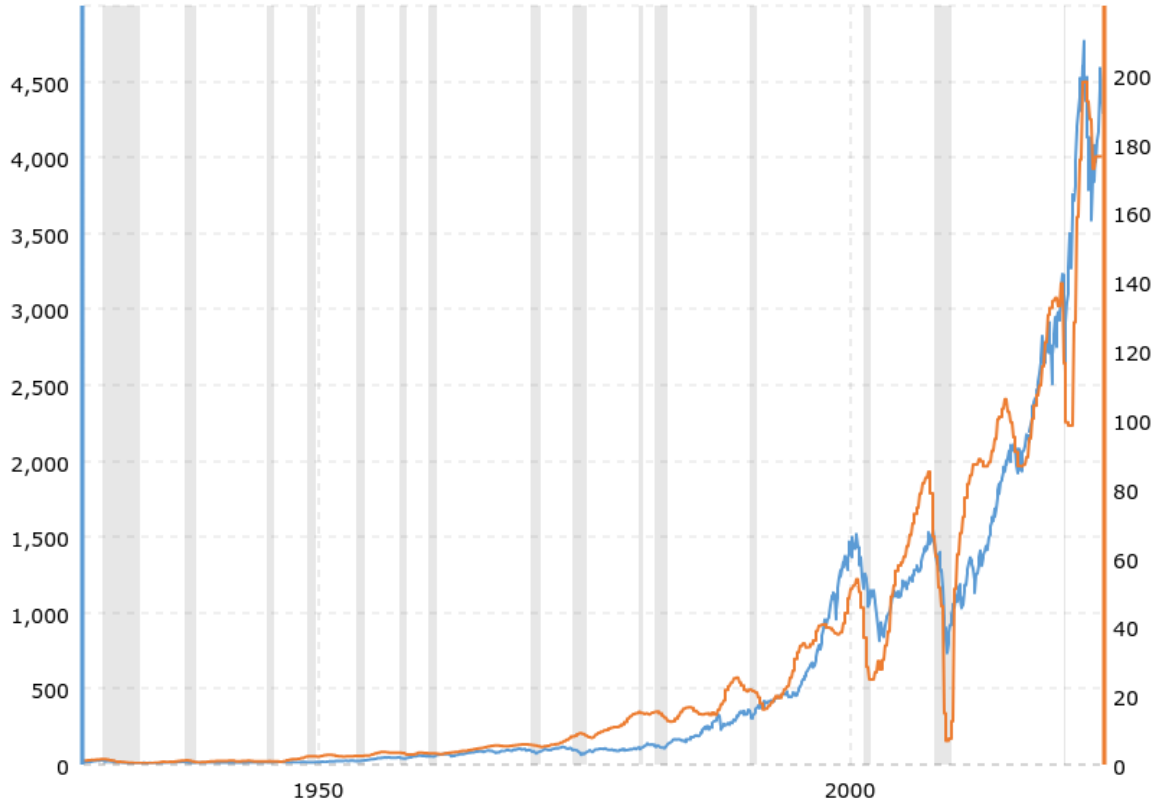
Stock market upward drift — S&P 500

- Market price has an upward drift over time
- Buying is more optimal than selling
- Risk management is necessary during corrective phases to avoid large drawdowns and allows the strategy to buy back in at more attractive prices

Source: Macrotrends.com

Strategy Introduction

S&P 500 Earnings vs. Market valuation



- S&P 500 index vs. earnings per share of the index
- Earnings growth is rewarded by an increase in price and valuation

Source: Macrotrends.com

Strategy Goals

Overarching goals of the strategy

1. Identify investible universe of American equities
2. Generate excess returns/cash flows
3. Capture outlier growth
4. Systematically risk manage all positions

Strategy Goals

Identify investible universe of American equities

To establish the universe of available equities, we will use the following criteria:

- Restrict equities to companies with a market cap greater than $10 billion
- Equities must be publicly traded on U.S. exchanges
- Restrict equities to companies that have positive earnings per share

Strategy Goals

Generate excess returns

Based upon the idea that companies experiencing earnings growth will subsequently experience an increase in valuation we:

- Identify all companies with growth in earnings year-over-year for each year in the back test
- Generate returns and capture these year-over-year in the form of "strategy dividends" which receive capital gains tax treatment and are distributed to investors
- Losses generated can be carried forward as capital gains losses to offset future "strategy dividends"
- Leverage investor capital 5-1 to generate excess cash flows beyond typical fixed income investments

Strategy Goals

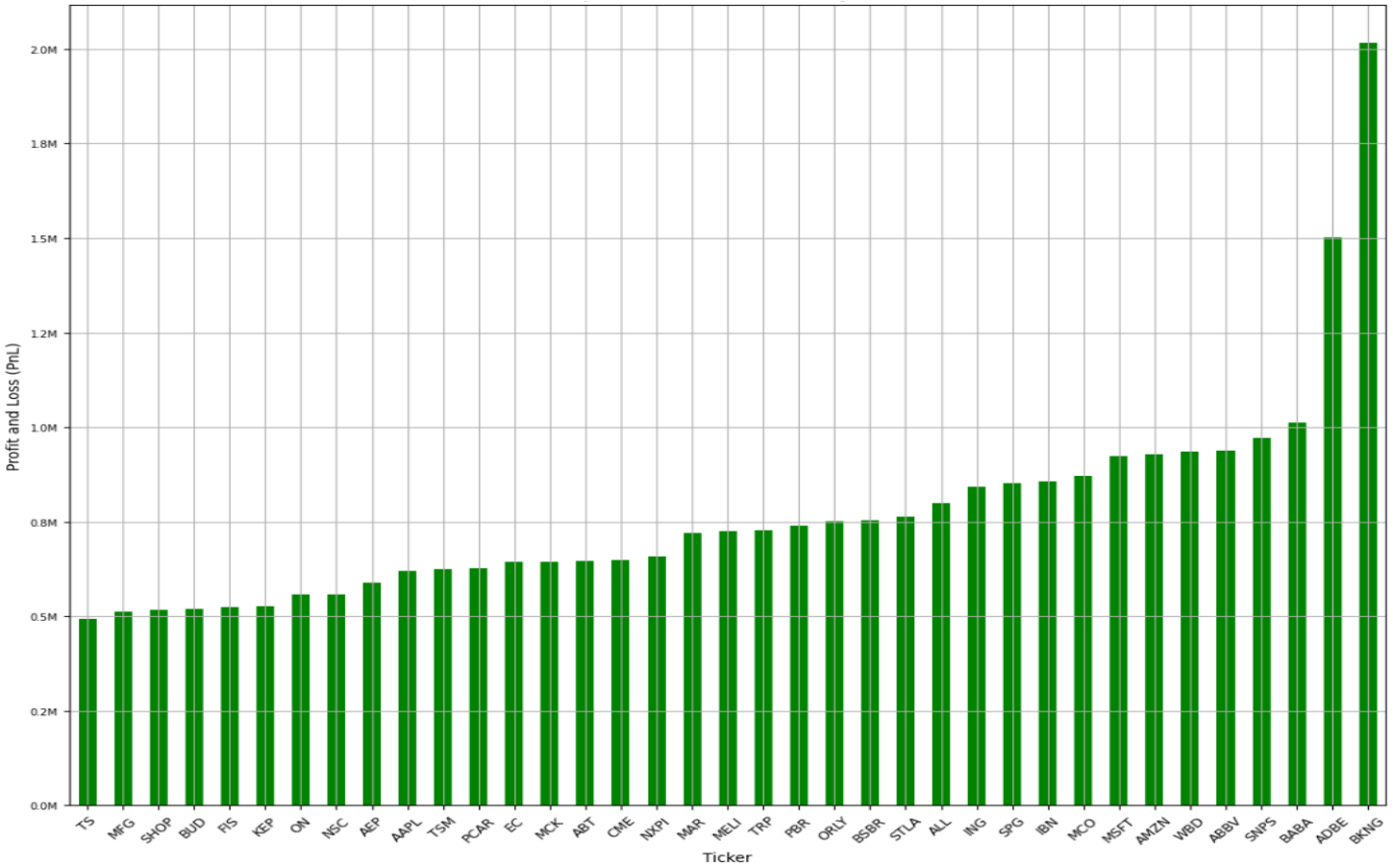
Capture outlier growth

We will also seek to identify equities that are experiencing outsized growth (so-called "outliers"), by implementing the following ideas:

- Identify the top 50 companies from the investible universe with the highest percentage change in earnings growth on an annualized basis

Strategy Performance

Outliers visualized



Strategy Goals

Systematic risk management

The strategy employs disciplined systematic risk management to perform the following:

- Stop loss which triggers a sale of any single position that loses 10% to protect investor capital
- Equal position sizing to mitigate risk and diversify the portfolio
- Rebalance the portfolio annually selling off the companies that do not make the top 50 cut and putting on new positions that do
- Gains are moved off book in the form of "strategy dividends" to preserve cash flows

Strategy Mechanics

No smoke and no mirrors

The strategy delivers on its promise of fixed income style equity cash flows via the below process:

- Investor capital is leveraged 5-1 at the beginning of each year to take advantage of leveraged returns
- Capital is invested each year in the 50 strongest performers identified
- Winners are then sold at the end of a year to receive capital gains treatment on excess returns and generate "strategy dividends"
- Any losers are sold or stopped loss out to preserve capital
- The process repeats 1 year post initial investment

Strategy Performance

Overall Performance Metrics – Annual Averages

Strategy

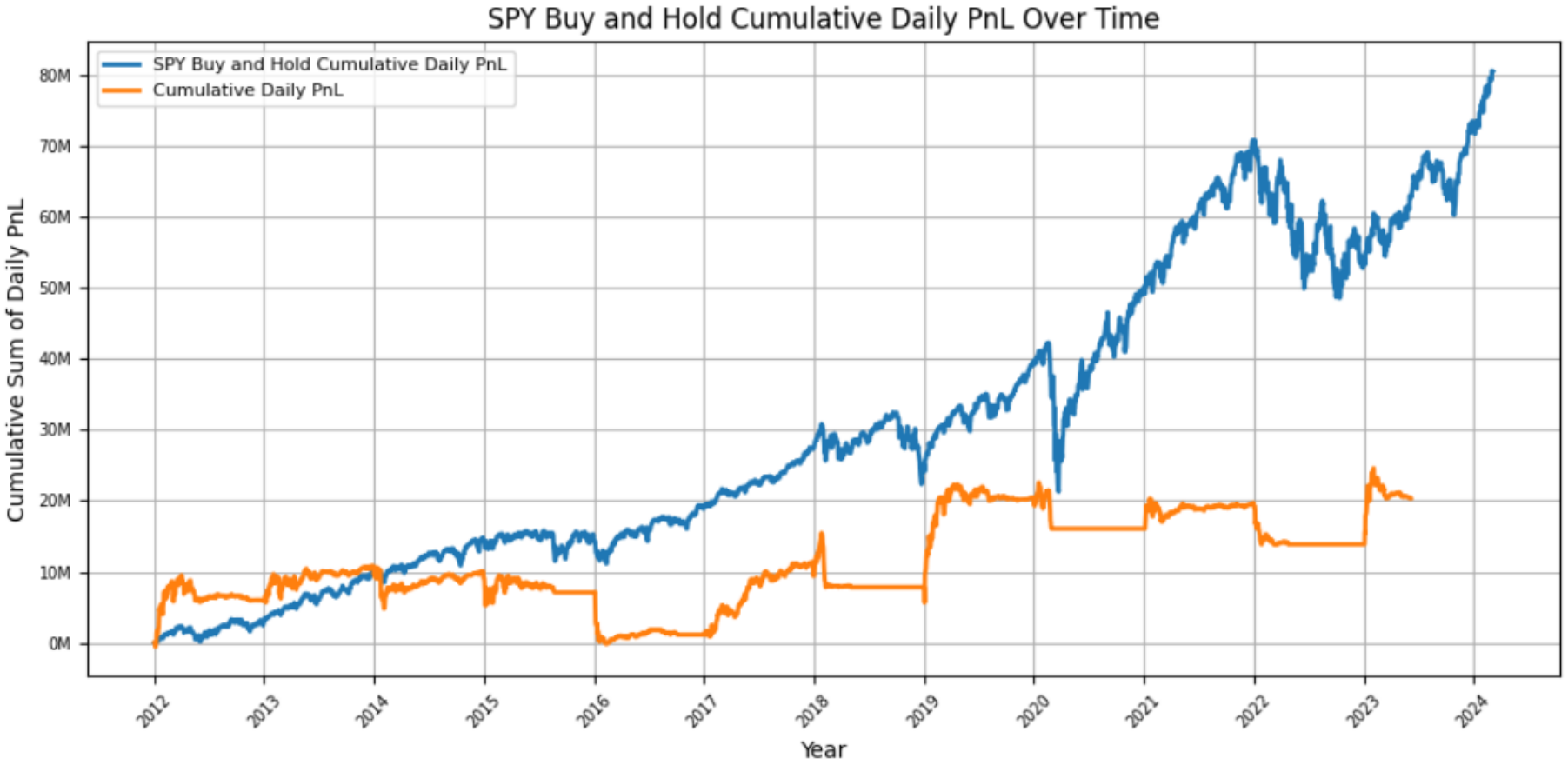
- Return on Capital (cash flows): 9.83%
- Portfolio Volatility: 5%
- Sharpe: 0.47
- Maximum drawdown: 12%
- Peak: 12/26/2013
- Bottom: 2/11/2016
- Recovery: 1/17/2018

S&P Buy and Hold (no cash flows)

- Return on Capital: 14.69%
- Volatility: 17%
- Sharpe: 0.88
- Maximum drawdown: 33%
- Peak: 2/20/2019
- Bottom: 3/23/2020
- Recovery: 8/10/2020

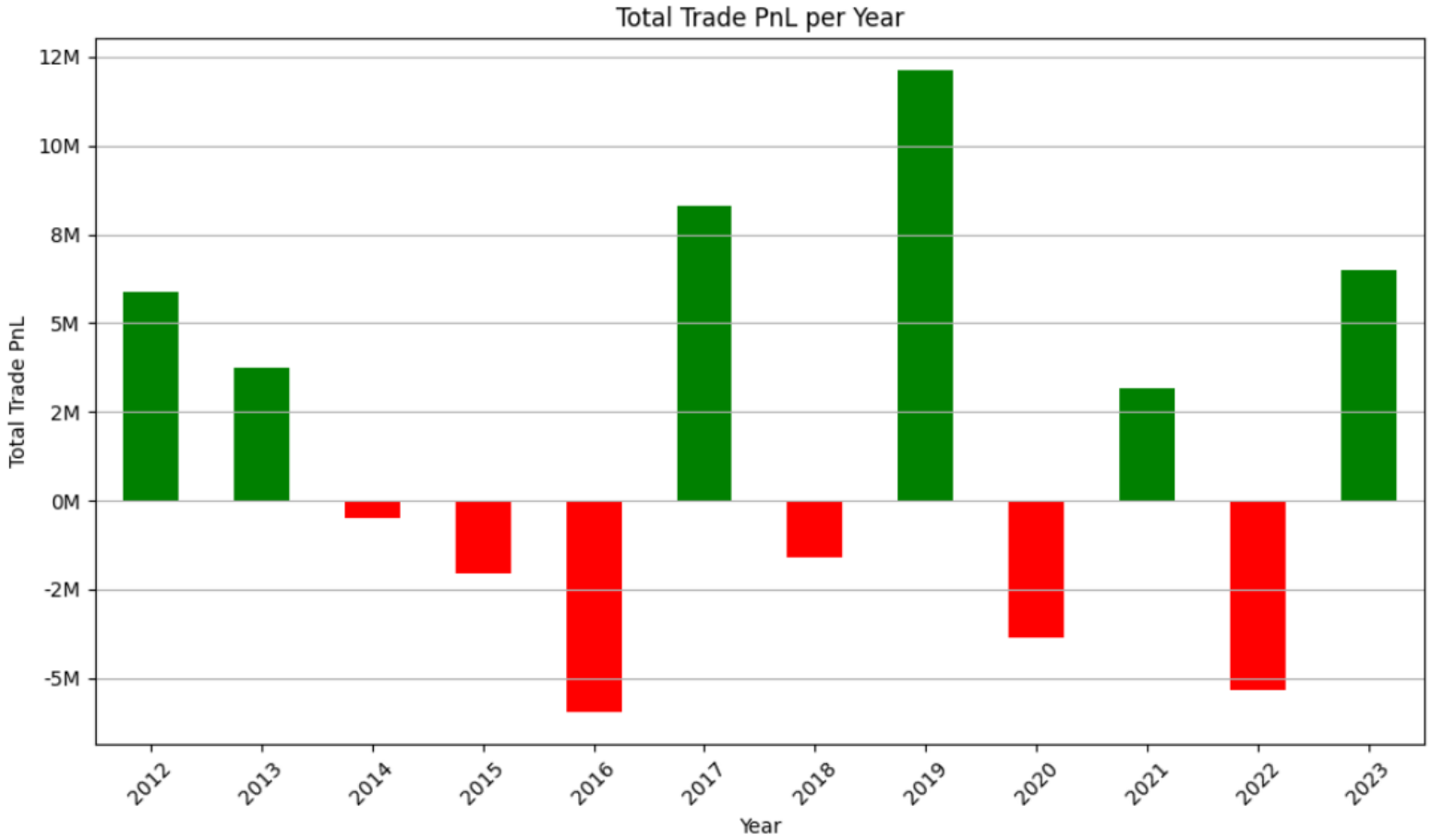
Strategy Performance

Performance metrics visualized – Chart 1



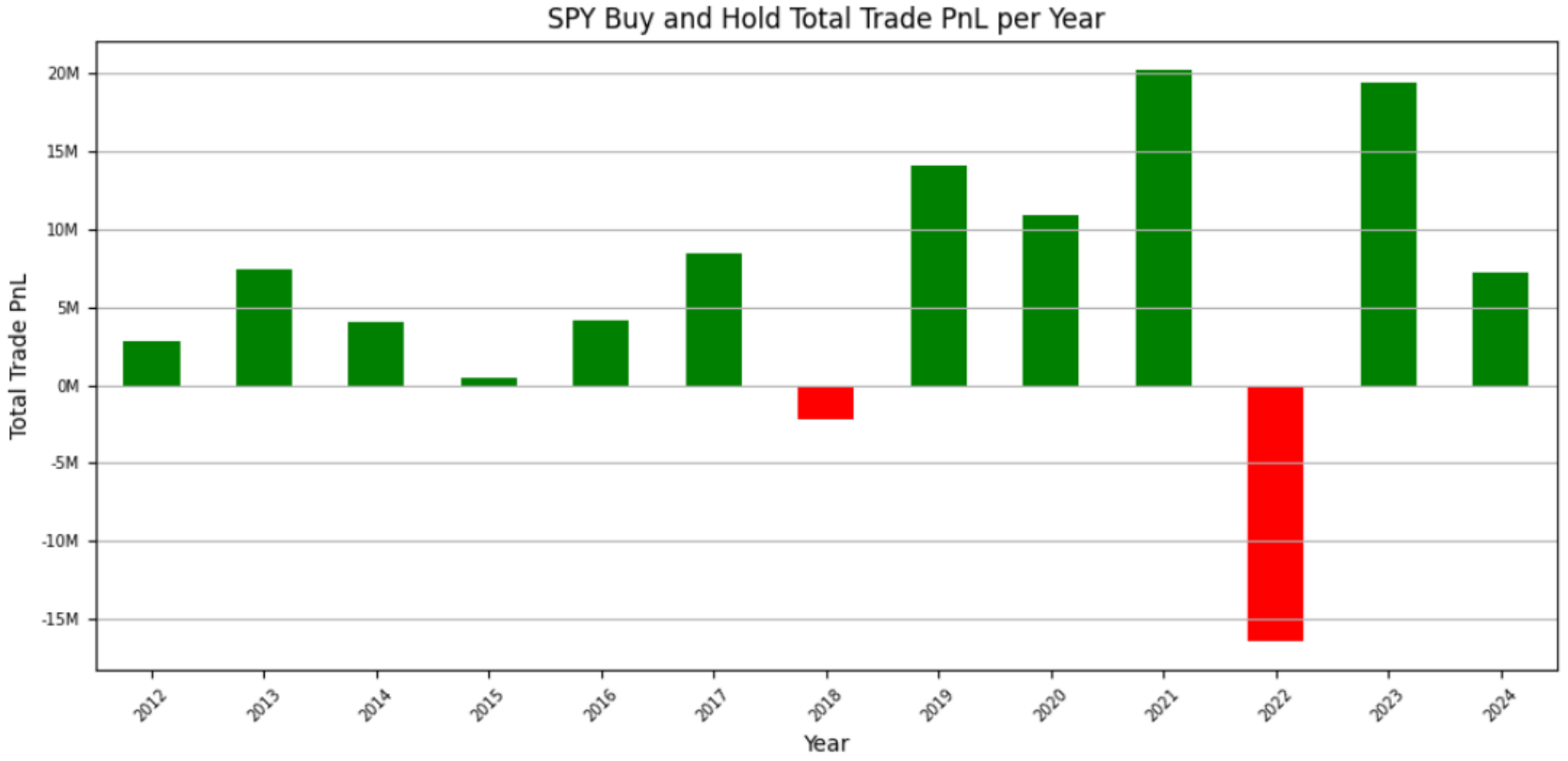
Strategy Performance

Performance metrics visualized – Chart 2



Strategy Performance

Performance metrics visualized – Chart 3



Strategy Performance

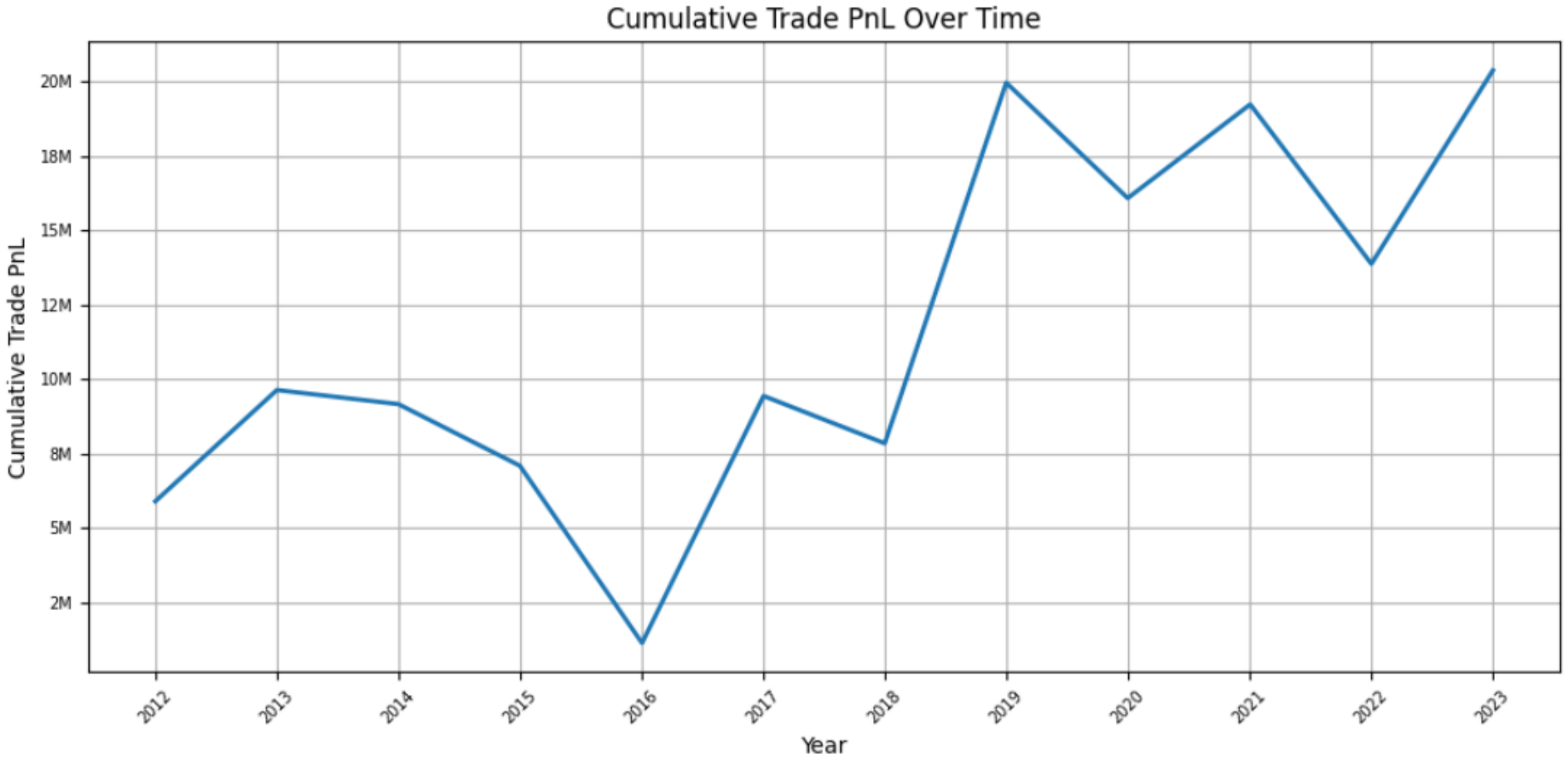
Commentary on performance vs. S&P buy and hold

The strategy would initially appear to significantly underperform a low-cost S&P buy and hold strategy:

- S&P buy and hold includes reinvested dividends, while our strategy generates "strategy dividends" in the form of tax advantaged annual disbursements
- This approach trades the advantage of compounding in favor of positive average cash flows at regular intervals
- In chart 1, consistent PnL ("strategy dividends") is shown alongside the compounded growth of the S&P during the same period for reference
- In chart 2, we see that the strategy does have down years, however it produces strong cash flows overtime, more than making up for the losses
- Capital gains losses can be carried forward to offset later capital gains, increasing the tax advantaged nature of the strategy and increasing the value of "strategy dividends"

Strategy Performance

Performance metrics visualized – Chart 4



Strategy Performance

Commentary on cumulative PnL over time

Strong cash flows, lower risk:

- In the 10 year back test over $20mm of "strategy dividends" were generated with an initial investment of $20mm (as seen in Chart 4)
- Due to extensive risk management, the overall portfolio experienced a maximum drawdown of 12% in the back test, as compared to 33% in the S&P
- The above was accompanied by lower volatility of 5%, compared to the S&P's 17%
- While the S&P's overall return is higher than the strategy's at 14.69% (which includes reinvested dividends), it does not generate cash flows with preferential tax treatment and tax loss harvesting
- Based on the above it is clear that the strategy meets the goals of an investor seeking:
  - Strong tax advantaged cash flows
  - Capital preservation
  - Lowered portfolio risk

Strategy Risks

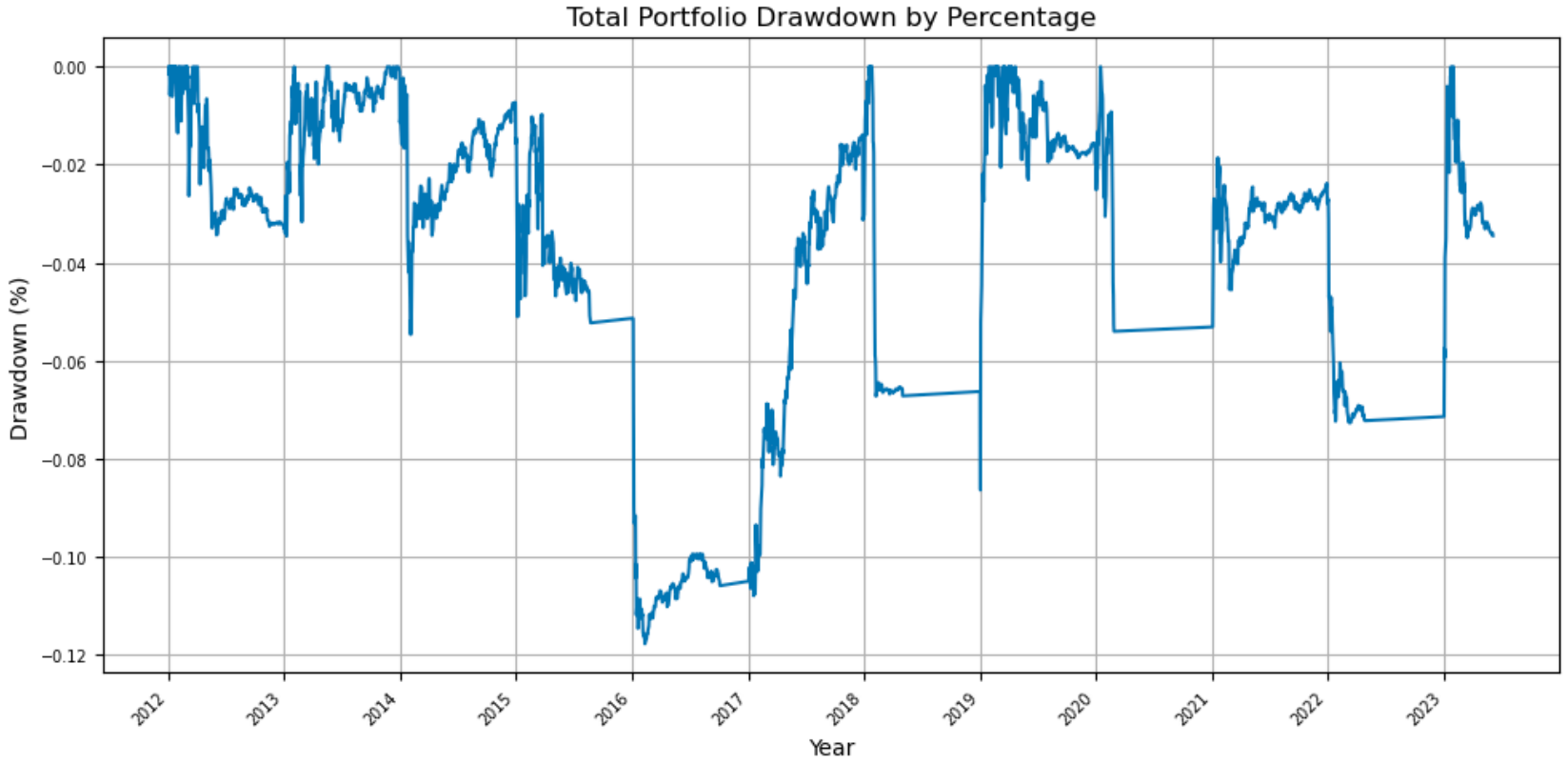
Primary Risks

The strategy is highly leveraged, which always poses a risk to investors:

- High leverage can cause rapid portfolio deterioration which is why the strategy implements a stop loss mechanism
- Trading costs are higher than for buy and hold strategies, eating into returns and causing lower "strategy dividends" than would otherwise be generated
- Funding costs due to leverage can increase as interest rates go up, making leverage and therefore excess returns more costly
- Interest rate risk is high due to the above, and since rates and equities are negatively correlated there is a risk of increased position costs and lots of stop loss triggers occurring at the same time, wiping out large amounts of capital at once

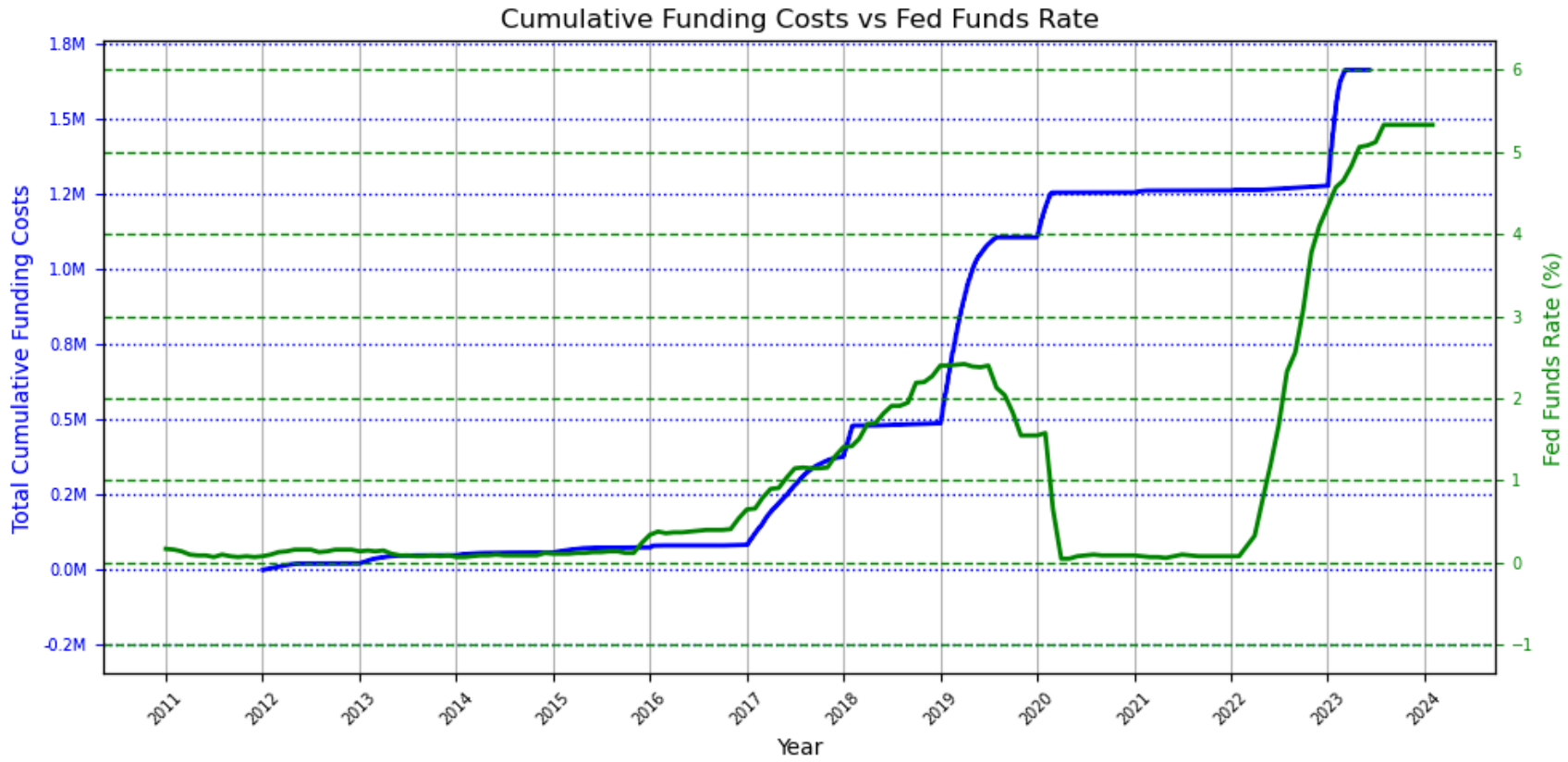
Strategy Risks

Risk metrics visualized – Chart 5



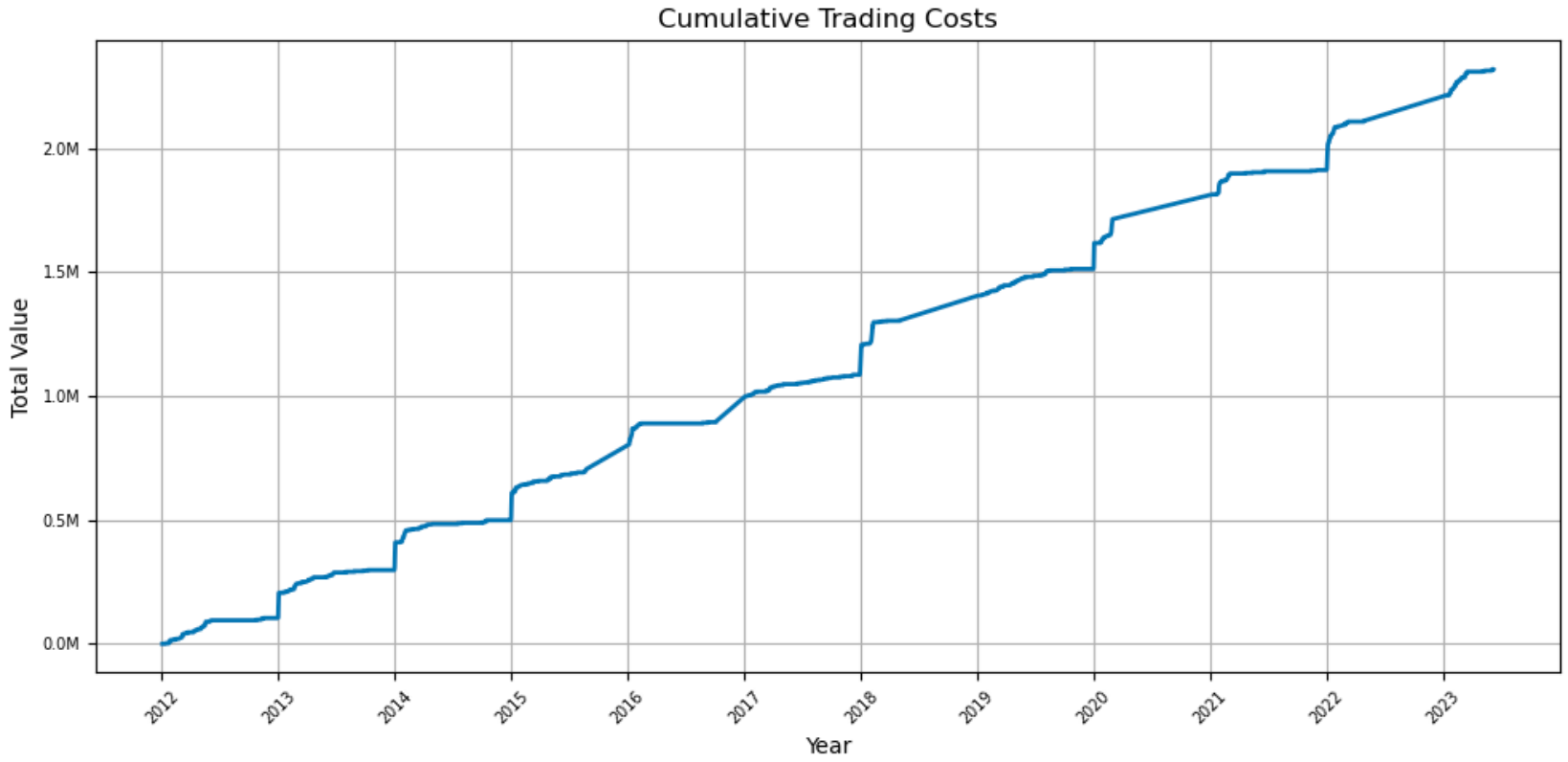
Strategy Risks

Risk metrics visualized – Chart 6



Strategy Risks

Risk metrics visualized – Chart 7



Strategy Risks

Commentary on risk visualizations

Drawdowns and Volatility, Interest Rates, and Trading Costs:

- Drawdowns and portfolio volatility are extremely limited due to the strategy's systematic stop loss mechanism, allowing investors to preserve capital and survive shocks
- Interest rate risk is real, and as one can see in chart 6, the cost to fund the strategy's leverage went up significantly along with the Federal Reserve's changes in policy
- While funding costs do impact "strategy dividends", some of the highest performing years in the back test were during the Federal Reserve's hiking cycle, meaning that funding cost increases do not necessarily correlate with lower statistically lower "strategy dividends"; capital preservation was also unimpacted
- Trading costs are not large from a cost perspective and remain steady throughout the entire back test

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