# *Trend-Adjusted Value Momentum in ESG (ESG-TAVM)*

*Michael Molenaar, Ved Munot, Judy Ojewia, Madeline Stover*

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# Summary

**Idea**: Trend-Adjusted Value + Improved Momentum Metric in ESG sector

**Origin**: "Finding Value Using Momentum" (Bijon Pani & Frank Fabozzi, 2022), paired with "ESG Integration: Value, Growth and Momentum" (Lars Kaiser)

**Strategy**: Select companies whose fundamentals are improving relative to price and whose momentum confirms that trend

**Historical Performance**: 679.1% cumulative 10yr return, 47.26% 1yr return

**Recommendation**: *Buy $50k, In ESG Fund, Sell ESGV*

**What to Sell**: *Sell ESGV, improving ESG portfolio returns and Sharpe*

**Effect on Portfolio**: Increases Beta, Sharpe, Expected Return

# Value & Momentum in Combination

**Value**

Stocks with low prices relative to fundamentals outperform

**Momentum**

Stocks with strong recent earnings continue to outperform

**Why Together?**

Value traps: assets may be cheap because their fundamentals are deteriorating (cheap assets get cheaper)

Momentum Traps: asset has been rising strongly, but overreaction (trend is exhausted)

Asness, Moskowitz, Pedersen (2013) assert that combining the two yields superior, more stable performance because risks offset each other

# Trend-Adjusted Value over Static Value

**Trends add info beyond static levels**

- Changes in fundamentals carry incremental alpha beyond static cheapness, capturing firms that are *cheap and improving value*
- Scale-neutral and comparable
- Avoids value traps

**Value Trends** were calculated using the rate of change in the value ratio over a two-year period.

*"Trends carry incremental information not captured by common factor models and control variables, adding alpha."*
*Pani & Fabozzi, 2022*

# Capturing Alpha – Results from Study

| | E/P Trend Model | EBITDA/M Trend Model |
|---|---|---|
| Monthly Average Return | 1.52% | 1.55% |
| CAGR (annualized) | 16.88% | 16.93% |
| Volatility (annualized) | 22.86% | 24.42% |
| Skewness | 0.46 | 0.69 |
| Ex-Kurtosis | 4.45 | 5.25 |
| Min. Monthly Return | –27.74% | –28.73% |
| Max. Monthly Return | 41.28% | 45.12% |

| | EBITDA/M Trend Model |
|---|---|
| Alpha ($\alpha$) | 0.70*** |
| | (8.55) |
| *Mkt – Rf* | 1.05*** |
| | (52.70) |
| *SMB* | 0.95*** |
| | (34.42) |
| *RMW* | –0.02 |
| | (–0.55) |
| *CMA* | –0.02 |
| | (–0.40) |
| *HML* | 0.13*** |
| | (3.15) |
| *MOM* | –0.53*** |
| | (–27.80) |
| Adj. $R^2$ | 0.92 |

**EBITDA/EV Yield over EBITDA/M**

- Removes leverage bias
- Capital-structure neutral

# 12-2M Momentum — An Improved Metric

**Removes near-term reversal bias**

- Excludes the last two months, which often mean-revert due to short-term overreactions, liquidity shocks, and earnings drift

**Cleaner signal than 1-Year Total Return**

- 1-year returns include volatile recent weeks that distort the true underlying trend

$$\boxed{\text{Momentum}_{12-2} = \text{1-Year Total Return} - \text{2-Month Total Return}}$$

# Strategy Details

***THESIS***: A systematic equity strategy that combines value metric trends and price momentum to identify stocks that are cheap, improving, and gaining recognition (prices are rising). Filter by ESG to capture risk-stabilization ESG intrinsically offers.

**Scenarios ran:**

- Alternative Momentum Metrics
  - 12-1m Total Return
  - 12-2m Total Return
- Weighting
  - Equally Weighted
  - Market Cap Weighted
- Rebalancing Frequency
  - Monthly, Quarterly

# Backtesting Implementation Details

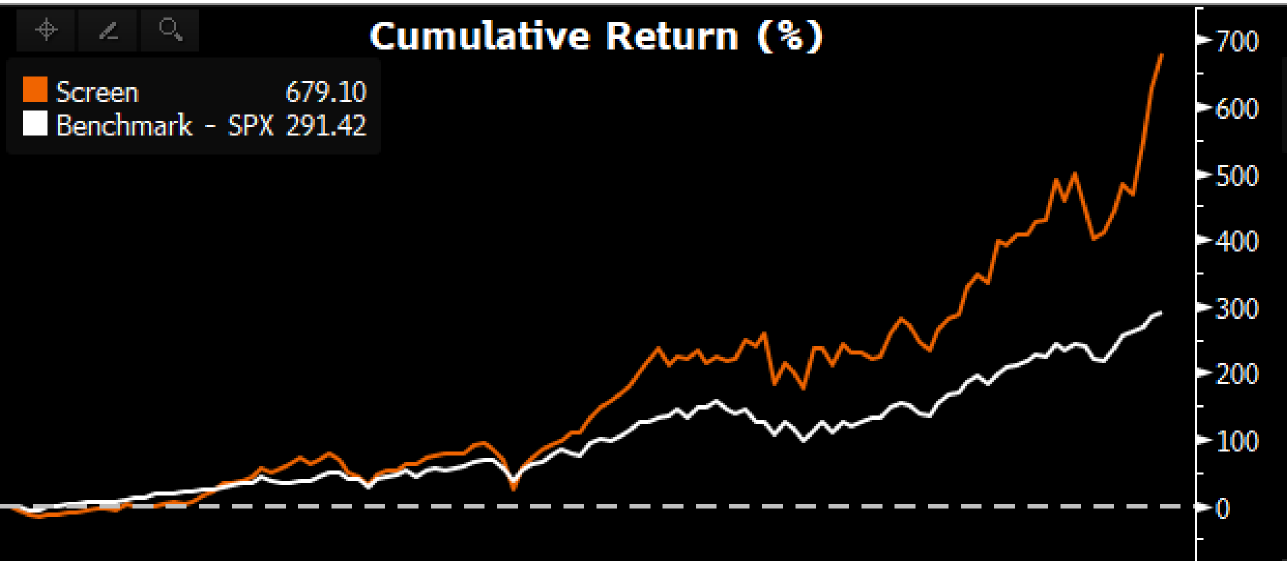
| | |
|---|---|
| **Back Testing Method** | Bloomberg |
| **# of Stocks** | 14 |
| **Weighting Scheme** | Equal-weight |
| **Rebalancing Frequency** | Monthly |
| **Years Back-Tested** | 10, 5, 3, 1 yr |
| **Currency** | USD |

# Filtering Criteria

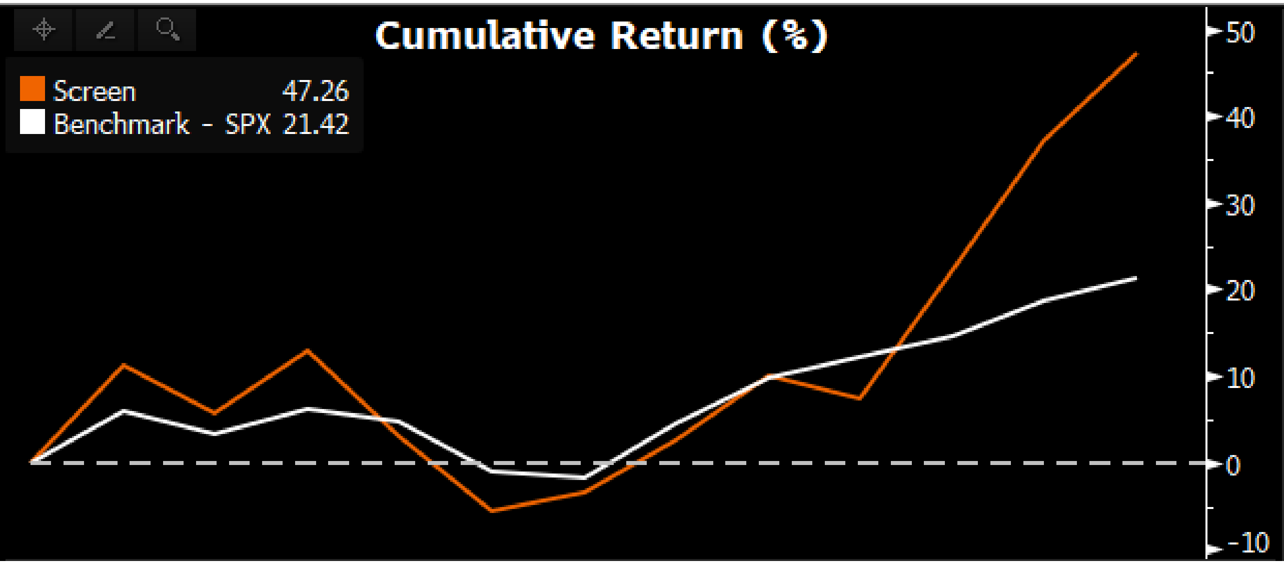
| | |
|---|---|
| Security Universe | 1594327 |
| Trading Status: Active | 574202 |
| Exchanges: United States; New York; NYSE American; NASDAQ GM | 28001 |
| Indices: Bloomberg ESG Data Index | 3526 |
| Current Market Cap > 1000 Million | 2035 |
| Top 10 Sequential Percentile Rank - Higher is Better(Period over Period Growth of EBITDA / EV Yield from 8 quart... | 137 |
| Percentile_Momentum > 90 | 14 |

# Backtesting Results - Performance

10-year

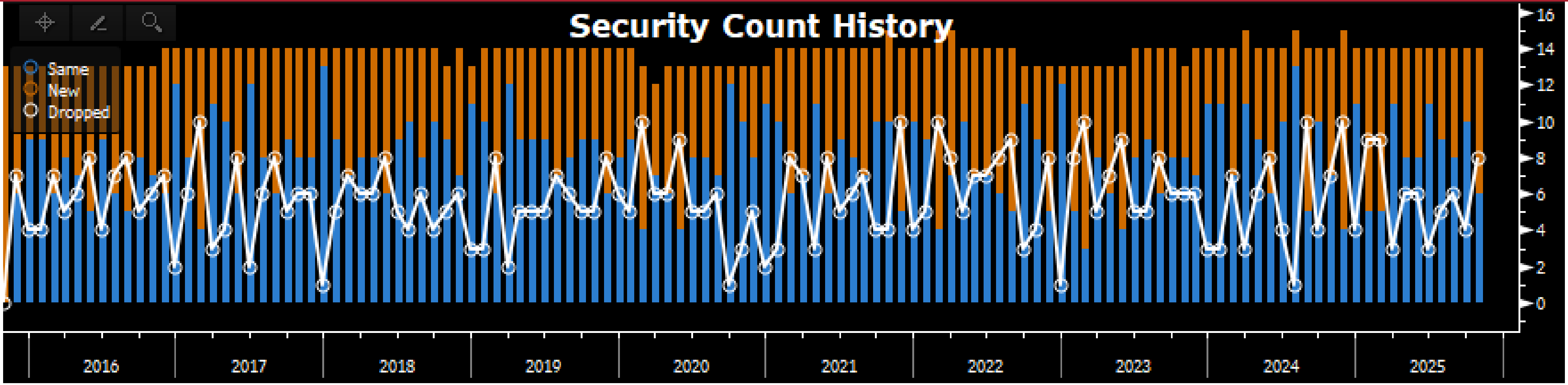



1-year




| Annualized | Return(%) | α* | β* | σ (%) | Sharpe | Treynor | Max DD(%) | Info Ratio* | Idio. Risk(%) |
|---|---|---|---|---|---|---|---|---|---|
| **10 Year TAVM** | 23 | 8.59 | 1.18 | 28.09 | 0.91 | 0.16 | -84 | 0.53 | 17.53 |
| **1 Year TAVM** | 47.26 | 25.2 | 1.28 | 29.95 | 1.67 | 0.34 | -36.76 | 1.34 | 20.2 |
| **10 Year SPX** | 11.08 | -0.07 | 1.00 | 18.61 | 0.59 | 0.07 | -52.98 | -- | -- |
| **1 Year SPX** | 8.73 | -- | 1.00 | 17.09 | 0.39 | 0.05 | -28.35 | -- | -- |

# Backtesting Results – Stock Turnover




| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Avg. Yearly Turnover (%)** | 42.31 | 44.41 | 38.69 | 39.28 | 40.34 | 41.67 | 41.67 | 44.88 | 49.41 | 40.2 | 42.14 |

| | Min | 25th | Median | 75th | Max |
|---|---|---|---|---|---|
| **Monthly Turnover (%)** | 7.14 | 30.77 | 42.86 | 53.85 | 76.92 |

| Unique Stocks | Avg Months/Stock |
|---|---|
| **121** | 14 |

# Backtesting Results - Characteristics

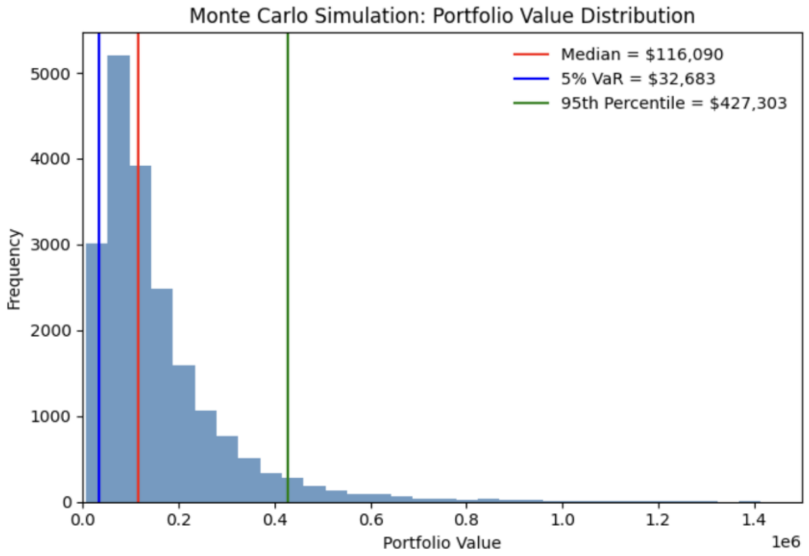
| 10-Year Analysis | Mean | Min | 25% | Median | 75% | Max |
|---|---|---|---|---|---|---|
| **Market Cap ($Billions)** | 16.3B | 1.00B | 1.92B | 3.68B | 11.12B | 3,048B |
| **P/E Ratio** | 123.42x | 1.51x | 10.78x | 24.18x | 52.00x | 14,256.2x |
| **P/E Ratio (Outliers Removed)** | 55.16x | 1.51x | 10.60x | 23.75x | 50.51x | 991.45x |
| **Monthly Trading Volume* ($Millions)** | 3.16M | .03M | .46M | 1.06M | 2.38M | 294.0M |
| **Share Price*** | $83.45 | $3.3 | $24.57 | $45.75 | $80.97 | $3,527.22 |

# Recommended Purchases

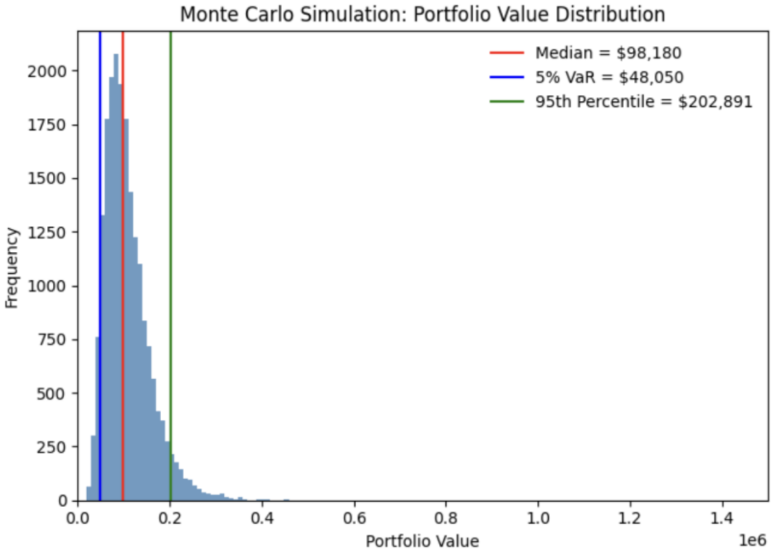
| Name | Ticker | P/E Ratio | Monthly Trading Volume ($M) | Market Cap ($B) | Share Price | # of Shares | Total Value (Equally Weighted) |
|---|---|---|---|---|---|---|---|
| **ASTRONICS CORP** | ATRO | 57.26 | 0.621 | 1.75 | 49.18 | 72.6 | $3,571 |
| **FIVE BELOW** | FIVE | 29.65 | 1.14 | 8.67 | 157.27 | 22.7 | $3,571 |
| **HECLA MINING CO** | HL | 64.41 | 20.23 | 8.62 | 12.87 | 277.5 | $3,571 |
| **LEGALZOOMCOM INC** | LZ | 87.10 | 2.01 | 1.80 | 9.97 | 385.3 | $3,571 |
| **LUCKIN COFFEE INC – ADR** | LKNCY | 33.15 | 2.14 | 11.36 | 40.10 | 89.1 | $3,571 |
| **NEWEGG COMMERCE INC** | NEGG | -- | 1.29 | 1.78 | 84.79 | 42.1 | $3,571 |
| **NEWMONT CORP** | NEM | 13.96 | 12.45 | 88.36 | 80.97 | 44.1 | $3,571 |
| **OPENLANE INC** | KAR | 30.54 | 0.752 | 2.81 | 26.42 | 133.0 | $3,571 |
| **PITNEY BOWES INC** | PBI | 11.17 | 2.47 | 1.59 | 9.88 | 361.4 | $3,571 |
| **PROGYNY INC** | PGNY | 31.16 | 1.48 | 1.61 | 18.71 | 190.9 | $3,571 |
| **RIOT PLATFORMS INC** | RIOT | 134.19 | 30.30 | 7.35 | 19.78 | 180.6 | $3,571 |
| **SOFI TECHNOLOGIES INC** | SOFI | 54.88 | 74.44 | 35.54 | 29.68 | 120.4 | $3,571 |
| **VIASAT INC** | VSAT | -- | 2.37 | 5.35 | 39.82 | 89.7 | $3,571 |
| **WARNER BROS DISCOVERY INC** | WBD | -- | 34.31 | 55.58 | 22.45 | 159.1 | $3,571 |
| *Average* | | | *50.17* | *14.56* | *19.55* | | |

# Monte Carlo Simulation

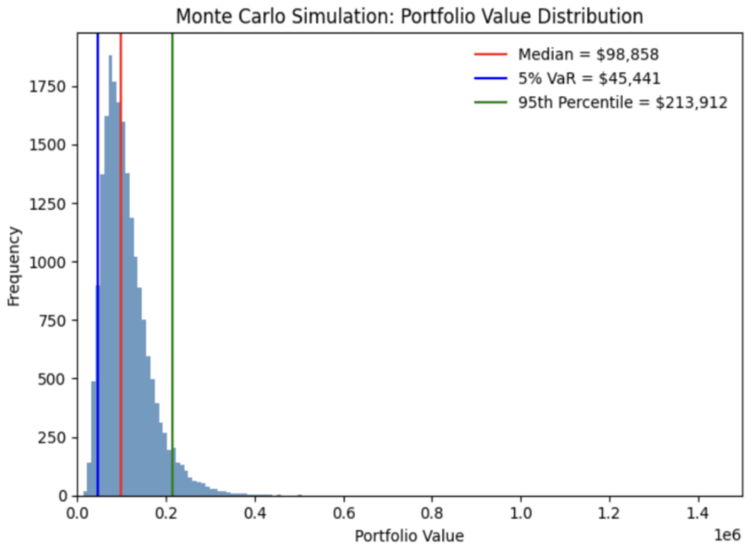
**Our Proposal**




**SPY**




**ESGV**



# Monte Carlo Simulation

| | Our Strategy | SPY | ESGV |
|---|---|---|---|
| **Mean (EV)** | $159,695 | $108,331 | $109,913 |
| **Median** | $116,090 | $98,180 | $98,858 |
| **5th Pct (VaR)** | $32,693 | $48,050 | $45,441 |
| **95th Pct** | 427,303 | $202,891 | 213,912 |
| **Average MDD** | 47% | 28% | 30% |

**$50,000 invested**

**Mean Return:** $159,695

**Median Return:** $116,090

**Rebalance:** Monthly

**Horizon:** 5 years

**Periods:** 12

**StDeviation:** $151,057

**Simulations:** 20,000

# Sell Proposal - Sell 50,000 of ESGV

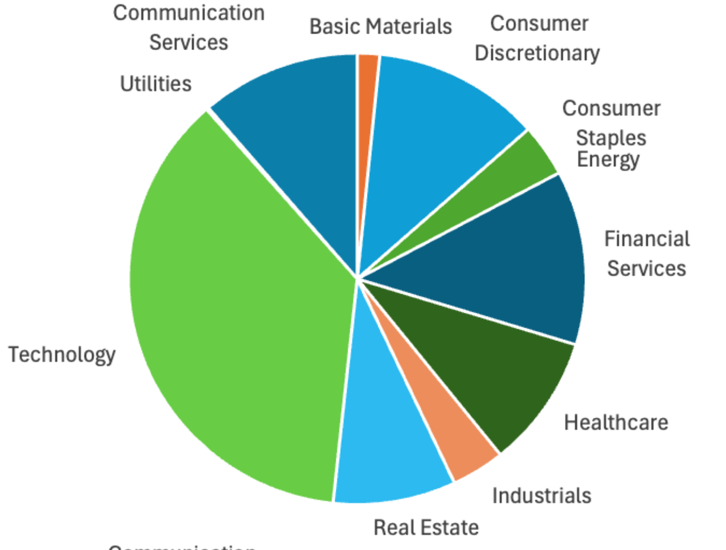
- We have a significant holding in ESGV
- Increase Beta and Sharpe

| | ESGV | TAVM Strategy |
|---|---|---|
| **Sharpe** | 0.72 | 1.10 |
| **σ** | 14.51% | 28.09% |
| **β** | 1.07 | 1.18 |
| **CAGR** | 15.23% | 23.00% |

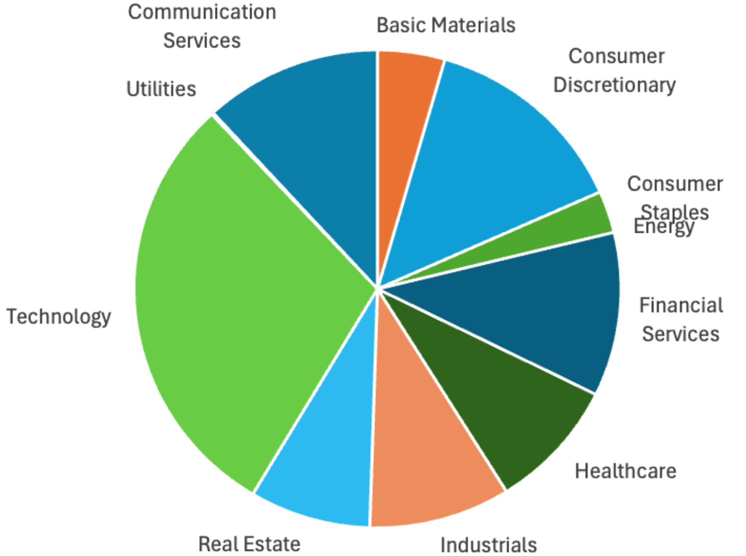
# Effect on the Portfolio

| | Existing Portfolio | New Portfolio |
|---|---|---|
| **Beta** | 1.02 | 1.14 |
| **Sharpe** | 0.89 | 0.895 |
| **Standard Deviation** | 14.51% | 17.6% |
| **Expected Return** | 10.4% | 11% |
| **HMB** | -0.01 | -0.15 |
| **Idiosyncratic Risk** | 8% | 9.7% |

Old Portfolio Sector Allocation




New Portfolio Sector Allocation



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Strategy: Select companies whose fundamentals are improving relative to price and whose momentum confirms that trend

Historical Performance: 679.1% cumulative 10yr return, 47.26% 1yr return

**Recommendation: *Buy $50k, In ESG Fund, Sell $50k of ESGV***

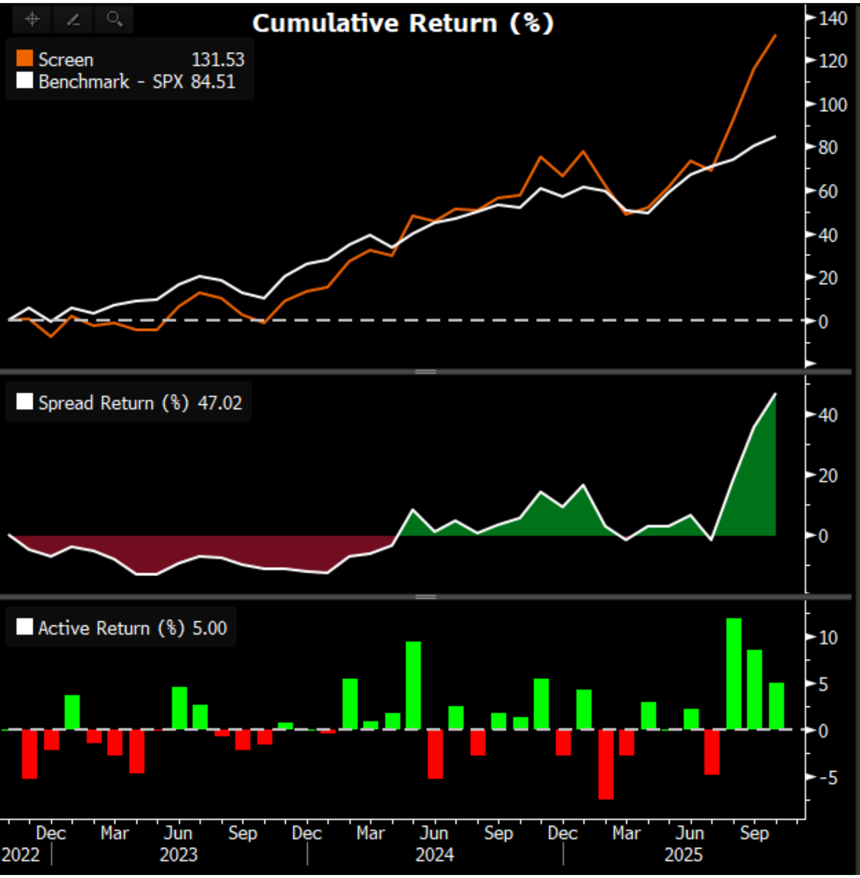
What to Sell – *Sell ESGV, improving ESG portfolio returns and Sharpe*

Effect on Portfolio – Increases Beta, Sharpe, Expected Return

# Appendix

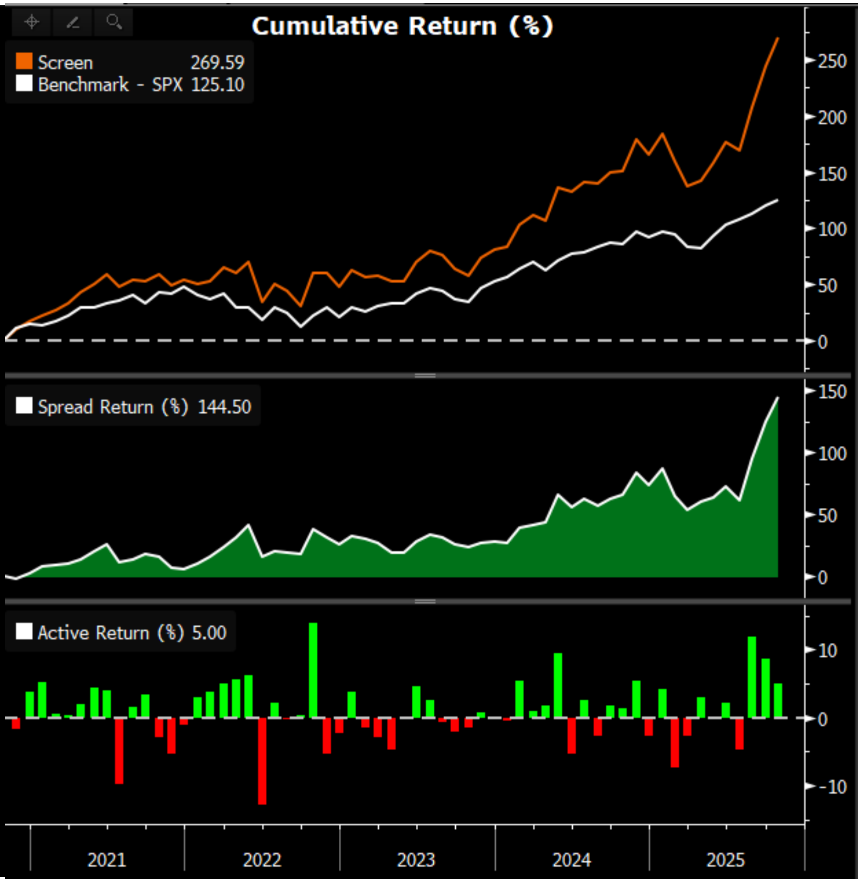
# Exhibit 1: 12-2M Momentum 3yr & 5yr Equally Weighted, Monthly Rebalancing

## 3-year




| | |
|---|---|
| Total Return | 131.53 |
| Mean Return (%) | 35.54 |
| Mean Active Return (%) | 9.83 |
| Minimum Return (%) | -8.76 |
| Maximum Return (%) | 14.44 |
| Standard Deviation | 26.09 |
| Semi variance | 17.54 |
| Tracking Error (%) | 17.97 |
| Skewness | 0.04 |
| Sharpe Ratio | 1.23 |
| Jensen Alpha | 8.48 |
| Information Ratio | 0.57 |
| Beta | 1.22 |
| Correlation | 0.74 |

## 5-year




| | |
|---|---|
| Total Return | 269.59 |
| Mean Return (%) | 33.93 |
| Mean Active Return (%) | 12.70 |
| Minimum Return (%) | -21.09 |
| Maximum Return (%) | 22.00 |
| Standard Deviation | 29.55 |
| Semi variance | 20.01 |
| Tracking Error (%) | 21.78 |
| Skewness | -0.16 |
| Sharpe Ratio | 1.10 |
| Jensen Alpha | 13.31 |
| Information Ratio | 0.63 |
| Beta | 1.19 |
| Correlation | 0.68 |

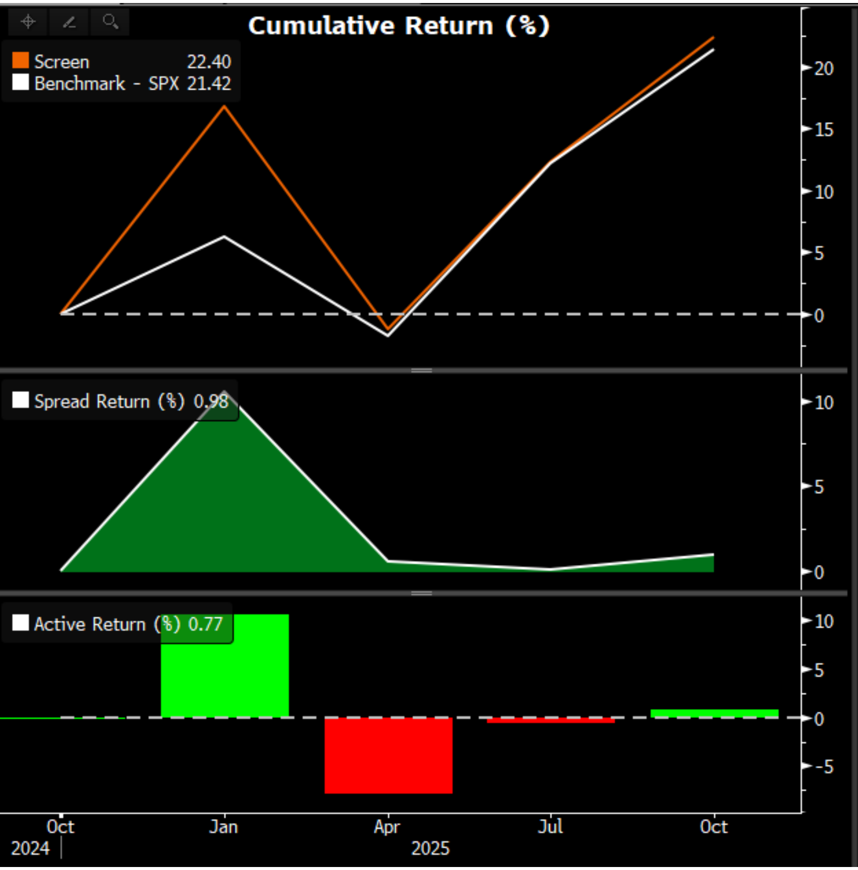
# Appendix: Empirical Evidence of Quarterly Rebalancing

| | | Panel A | | | | Panel B → 1 week lag | | | |
|---|---|---|---|---|---|---|---|---|---|
| *J* | *K* = | 3 | 6 | 9 | 12 | *K* = 3 | 6 | 9 | 12 |
| 3 | Sell | 0.0108 | 0.0091 | 0.0092 | 0.0087 | 0.0083 | 0.0079 | 0.0084 | 0.0083 |
| | | (2.16) | (1.87) | (1.92) | (1.87) | (1.67) | (1.64) | (1.77) | (1.79) |
| 3 | Buy | 0.0140 | 0.0149 | 0.0152 | .0156 | 0.0156 | 0.0158 | 0.0158 | 0.0160 |
| | | (3.57) | (3.78) | (3.83) | (3.89) | (3.95) | (3.98) | (3.96) | (3.98) |
| 3 | Buy-sell | 0.0032 | 0.0058 | 0.0061 | 0.0069 | 0.0073 | 0.0078 | 0.0074 | 0.0077 |
| | | (1.10) | (2.29) | (2.69) | (3.53) | (2.61) | (3.16) | (3.36) | (4.00) |
| 6 | Sell | 0.0087 | 0.0079 | 0.0072 | 0.0080 | 0.0066 | 0.0068 | 0.0067 | 0.0076 |
| | | (1.67) | (1.56) | (1.48) | (1.66) | (1.28) | (1.35) | (1.38) | (1.58) |
| 6 | Buy | 0.0171 | 0.0174 | 0.0174 | 0.0166 | 0.0179 | 0.0178 | 0.0175 | 0.0166 |
| | | (4.28) | (4.33) | (4.31) | (4.13) | (4.47) | (4.41) | (4.32) | (4.13) |
| 6 | Buy-sell | 0.0084 | 0.0095 | 0.0102 | 0.0086 | 0.0114 | 0.0110 | 0.0108 | 0.0090 |
| | | (2.44) | (3.07) | (3.76) | (3.36) | (3.37) | (3.61) | (4.01) | (3.54) |
| 9 | Sell | 0.0077 | 0.0065 | 0.0071 | 0.0082 | 0.0058 | 0.0058 | 0.0066 | 0.0078 |
| | | (1.47) | (1.29) | (1.43) | (1.66) | (1.13) | (1.15) | (1.34) | (1.59) |
| 9 | Buy | 0.0186 | 0.0186 | 0.0176 | 0.0164 | 0.0193 | 0.0188 | 0.0176 | 0.0164 |
| | | (4.56) | (4.53) | (4.30) | (4.03) | (4.72) | (4.56) | (4.30) | (4.04) |
| 9 | Buy-sell | 0.0109 | 0.0121 | 0.0105 | 0.0082 | 0.0135 | 0.0130 | 0.0109 | 0.0085 |
| | | (3.03) | (3.78) | (3.47) | (2.89) | (3.85) | (4.09) | (3.67) | (3.04) |
| 12 | Sell | 0.0060 | 0.0065 | 0.0075 | 0.0087 | 0.0048 | 0.0058 | 0.0070 | 0.0085 |
| | | (1.17) | (1.29) | (1.48) | (1.74) | (0.93) | (1.15) | (1.40) | (1.71) |
| 12 | Buy | 0.0192 | 0.0179 | 0.0168 | 0.0155 | 0.0196 | 0.0179 | 0.0167 | 0.0154 |
| | | (4.63) | (4.36) | (4.10) | (3.81) | (4.73) | (4.36) | (4.09) | (3.79) |
| 12 | Buy-sell | 0.0131 | 0.0114 | 0.0093 | 0.0068 | 0.0149 | 0.0121 | 0.0096 | 0.0069 |
| | | (3.74) | (3.40) | (2.95) | (2.25) | (4.28) | (3.65) | (3.09) | (2.31) |

***12-month/3-month*** *strategy yield the best results.*

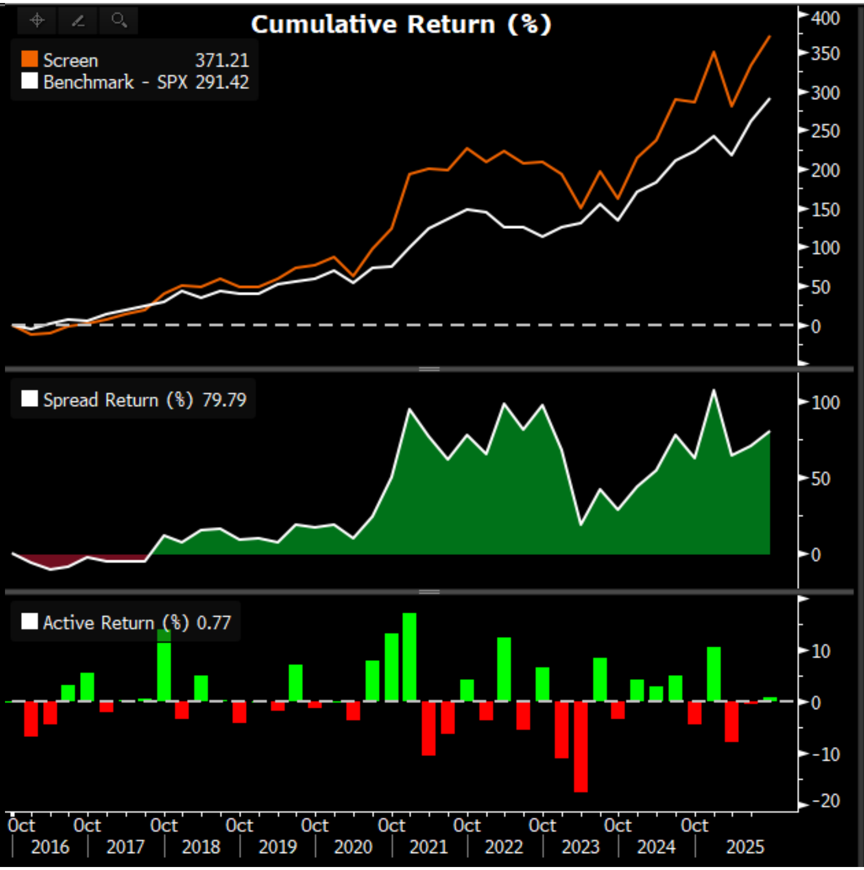
# Exhibit 2: 12-2M Momentum 1yr & 10yr Equally Weighted, Quarterly Rebalancing

## 1-year




| | |
|---|---|
| Total Return | 22.40 |
| Mean Return (%) | 26.28 |
| Mean Active Return (%) | 2.93 |
| Minimum Return (%) | -15.36 |
| Maximum Return (%) | 16.76 |
| Standard Deviation | 32.39 |
| Semi variance | 23.67 |
| Tracking Error (%) | 20.03 |
| Skewness | 0.36 |
| Sharpe Ratio | 0.77 |
| Jensen Alpha | -2.60 |
| Information Ratio | 0.22 |
| Beta | 1.41 |
| Correlation | 0.82 |

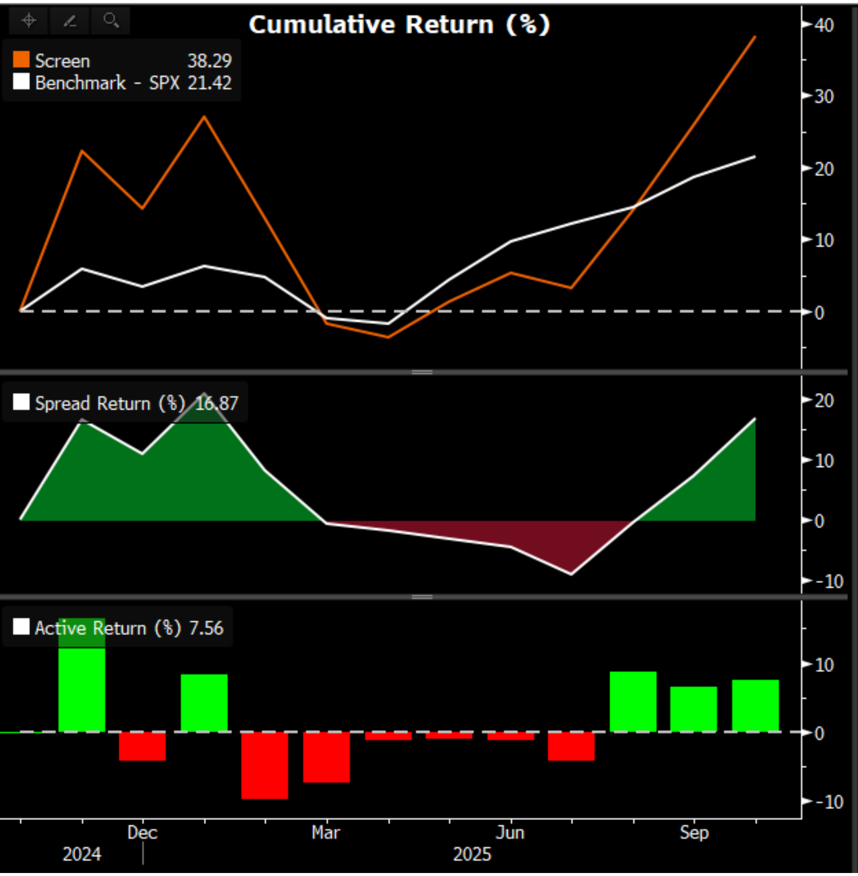
## 10-year




| | |
|---|---|
| Total Return | 371.21 |
| Mean Return (%) | 19.16 |
| Mean Active Return (%) | 3.19 |
| Minimum Return (%) | -15.36 |
| Maximum Return (%) | 31.21 |
| Standard Deviation | 27.82 |
| Semi variance | 20.76 |
| Tracking Error (%) | 18.03 |
| Skewness | -0.35 |
| Sharpe Ratio | 0.69 |
| Jensen Alpha | 2.27 |
| Information Ratio | 0.23 |
| Beta | 1.18 |
| Correlation | 0.77 |

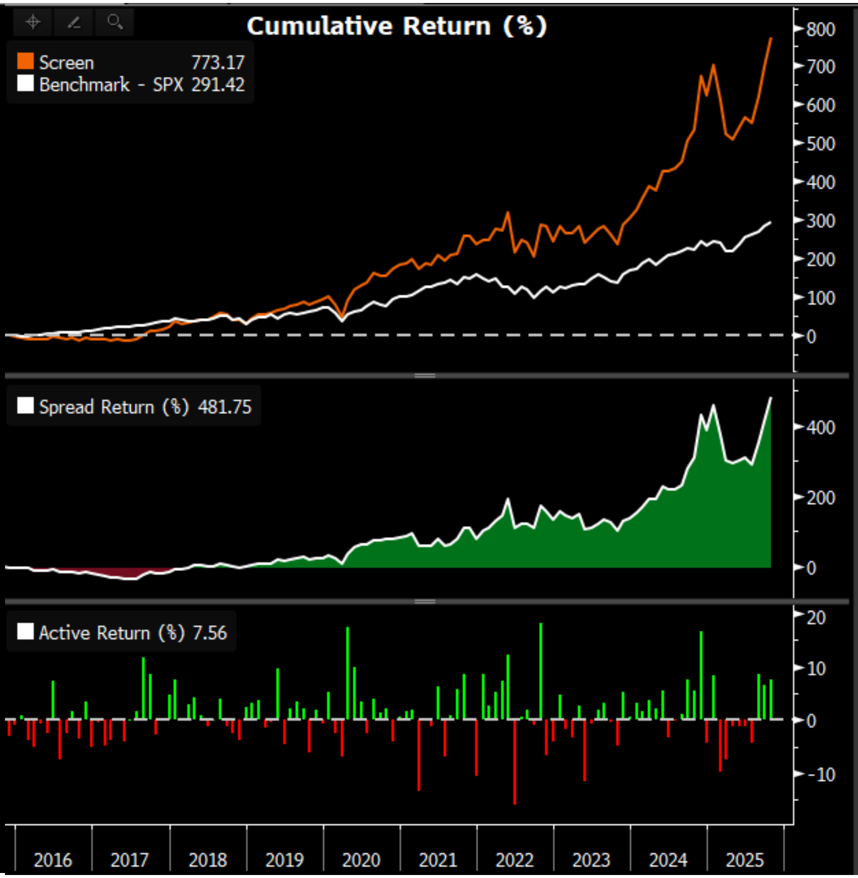
# Exhibit 3: 12-2M Momentum 1yr & 10yr Market Cap Weighted, Monthly Rebalancing

## 1-year




| | |
|---|---|
| Total Return | 38.29 |
| Mean Return (%) | 46.40 |
| Mean Active Return (%) | 20.10 |
| Minimum Return (%) | -12.99 |
| Maximum Return (%) | 22.36 |
| Standard Deviation | 32.37 |
| Semi variance | 24.66 |
| Tracking Error (%) | 22.20 |
| Skewness | -0.16 |
| Sharpe Ratio | 1.29 |
| Jensen Alpha | 16.88 |
| Information Ratio | 0.81 |
| Beta | 1.28 |
| Correlation | 0.75 |

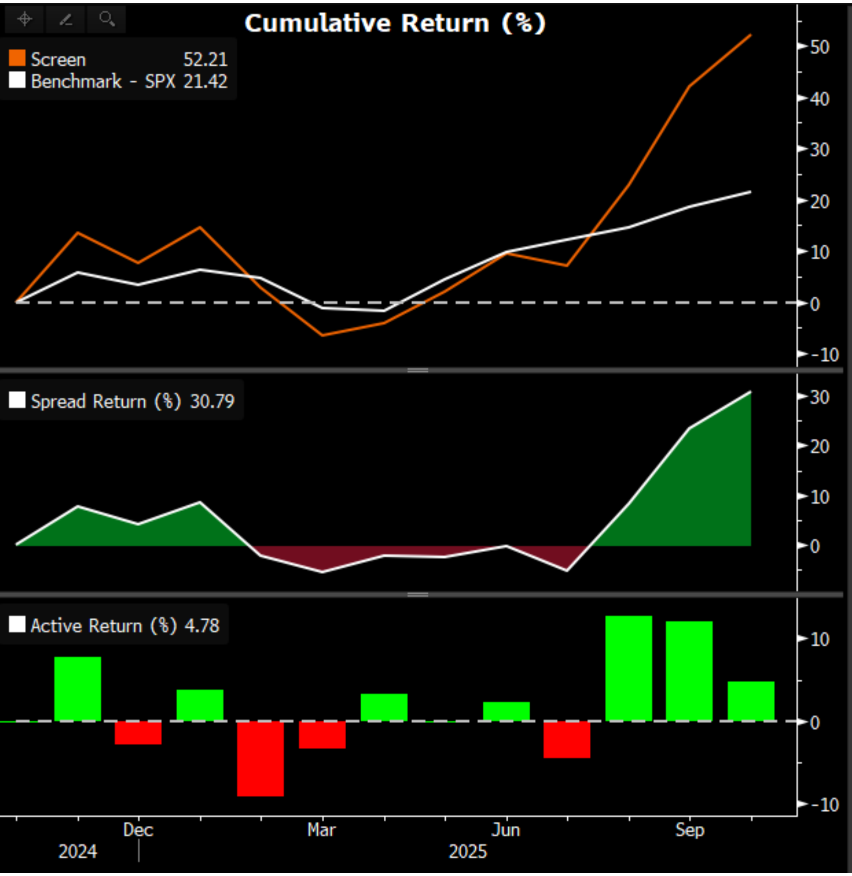
## 10-year




| | |
|---|---|
| Total Return | 773.17 |
| Mean Return (%) | 28.64 |
| Mean Active Return (%) | 11.11 |
| Minimum Return (%) | -24.19 |
| Maximum Return (%) | 30.07 |
| Standard Deviation | 30.12 |
| Semi variance | 23.57 |
| Tracking Error (%) | 21.92 |
| Skewness | -0.59 |
| Sharpe Ratio | 0.93 |
| Jensen Alpha | 11.38 |
| Information Ratio | 0.53 |
| Beta | 1.15 |
| Correlation | 0.69 |

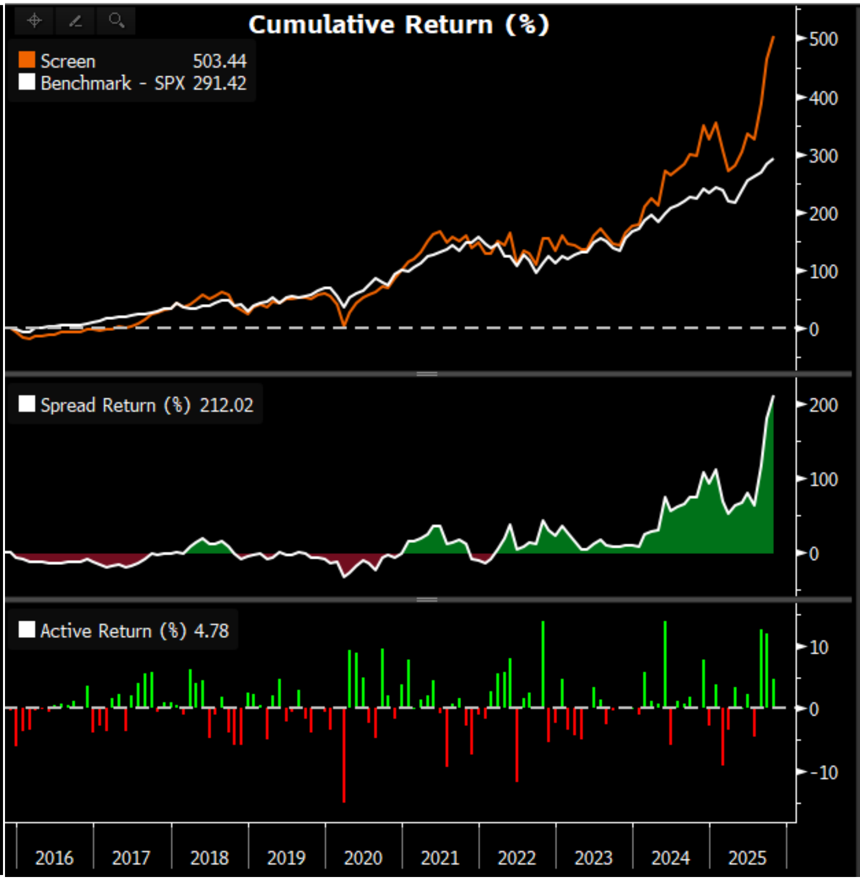
# Exhibit 4: 12-1M Momentum 1yr & 10yr Equally Weighted, Monthly Rebalancing

## 1-year




| | |
|---|---|
| Total Return | 52.21 |
| Mean Return (%) | 58.68 |
| Mean Active Return (%) | 30.35 |
| Minimum Return (%) | -10.40 |
| Maximum Return (%) | 15.69 |
| Standard Deviation | 29.85 |
| Semi variance | 20.05 |
| Tracking Error (%) | 18.96 |
| Skewness | 0.26 |
| Sharpe Ratio | 1.85 |
| Jensen Alpha | 31.05 |
| Information Ratio | 1.53 |
| Beta | 1.25 |
| Correlation | 0.79 |

## 10-year

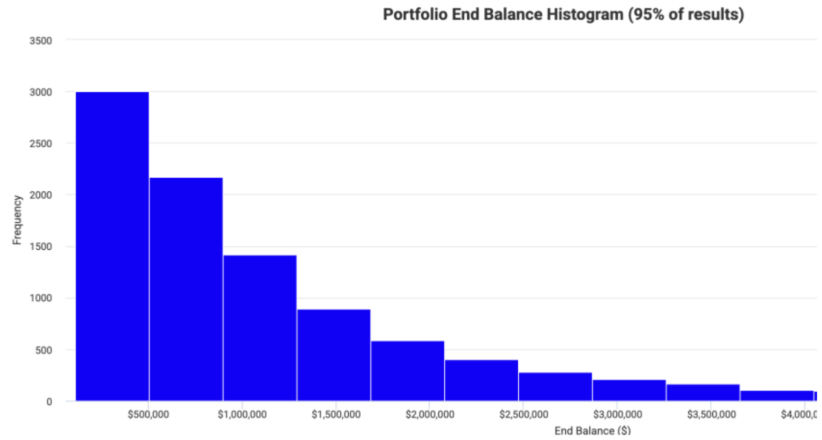



| | |
|---|---|
| Total Return | 503.44 |
| Mean Return (%) | 23.47 |
| Mean Active Return (%) | 6.59 |
| Minimum Return (%) | -27.43 |
| Maximum Return (%) | 22.16 |
| Standard Deviation | 27.88 |
| Semi variance | 21.12 |
| Tracking Error (%) | 18.60 |
| Skewness | -0.61 |
| Sharpe Ratio | 0.80 |
| Jensen Alpha | 5.74 |
| Information Ratio | 0.37 |
| Beta | 1.15 |
| Correlation | 0.75 |

# Monte Carlo Simulation

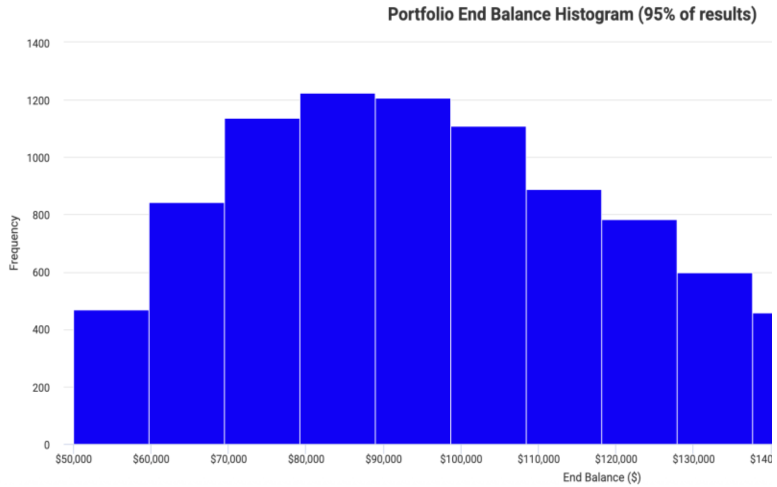
## Our Proposal

Portfolio End Balance Histogram



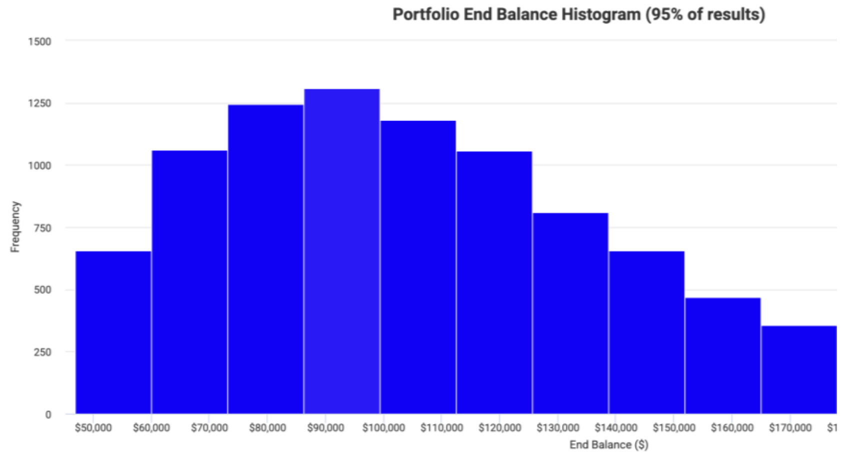

## SPY

Portfolio End Balance Histogram




## ESGV

Portfolio End Balance Histogram



# Appendix - Sources


https://alphaarchitect.com/using-momentum-to-find-value/

https://alphaarchitect.com/how-to-measure-momentum/

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