Money Making Materials

James VanDam, Jake Bauman, Kyle Klinger, Zach Lombardi

3/30/26

Summary

Strategy – Companies in the mining and construction materials sector with above 30% gross profit that remain undervalued relative to peers

Data Source: Quality Factor Investing with materials industry tailwinds

Historical Performance – 1y Performance: 65.80%, Sharpe 2.40, 10y 454%, Sharpe .75

Recommendation – Buy $30k, In School Fund using cash

Effect on Portfolio – Slightly increases beta, exposure to new sectors

What is Quality Factor Investing

"Quality Investing" is a strategy that targets "safe" companies with robust financial health, consistent profitability, and low debt

Pros:

- **Strong resilience** and **defensive characteristics** during market volatility
- Low correlation with value factors and negative correlation with market beta and size helping smooth out performance of a multi-factor portfolio
- Historically performs best during periods of stagflation and slow growth
- No risk premium dilution after adoption

Cons

- May experience long periods of underperformance during bull markets (risk appetite increases -> capital reallocation from defensive assets)

Our Quality/Value Factors

- Gross Margin
  - Quality Premium – Asness (2014) and others found gross margin generated statistically significant alphas for both U.S. and global
    - Represents the most fundamental profitability metric without capturing manipulated accrual accounts or overblown assets/liabilities in capital intensive companies
- EV/EBITDA
  - Industry-Specific Advantages
    - Preferred multiple for capital intensive industries, especially materials
    - Capital neutral evaluation method
    - Adjusts for non-cash expenses
  - High Valuation Accuracy – More accurate value estimates and higher valuation performance than EBIT, net income, or sales
- Combined
  - Extensive research supports a combined value/quality factor strategy extremely well due to their ability to target high-quality assets without overpaying for a premium

MSCI, Alpha Architect, Ma, Yang, Ye

Mining & Metals, Construction Mtrls Tailwinds

Figure 1

US policy actions and standing federal mechanisms affecting metals and mining since 2025

Announcement date/status	Policy/executive order	Action type	Potential implications for metals and mining companies
Ongoing (standing authority)	Defense Production Act (DPA)	Federal industrial base and national security authority	Provides a legal and funding framework that could be used to support the expansion of domestic capacity for critical materials and related supply chains (e.g., purchase commitments and other industrial base measures), depending on prioritization, program design, and available appropriations
Ongoing (standing policy)	Federal tax incentives and provisions relevant to mining finance (e.g., credits such as Section 45X where applicable, depletion, selected capitalization rules, corporate minimum tax interactions)	Tax-based incentives and capital formation	Could influence project after-tax economics, capital structuring, and investor returns; where later legislation modifies these provisions, impacts may be seen through changes to eligibility, phase-down timing, compliance requirements, or interaction effects across the tax base
January 20, 2025	Unleashing American Energy	Permitting posture	Signals a federal posture that could reduce permitting friction for projects with federal approvals
February 3, 2025	Department of the Interior secretarial order (Unleashing American Energy)	Federal lands and permitting	Directs the department to identify and revise elements viewed as constraining development
February 14, 2025	Establishing the National Energy Dominance Council	Coordination and prioritization	Creates a cross-government coordination mechanism spanning energy and critical minerals, which could increase the likelihood of structured interagency support for priority projects and faster issue resolution across agencies
March 12, 2025	Environmental Protection Agency deregulatory actions package	Environmental regulation	Introduces a regulatory change agenda that could affect permitting timelines and compliance costs, subject to rulemaking sequencing, implementation capacity, and litigation risk
March 20, 2025	Immediate Measures to Increase American Mineral Production	Critical minerals and national security	Elevates mineral production as a federal priority
April 8, 2025	Protecting American Energy from State Overreach	Jurisdictional risk	Seeks to limit certain state actions affecting nationally significant development
April 15, 2025	Addressing the Threat to the United States from Critical Mineral Imports	Trade and national security	Initiates a national security-framed review of import dependence
April 18, 2025	FAST-41 coverage expanded to include additional critical minerals and related projects	Process acceleration	FAST-41 designation could improve transparency, interagency coordination, and timetable discipline for qualifying projects
April 24, 2025	Unleashing America's Offshore Critical Minerals and Resources	Offshore development	Expands federal focus on offshore critical minerals, which could support optionality for supply diversification and coordinated federal action on offshore pathways, while remaining subject to technical, environmental, and regulatory complexity
May 16, 2025	Interior public input process to reduce regulatory burdens	Regulatory reform	Creates an industry input channel that could shape future permitting and compliance requirements, potentially affecting cost and timeline certainty for projects where the Department of the Interior is a key decision-maker in permitting and approvals
May 23, 2025	Reinvigorating the Nuclear Industrial Base	Industrial policy	Indirect relevance via implications for reliable power and industrial buildout
June 30, 2025	Presidential memorandum to simplify access to federal financing tools for energy infrastructure and critical minerals and materials	Federal financing	Could improve navigation and coordination across federal financing mechanisms
July 4, 2025	One Big Beautiful Bill Act	Comprehensive federal tax and spending law	Establishes direct statutory funding support for critical minerals (including support related to stockpiling and supply-chain investment) and adjusts parts of the incentive landscape
August 2025	Department of Energy funding opportunities for critical minerals and materials supply chain	Federal financing and grants	Signals a potential pipeline of competitive funding opportunities spanning mining, processing, and manufacturing technologies
October 24, 2025	Regulatory Relief for Certain Stationary Sources to Promote American Mineral Security	Downstream processing	Signals support for domestic processing where stationary-source requirements affect permitting and operating economics
December 11, 2025	Congressional Review Act disapprovals signed affecting selected plans of the Bureau of Land Management and related actions (H.J. Res. 104, 105, 106, 130, 131)	Federal lands access	Could make reversals of certain land-use and leasing policies more durable, potentially reducing long-cycle land-access uncertainty for affected areas
Ongoing (deal-enabling structures)	Public-private partnerships (PPPs), joint ventures (JVs), and policy-supported long-term offtake agreements	Public-private financing structures	Policy posture and federal tools could encourage de-risking structures (PPPs, JVs, and long-term offtakes) that may increase demand visibility and blend public and private capital
January 2026	Proposed critical minerals production agency ($2.5 billion bipartisan proposal)	Federal institutional proposal	If enacted, could create a dedicated, funded vehicle to spur production of rare earths and other critical minerals
February 2, 2026	Export-Import Bank of the United States (EXIM)— Project Vault	Federal financing and credit support	Introduces large-scale financing support aimed at strengthening US critical mineral supply chains through EXIM lending capacity and private capital mobilization
Ongoing (multiagency execution)	Direct federal investments by other departments (e.g., commerce- and defense-linked investment channels)	Direct federal investment	Could provide additional channels for targeted capital support for mining, processing, and downstream industrial capacity

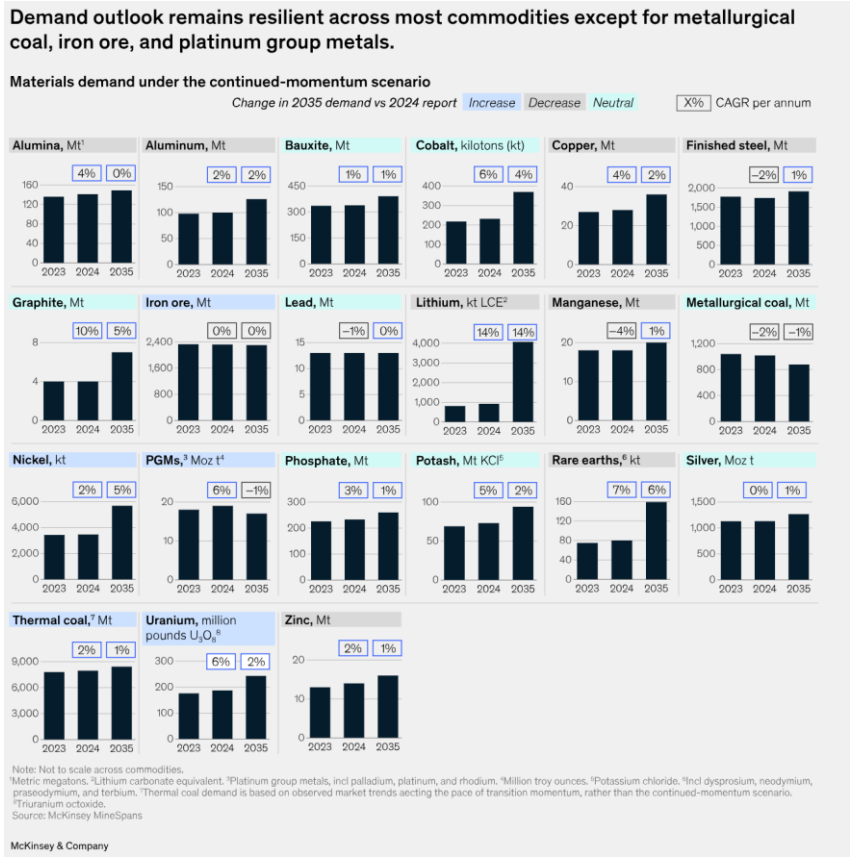
Note: FAST-41 = Title 41 of the Fixing America's Surface Transportation Act of 2015.

Sources: National Mining Association Annual Report 2025; White House press briefings.

Deloitte. | www.deloitte.com/energy-industrials-research

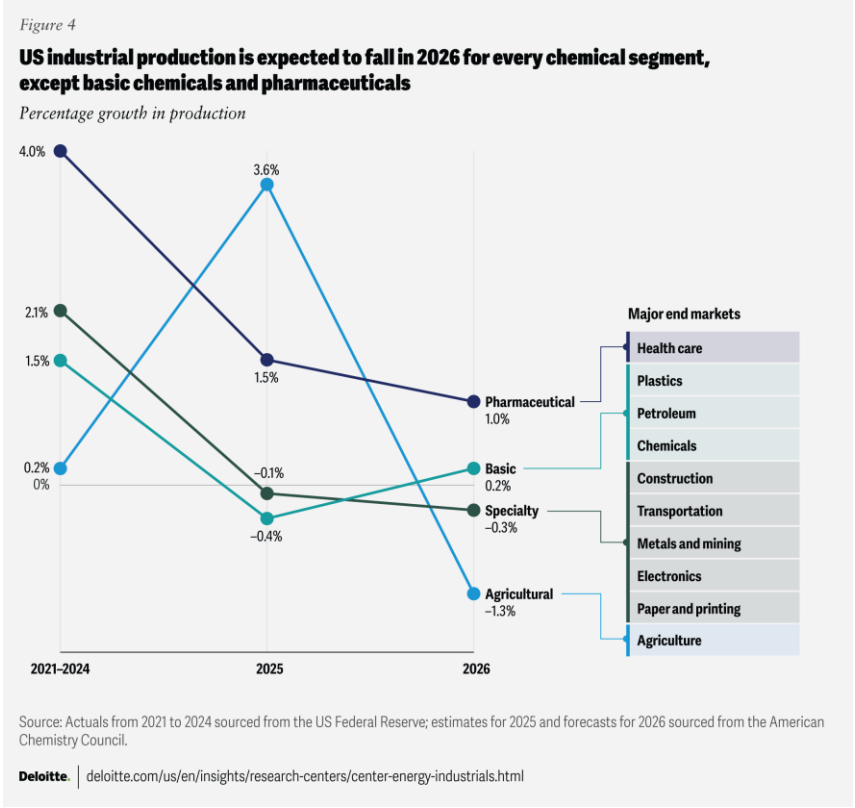
- **U.S. government policy and public financing** are increasingly prioritizing and supporting domestic supply chains

- Anticipated **growth in demand** across almost all raw inputs ranging from 1-6% CAGR through 2035 – *fueled largely by "AI buildout"*



Mining & Metals, Construction Mtrls vs Other Segments

- Demand growth higher than for containers & packaging and paper & forest products
- Superior price performance in the past year
- Excluded chemicals specifically due to recent industry erosion and un-compensated risks in their outlook
  - Weak consumer sentiment, demand only expected to remain suppressed
  - Over-industrialization globally leading to oversupply



Counterargument

Risks:

- Cyclicality:
  - Minerals & construction are very subject to macroeconomic shocks such as interest rate fluctuation and supply chain bottlenecks
  - Current macroeconomic threats include supply chain shutoffs, recession risks, interest rate hikes, and AI bubble risks
- Production Costs Rising
  - Mineral extraction on commodities such as copper is only increasing – Deloitte reported that copper extraction is 2x more expensive in the US than in other countries
  - Current labor shortages in manufacturing and shipping sectors are forcing production slowdowns and inflating operational costs
- Volatile Policy Environment
  - Policies supporting tariffs are subject to reversal, creating uncertainty around pricing and supply chain advantage of domestic producers

Mitigants

Mitigants:

- Margin Resilience
  - Though revenues in materials have decreased for the past two years, McKinsey has reported that margins have stayed consistent, signaling operational sustainability amidst macro shocks and cyclicality
- Investment in Efficiency:
  - Heavy investment is being made into tech and AI, with the highest growth being in process optimization, which is forecasted to help firms shoulder rising production costs and decrease reliance on labor
- Screening for Fundamental Leaders
  - Equity screen filters for firms that are enabled to absorb increasing cost pressures
  - Will be defensible against any unhelpful shifts, which is proven because firms in our screen were already performing efficiently before favorable policy tailwinds were enacted
  - Onshoring trend is bipartisan and supported – making it defensible even if tariff policies fluctuate

Backtesting Implementation Details

# OF STOCKS	6
MIN MARKET CAP	$500M
WEIGHTING SCHEME	EQUAL
REBALANCING FREQUENCY	QUARTERLY
TIME FRAME	10 YEARS
CURRENCY	USD

Backtest Criteria

Security Universe	1623627
Trading Status: Active	587012
Security Attributes: Show Primary Security of company only	84177
Exchanges: United States; -OTC US; -OTC Markets; -OTC BB	10492
Sectors (BICS): Metals & Mining; Construction Materials Manufacturing	84
Current Market Cap > 500 Million	54
Latest Quarterly Gross Margin >= 30	19
Current Periodic EV to Trailing 12M EBITDA <= 12	7

Gross Margins - NYU Stern
EV/EBITDA - NYU Stern

Backtesting Results

10-Year Analysis	Mean	Min	25%	Median	75%	Max
Market Cap ($Billions)	33.27	1.30	1.59	3.68	67.74	111.00
P/E Ratio	16.57	12.16	12.54	16.61	20.06	21.54
Monthly Trading Volume (Millions)	3.43	.04	.60	2.06	5.93	11.29
Share Price ($)	72.37	9.88	35.4	102.01	103.12	122

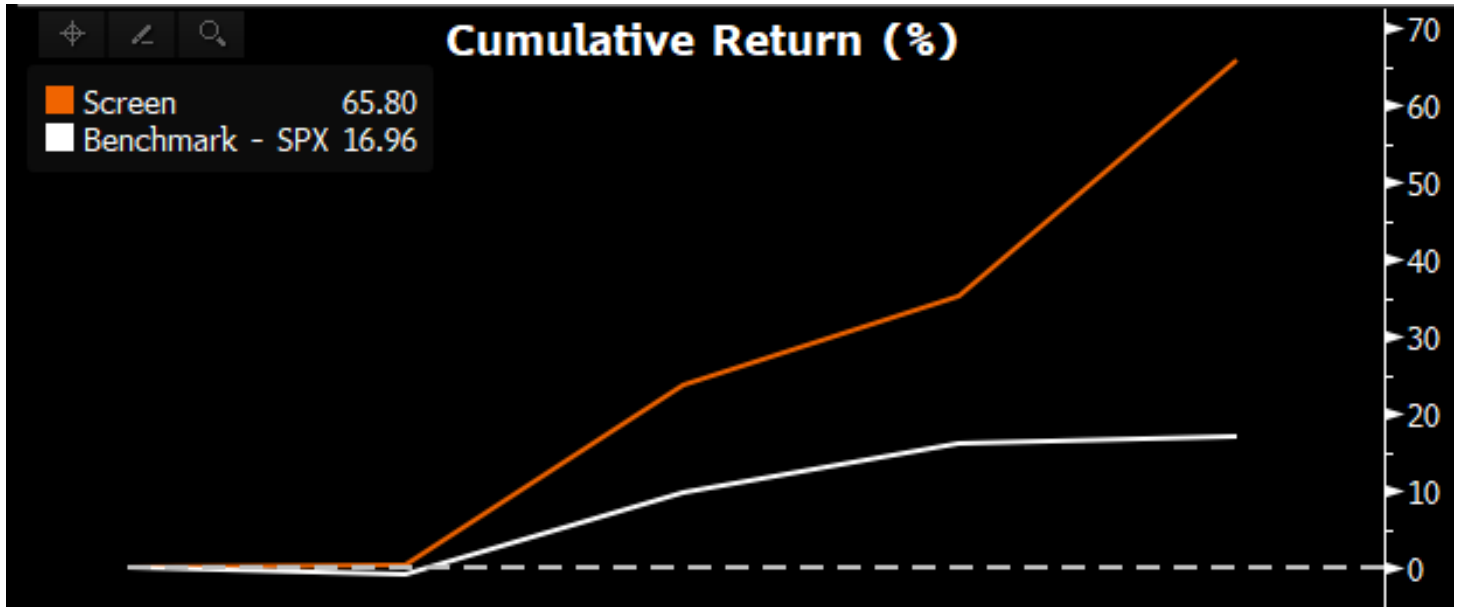
Recommended Purchases

Name	Ticker	P/E Ratio	Monthly Trading Volume ($M)	Market Cap ($M)	Share Price	# of Shares	Total Value
Newmont Corp	NEM	15.98	245.45	110,260	$103.12	41.56	$4,286
CRH PLC	CRH	18.46	123.45	68,020	$101.91	42.06	$4,286
Tecnoglass Inc	TGLS	12.42	14.02	1,900	$43.14	99.35.	$4,286
Natural Resource Partners	NRP	12.41	0.73	1,650	$122.55	34.97	$4,286
Nexa Resources	NEXA	10.04	13.79	1,330	$9.88	433.81	$4,286
AngloGold Ashanti PLC	AU	17.48	73.76	45,030	$90.56	47.33	$4,286
Trex Company	TREX	19.89	37.92	3,690	$35.40	121.07	$4,286

Backtesting Results 10yr

Annualized	Return	α*	β*	σ	Sharpe	Treynor	Max DD	Info Ratio*	Idio. Risk
10 Year	453.78%	7.12	1.09	30.66	0.75	0.17	-19%	0.28	24.43%
10 Year SPY	286.78%	-	1.00	17.0	0.60	0.10	-39%	-	-

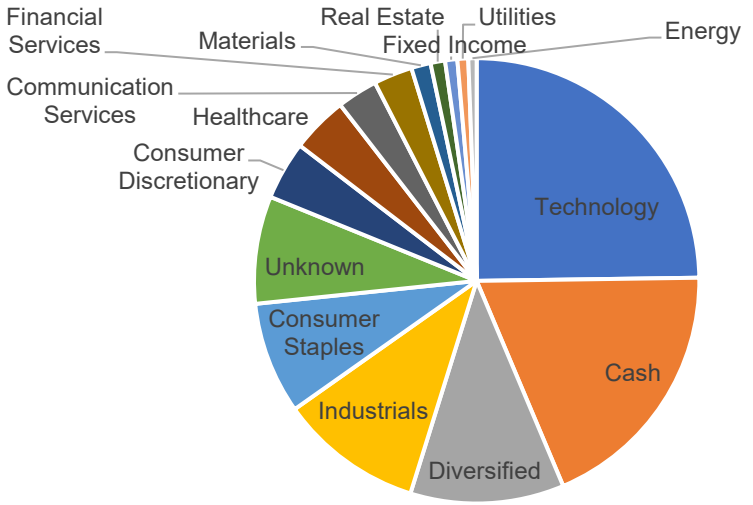
Backtest Results 1yr

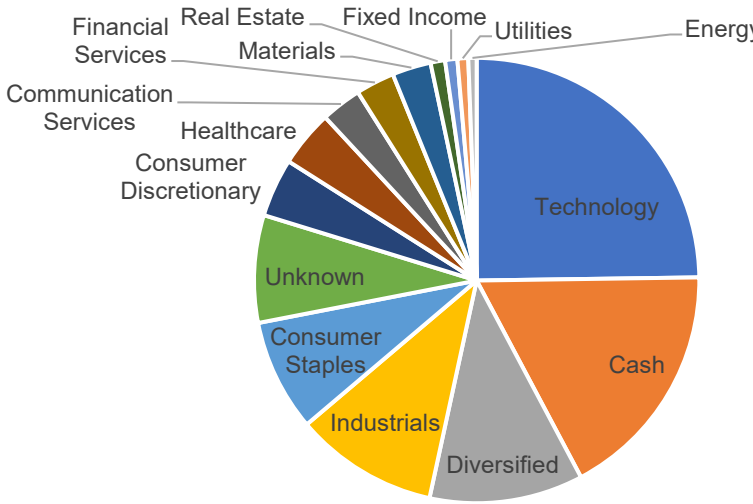


Annualized	Return	α*	β*	σ	Sharpe	Treynor	Max DD	Info Ratio*	Idio. Risk
1 Year	65.80%	55.28	0.94	28.95	2.4	0.68	-	1.96	24.2%
1 Year SPY	16.96%	-	1.00	18.5	0.71	0.13	-10%	-	-

Effect on the Portfolio

	Existing Portfolio	New Portfolio
Beta	1.01	1.02
Sharpe	1.02	0.98
Alpha	5.59%	5.90%
Standard Deviation	0.88%	0.88%
Expected Return	10.24%	10.94%





Recap

Idea – Invest into profitable mining and construction materials companies

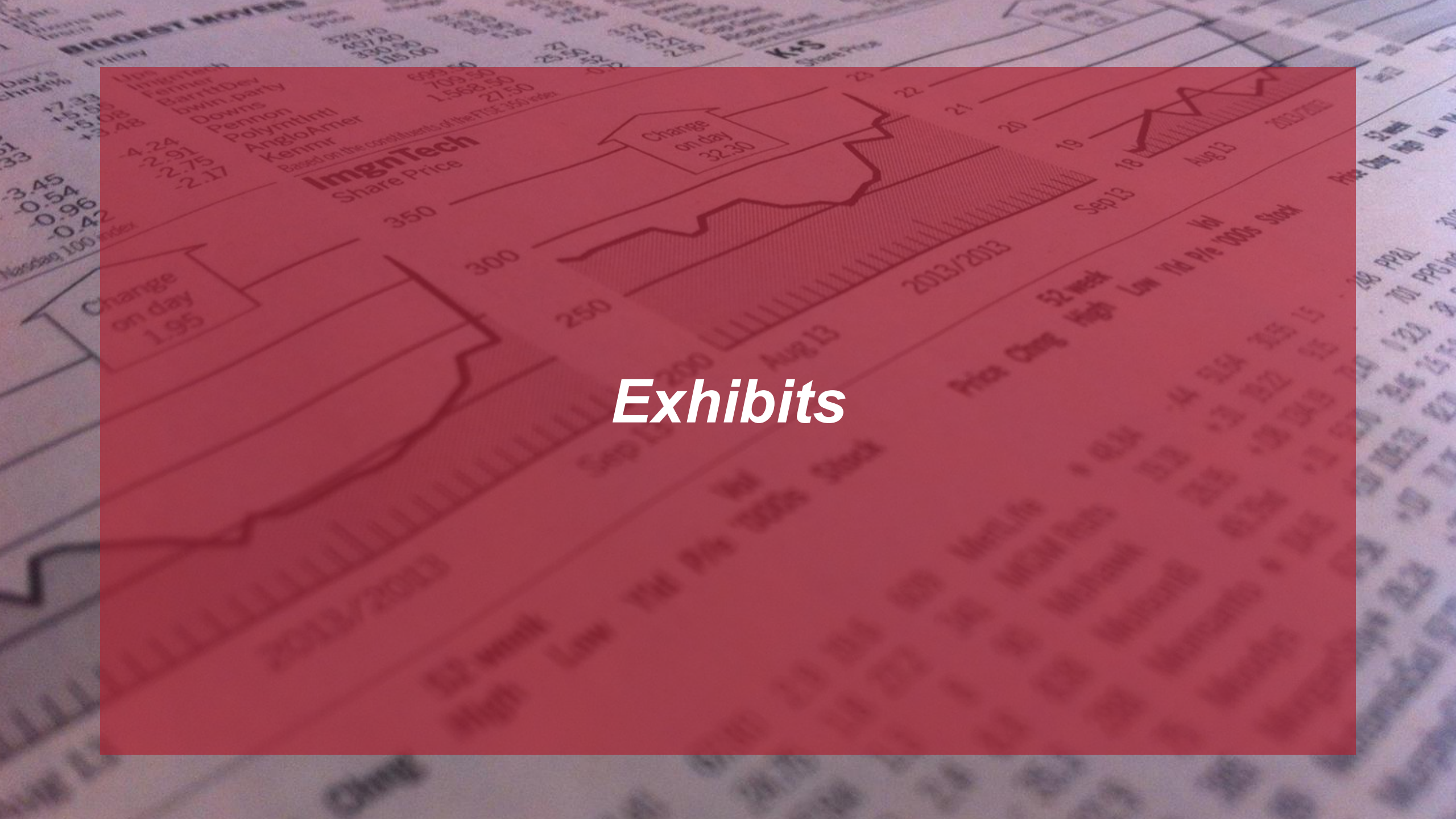
Strategy – Companies in the mining and construction materials sector with above 30% gross profit that remain undervalued relative to peers

Historical Performance – 1y Performance: 56.73%, Sharpe 1.96

Recommendation – Buy $30k, In School Fund using cash

What to Sell – Use cash

Effect on Portfolio – Better diversification reduced exposure to tech

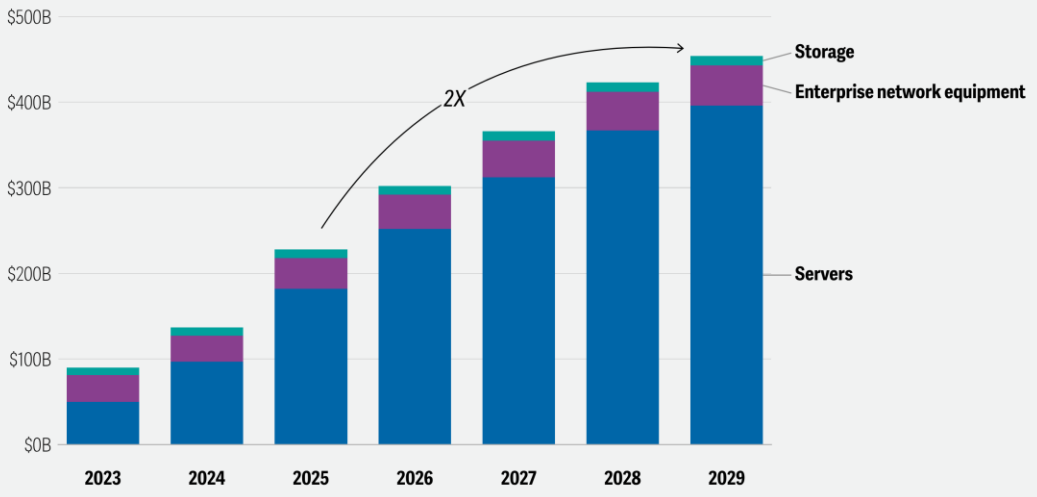

Exhibits

Materials Tailwinds

Figure 3

Enterprise IT spending on data center systems across all US industries, including mining and metals, is expected to double over the next four years

US dollars



Source: Gartner, Enterprise IT spending data, Q4 2025.

Deloitte. | www.deloitte.com/energy-industrials-research

Figure 5

AI adoption in the chemical industry is evolving with AI maturity

Digital/ AI maturity ↓	*AI deployment level* → Single-point solution	Cross-function solution	Enterprise-level solution
React Detect patterns and anomalies	**Identifies specific issues** *e.g., identify anomalies that indicate corrosion*	**Identifies issues across teams** *e.g., monitor safety compliance*	**Monitors specific issues across the organization** *e.g., monitor frequency of equipment anomalies across all plants**
Anticipate Track issues and automate simple tasks	**Automates a simple task** *e.g., autonomous invoice processing*	**Automates tasks across teams** *e.g., integrate across research and development and operations teams to improve innovation*	**Automates tasks across the organization** *e.g., implement predictive intelligence across R&D, operations, and customer workflows*
Integrate Automate complex tasks between systems	**Automates a system of tasks** *e.g., monitor product quality at a plant*	**Connects multiple systems** *e.g., monitor and advise maintenance for multiple substation assets*	**Integrates all systems across the organization** *e.g., implement predictive maintenance across all global facilities using data from across systems*
Collaborate Automate complex systems across multiple teams	**Automates task across systems and teams** *e.g., aid operations teams by automating process safety*	**Automates cross-team workflows** *e.g., standardize data and integrate platforms across manufacturing and R&D*	**Supports company-wide collaboration** *e.g., trigger and coordinate workflows across departments, such as HR, IT, and training when a new employee is hired**
Orchestrate Implement autonomous operations	**Streamlines a single process** *e.g., optimize production steps in a single reactor*	**Coordinates related processes** *e.g., coordinate multisite production scheduling*	**Directs key activities across the organization** *e.g., optimize production across a portfolio of plants using real-time sales and supply chain data**

Note: *While all other examples are based on real-world cases, these are hypothetical scenarios that organizations could work toward.
Source: Deloitte analysis.

Deloitte. | deloitte.com/us/en/insights/research-centers/center-energy-industrials.html

Materials Tailwinds

Several new technologies and practices have emerged that could improve productivity.

Improvement opportunities by cost category and technology or operational practice

■ Main improvement opportunities, with selected examples

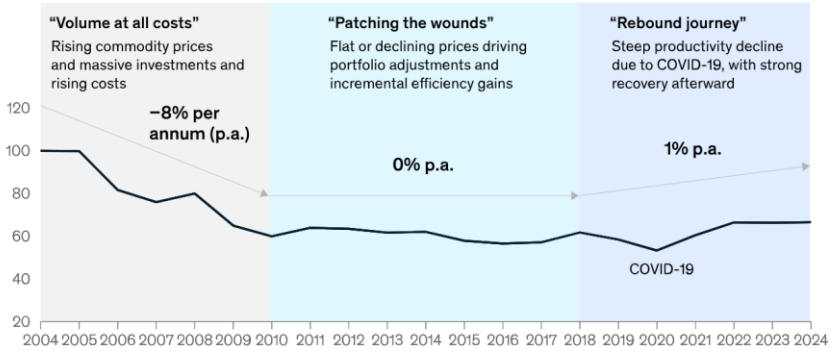
Cost category[1]	AI	Gen AI	Automation	Electrification	Global supplier diversification
Labor 25–30%	Workforce forecast modeling	AI-assisted negotiant modeling	Robotization	Autonomous and electric hauling trucks	
Sustaining capital expenditures 20–25%	Predictive maintenance	Generative scheduling			Alternative suppliers to incumbents
Energy 15–20%	Real-time process and equipment feedback loops			Equipment electrification and (thermal) storage	
Consumables 15–20%	Real-time process feedback loops				
Maintenance and spares 10%	Predictive maintenance	Issue identification and resolution in reactive maintenance			Non-OEM spare parts sourcing

Note: Chart is exemplary and nonexhaustive.
[1]Excluding overheads, which typically account for 5% of total costs; based on a weighted average across coal, lithium, iron ore, zinc, uranium, nickel, copper, and gold.
Source: McKinsey MineSpans

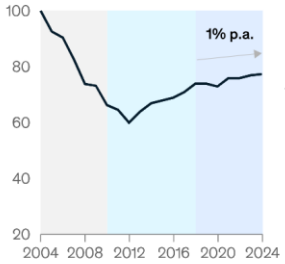
McKinsey & Company

Global mining productivity has seen a modest rebound since around 2018.

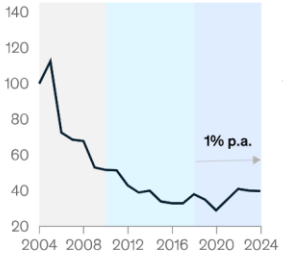
MineLens Productivity Index, 2004 = 100



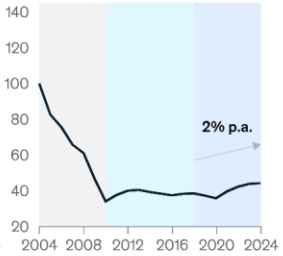
Labor productivity, index (2004 = 100)



Capital productivity, index (2004 = 100) in real terms[1]



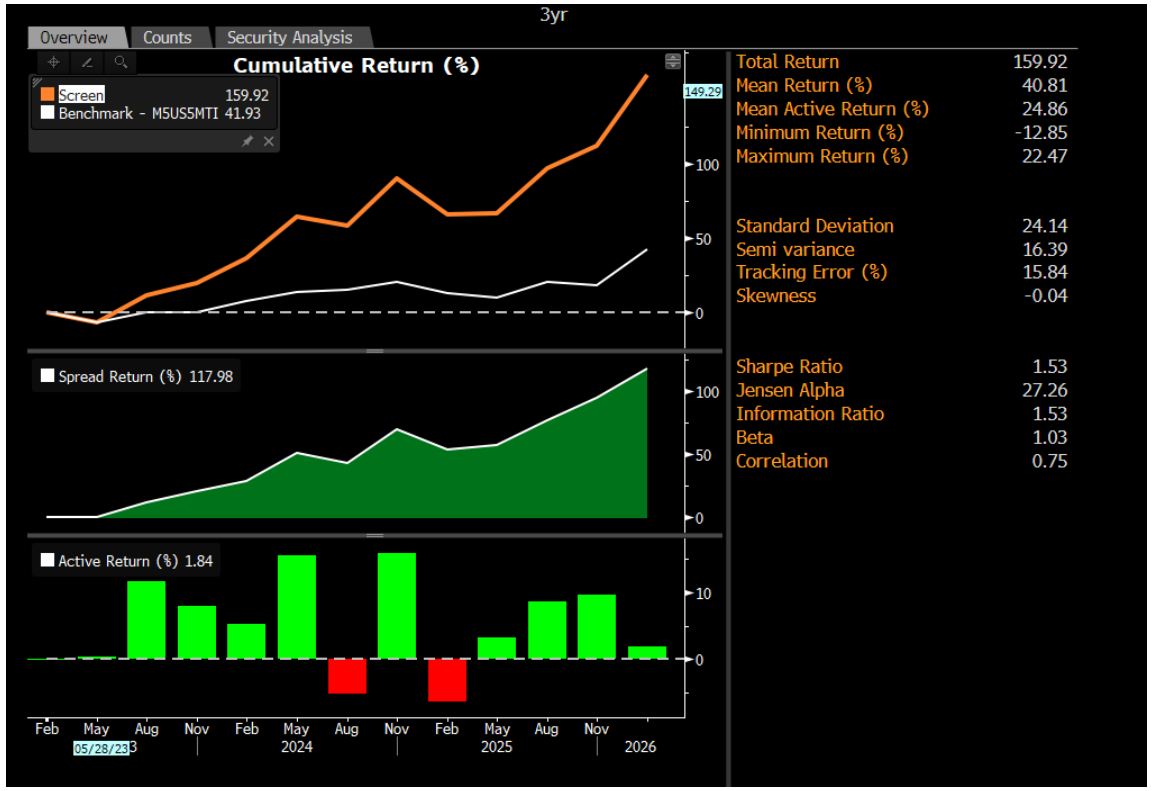
Factor cost productivity, index (2004 = 100) in real terms[1]

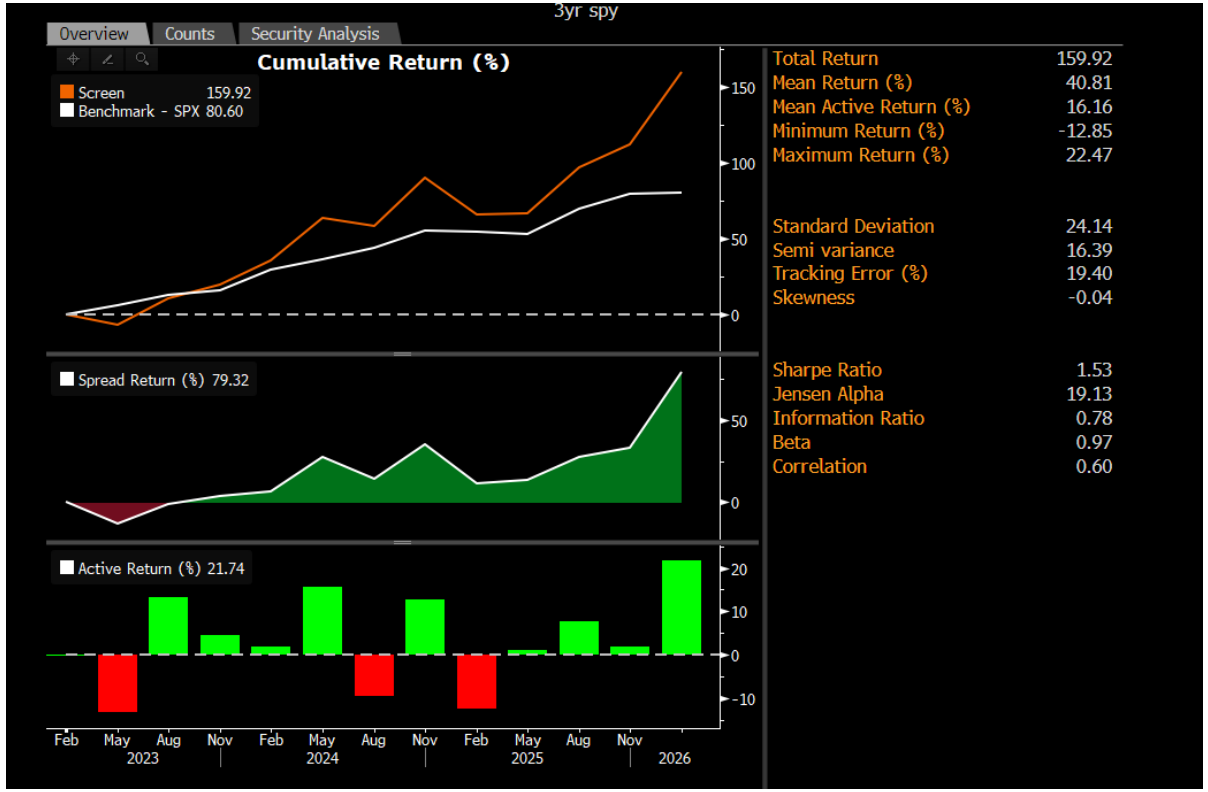


[1]Capital expenditures and operating expenditures adjusted for mine cost inflation. Capital expenditures include book value of property plant and equipment.
Source: McKinsey MineLens; McKinsey MineSpans

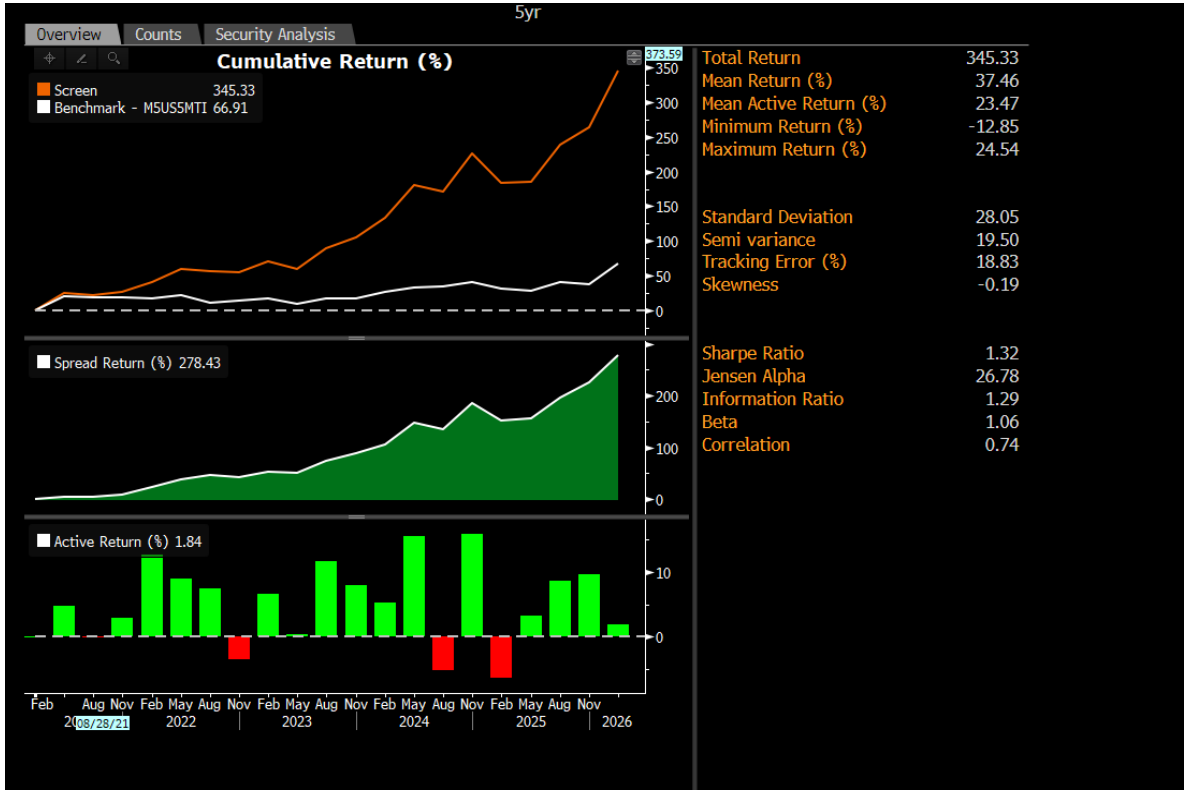
McKinsey & Company

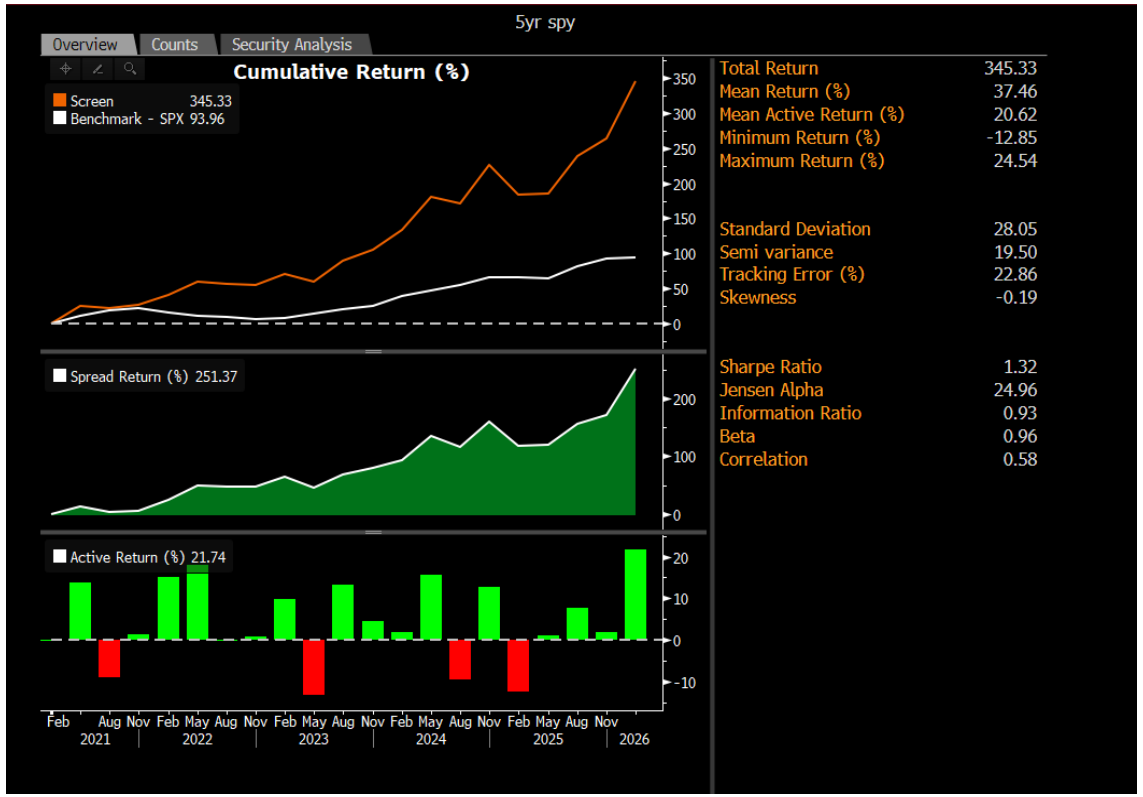
3yr Backtest



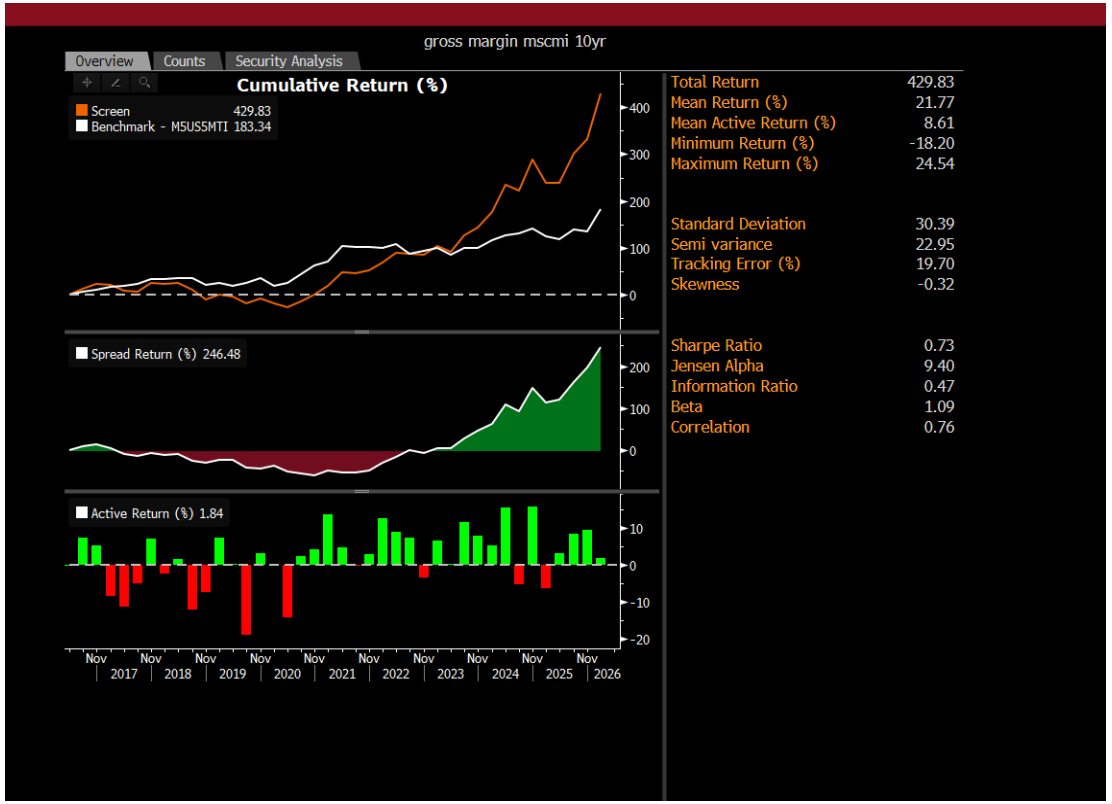


5yr Backtest

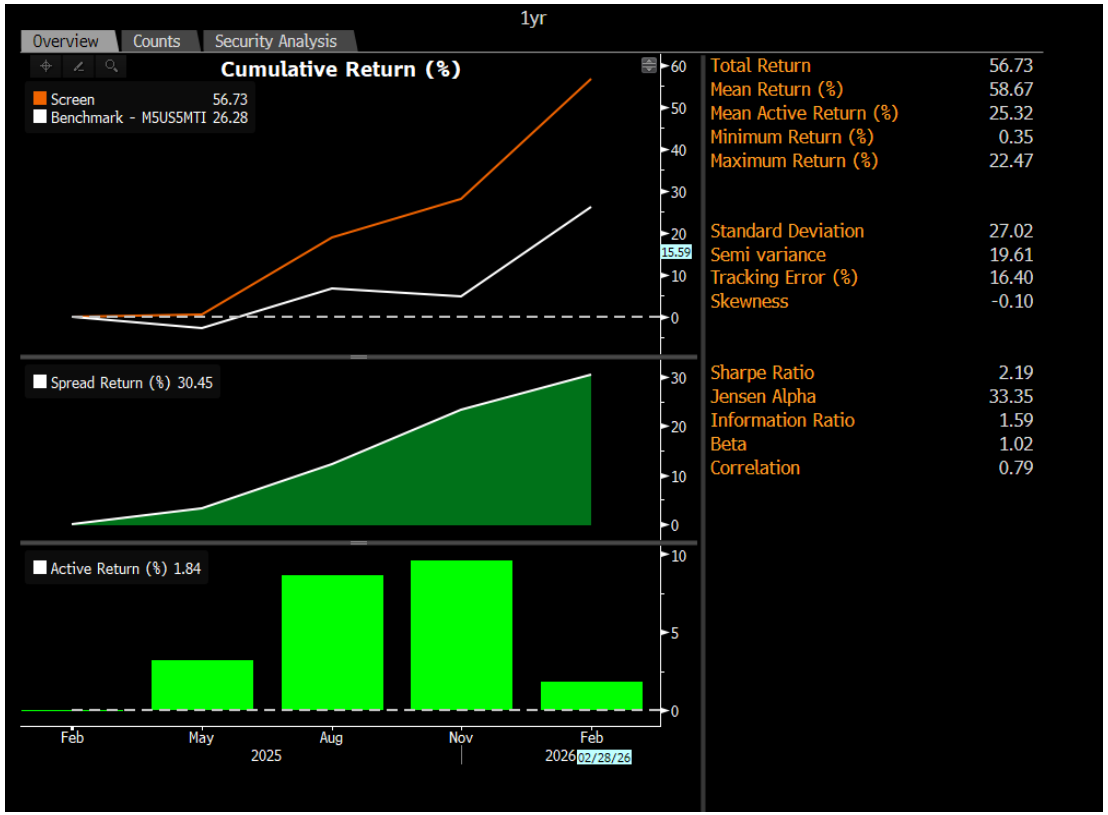




10yr & 1yr vs MSCI Materials ETF

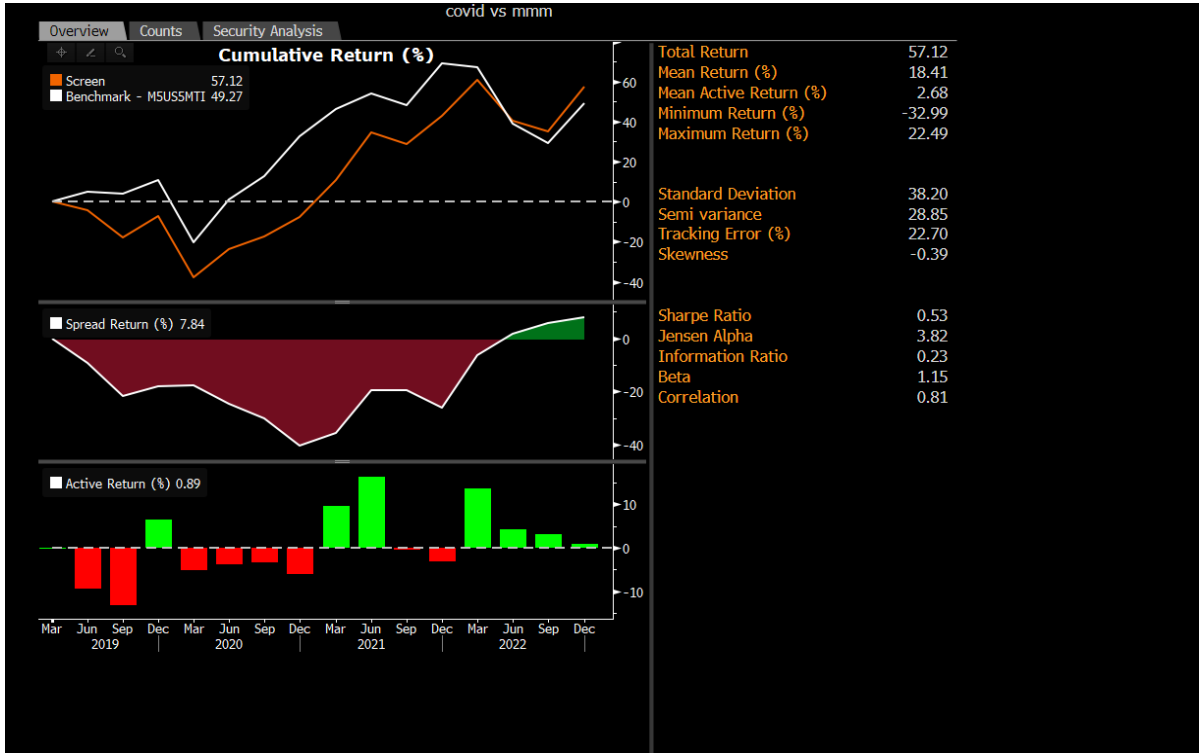


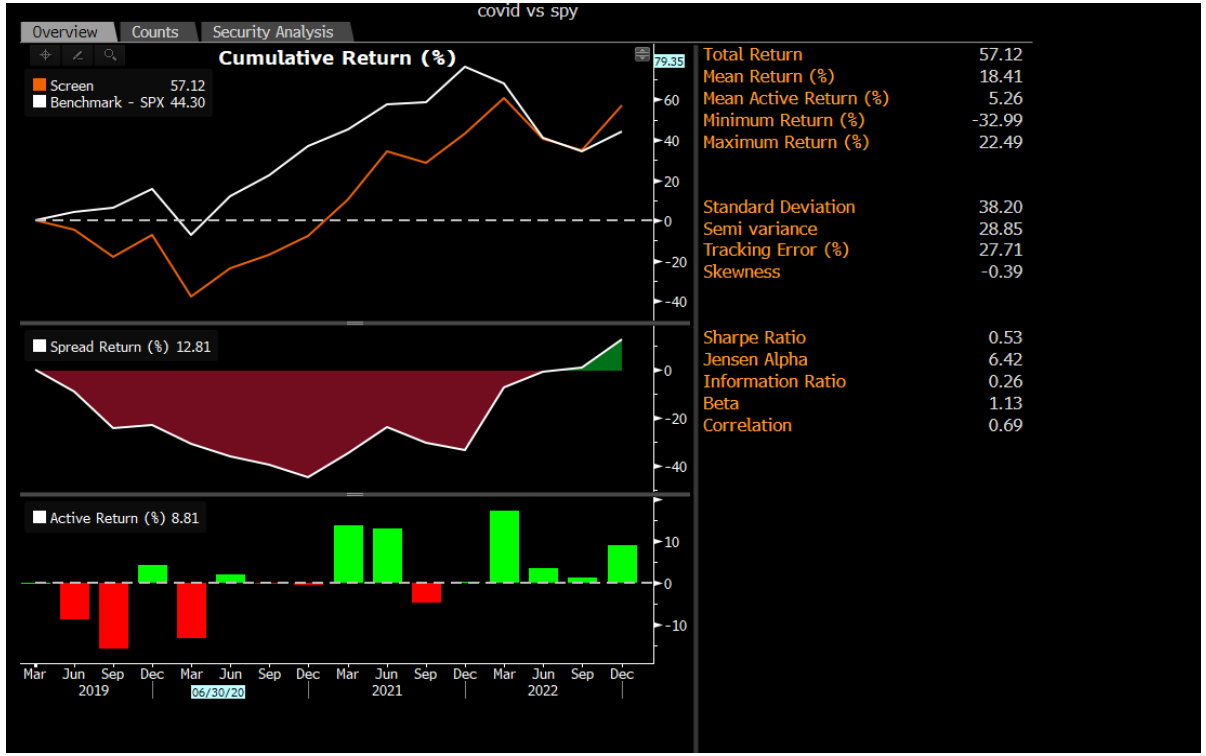
Total Return	429.83
Mean Return (%)	21.77
Mean Active Return (%)	8.61
Minimum Return (%)	-18.20
Maximum Return (%)	24.54
Standard Deviation	30.39
Semi variance	22.95
Tracking Error (%)	19.70
Skewness	-0.32
Sharpe Ratio	0.73
Jensen Alpha	9.40
Information Ratio	0.47
Beta	1.09
Correlation	0.76



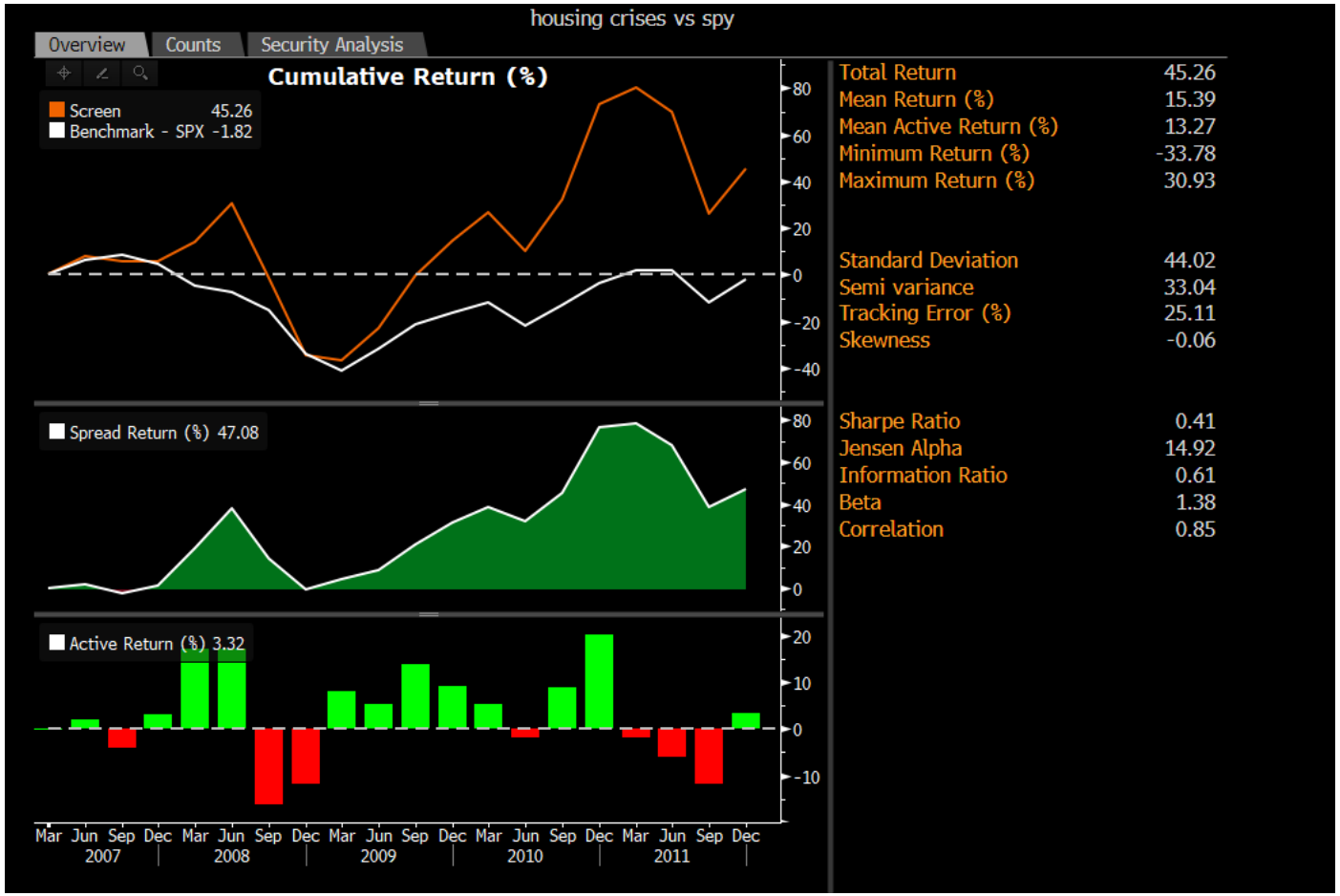
Total Return	56.73
Mean Return (%)	58.67
Mean Active Return (%)	25.32
Minimum Return (%)	0.35
Maximum Return (%)	22.47
Standard Deviation	27.02
Semi variance	19.61
Tracking Error (%)	16.40
Skewness	-0.10
Sharpe Ratio	2.19
Jensen Alpha	33.35
Information Ratio	1.59
Beta	1.02
Correlation	0.79

COVID Backtest

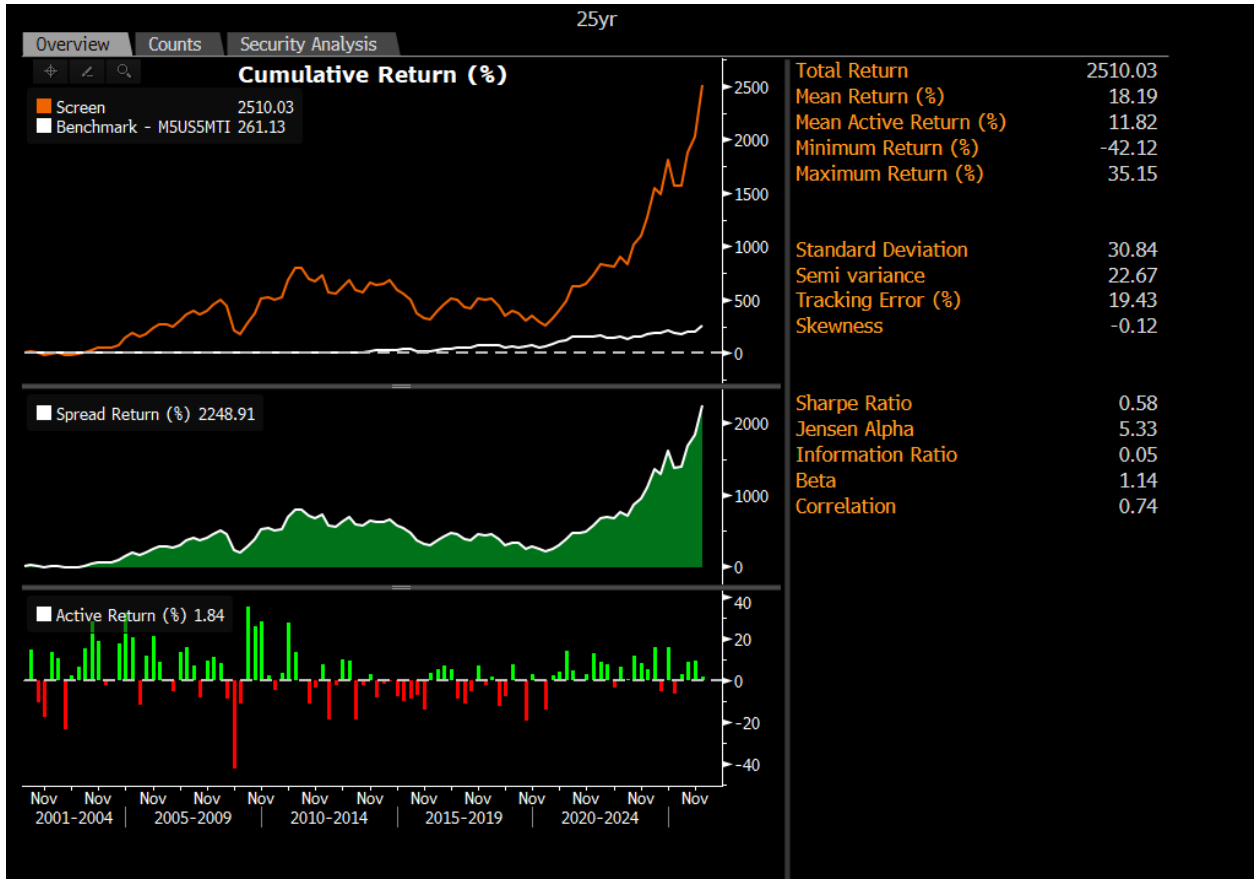




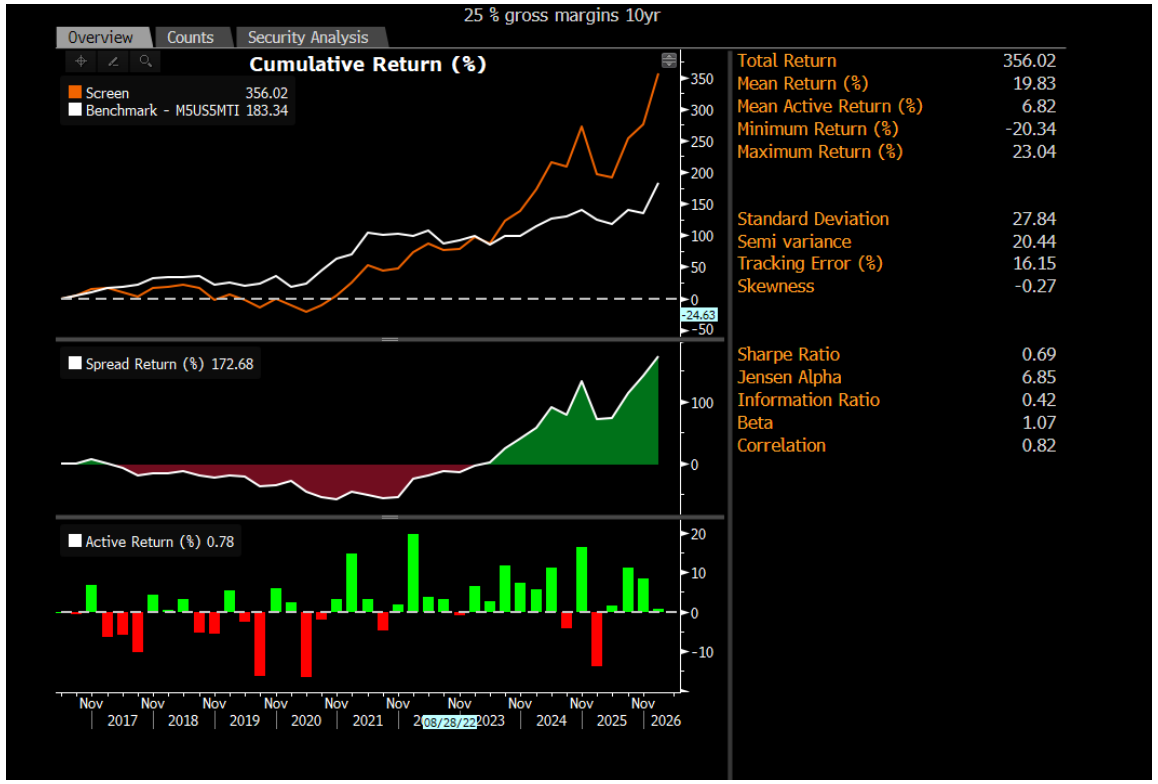
2007-2011

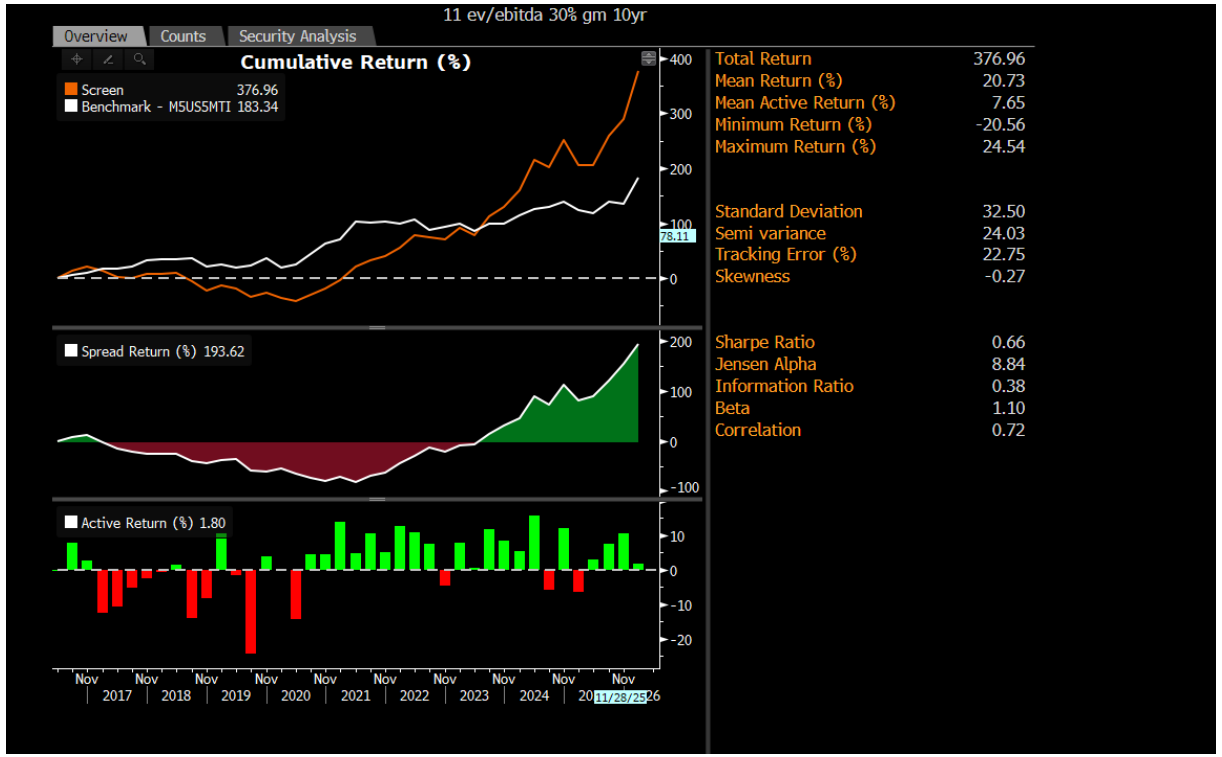

housing crises vs spy
Overview
Counts
Security Analysis
Cumulative Return (%)
Screen 45.26
Benchmark - SPX -1.82
Spread Return (%) 47.08
Active Return (%) 3.32
Mar Jun Sep Dec Mar Jun Sep Dec Mar Jun Sep Dec Mar Jun Sep Dec Mar Jun Sep Dec
2007 2008 2009 2010 2011
Total Return 45.26
Mean Return (%) 15.39
Mean Active Return (%) 13.27
Minimum Return (%) -33.78
Maximum Return (%) 30.93
Standard Deviation 44.02
Semi variance 33.04
Tracking Error (%) 25.11
Skewness -0.06
Sharpe Ratio 0.41
Jensen Alpha 14.92
Information Ratio 0.61
Beta 1.38
Correlation 0.85

25yr Backtest

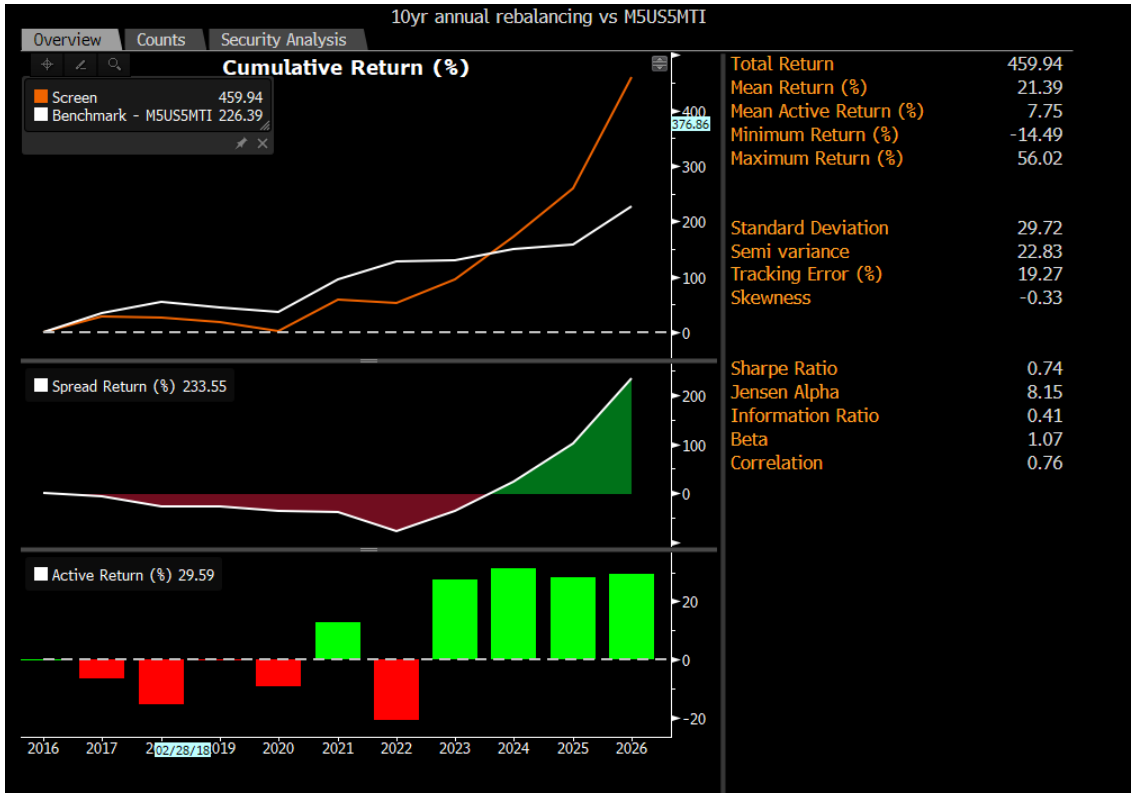


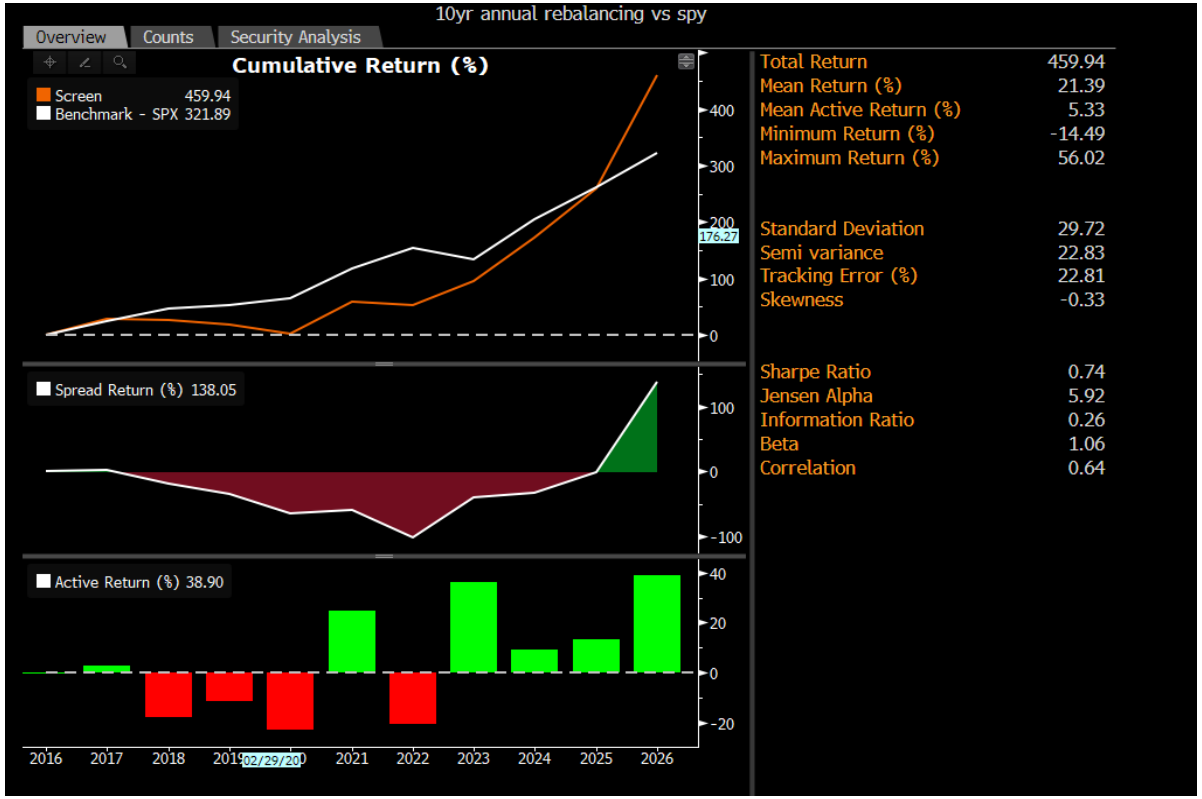
10yr Backtest - 25% GM & 11x EV/EBITDA



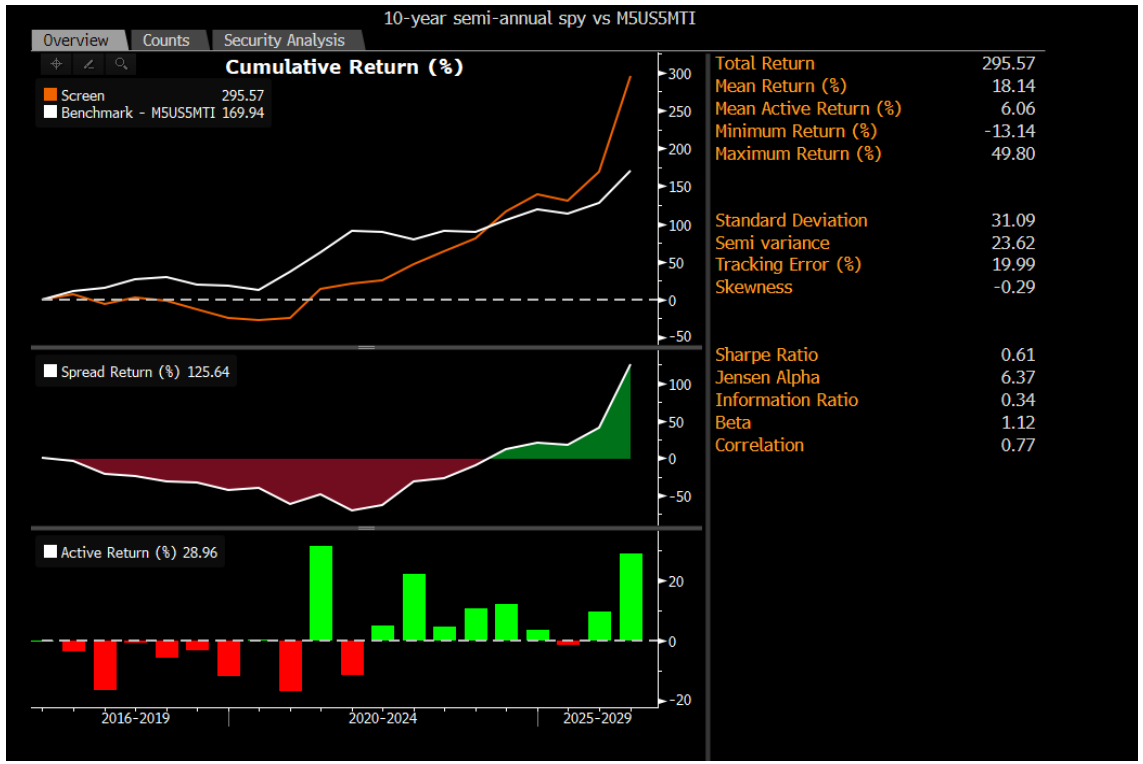


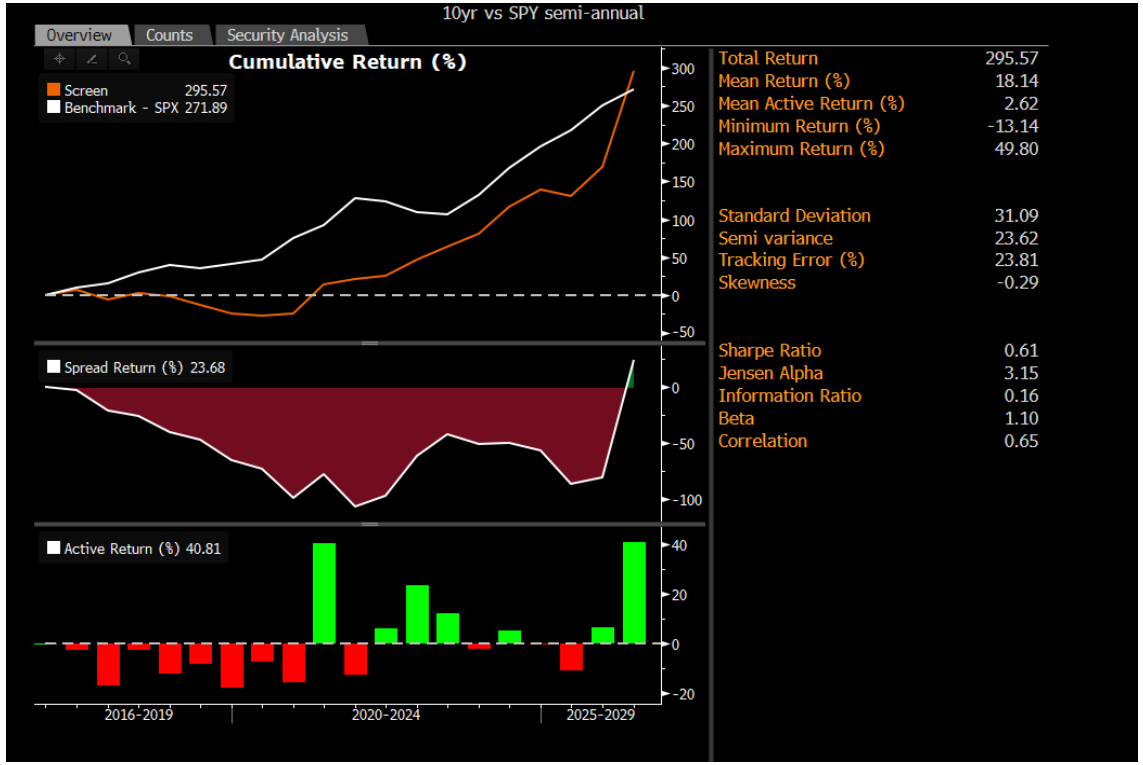
10yr Backtest – Annual Rebalancing



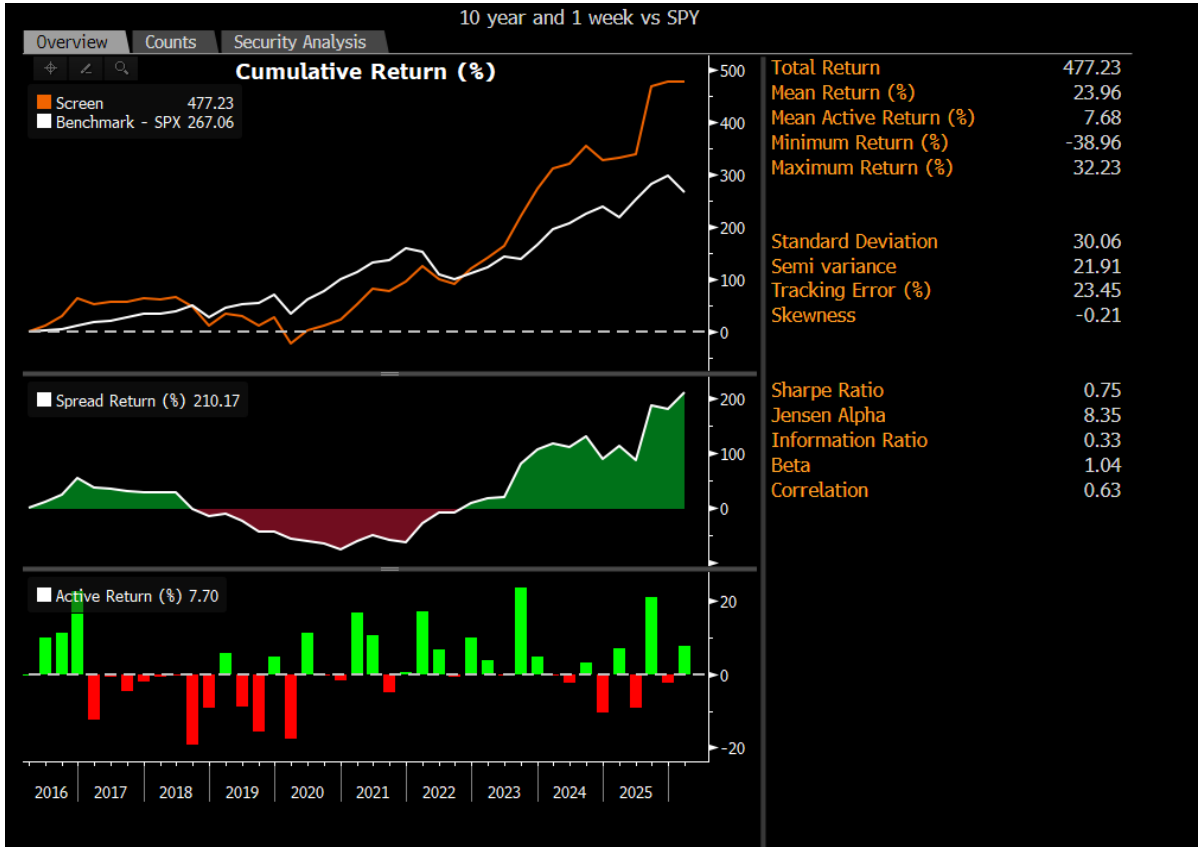


10yr Backtest – Semi-Annual Rebalancing

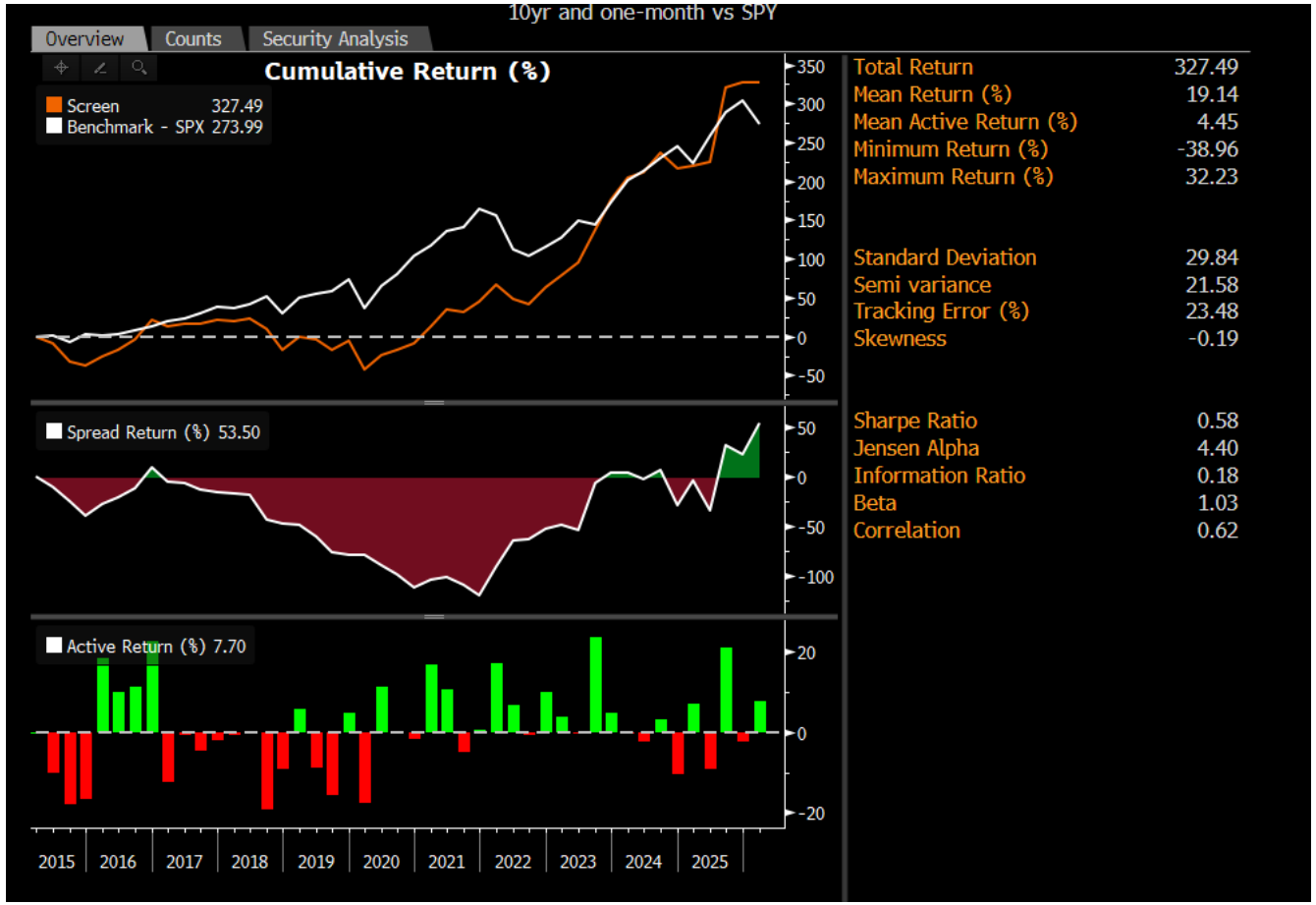




10yr & 1 Week Backtest



10yr & 1 Month Backtest



Security Count History