STATE STREET GLOBAL ADVISORS

Active and Index-Based Climate Strategies

A Core-Satellite Approach

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Understanding the Diversification and Risk Control Advantages

A core, index-based climate strategy, combined with a satellite, active-oriented, high-conviction climate strategy, can demonstrate alpha and diversification benefits while controlling tracking error.

Climate's Growing Role in Investment Decision Making and Risk Management

Climate change remains one of the top concerns for regulators and policymakers, and climate-related investment has already increased markedly due to climate regulation and the creation of funds and incentives in various countries around the globe. For example:

- In the United States, the 2022 Inflation Reduction Act (IRA)[1] was by many measures the most supportive bill yet for the green economy. The IRA, along with the 2022 CHIPS and Science Act,[2] put into place large-scale fiscal incentives for the adoption of clean technologies and new infrastructure spending. Both US and international companies are eligible for these incentives as long as they have US operations, which has led to knock-on effects of companies reallocating resources and relocating to US-based production.

- In the EU, institutions are faced with a wide range of requirements for reporting on climate transition plans and decarbonizing, such as the Corporate Sustainability Reporting Directive (CSRD).[3] The EU Green Deal[4] sets goals for Europe's economy to become climate-neutral by 2050.

- Partly owing to companies' needs to comply with regulations, take advantage of incentives and secure future carbon-mitigation technologies, electrification[5] and clean technologies will in turn be major drivers for spending on highly sophisticated information and other technologies.[6]

With the billions of dollars in funding incentives offered, along with the trillions of dollars required to fund the energy transition in coming years,[7] investors are looking for answers to questions about the role that climate change could play in portfolios, and how investment choices could impact portfolio risk and return. Investors are also wondering which climate metrics to focus on, and whether the same metrics can be applied to different asset classes.

In our view, an effective strategy is to combine (1) an indexing strategy that can manage exposure to climate risks while optimizing to minimize tracking error, with (2) a high-conviction active strategy with alpha return targets. With a core-satellite strategy, investors can determine their level of overall active risk based on their specific risk tolerances and objectives. Furthermore, basing the strategies on a mix of key metrics — including forward-looking and backward-looking — can be advantageous, as these metrics can impact the portfolio differently and offer broader insights about portfolio risks.

In this paper, we provide an overview of State Street Global Advisors' active and index climate-related strategies and explain the climate change approach and targeted metrics of each strategy. We also demonstrate how active and indexing strategies can work together effectively in a core-satellite portfolio construction.

State Street Global Advisors Active and Index Solutions

For institutional investors who wish to integrate their strategic views on climate change into their portfolios, State Street Global Advisors offers both active- and index-oriented solutions.

Active

The Global Climate Transition strategy,[8] managed by our Fundamental Growth & Core Equity (FGC) team, is an active investment strategy. Key points include:

- Targets an excess return of 3% over the MSCI All Country World Index over a three-year investment cycle.
- Takes a concentrated, high-conviction approach that seeks to generate alpha by selecting securities based on our FGC analysts' proprietary and forward-looking climate transition scores.
- Aims to select 30–40 companies that are climate-transition leaders and influencers in their respective industries.

Index

In this paper, we consider three out of the several State Street Global Advisors index-based climate strategies in which the parent universes are the MSCI World Index: the MSCI World EU Climate Transition Benchmark (CTB) Overlay ESG Screened Select strategy; the SPDR MSCI World Climate Paris Aligned UCITS ETF; and the State Street Sustainable Climate World Equity strategy. Key points for these three strategies include:

- Has low tracking error relative to the parent benchmark
- Allocates to a broad base of securities
- Achieves portfolio construction using an optimization approach. The climate change parameters are integrated as attributes to each security in the parent universe.

Investment Strategies Compared

Figure 1 compares the index and active approaches. A more detailed description of these strategies can be found in Appendix A.

Figure 1: Active and Passive Investment Approaches Differ in Goals and Risk Budgets

	MSCI World EU CTB Overlay ESG Screened Select Strategy	SPDR MSCI World Climate Paris Aligned UCITS ETF	State Street Sustainable Climate World Equity Fund	State Street Global Climate Transition Strategy
Positioning	Core	Core	Core	Satellite
Description	The index follows an optimization-based approach, which is designed to exceed the minimum standards of the EU Climate Transition benchmark.	The index incorporates the Task Force on Climate-Related Financial Disclosures | (TCFD) recommendations and are designed to exceed the minimum standards of the EU Paris-Aligned benchmark (PAB)	A systematic approach which, through optimization, minimizes the ex-ante tracking error and maximizes reduction of carbon-intensity (subject to climate change parameter constraints) for the given benchmark universe.	A high-conviction approach based on in-depth fundamental research and demonstrated stock-picking skills. Company-specific risk taking drives performance, rather than market beta.
Parent Universe	MSCI World Index	MSCI World Index	MSCI World Index	MSCI ACWI
Parent Number of Holdings	~1500	~1500	~1500	~3000
Strategy Number of Holdings	~900	~500	~500	30–40
Return Target	Beta: No excess return target	Beta: No excess return target	Beta: No excess return target	Alpha: Excess return target of +300 bps
Approach	Top down/Bottom-up	Top down/Bottom-up	Top down/Bottom-up	Bottom-up
Holdings	Broadly diversified	Broadly diversified	Broadly diversified	Concentrated
Orientation	Mostly historical	Mix historical and forward looking	Mix historical and forward looking	Mostly forward looking
Tracking Error (ex-ante)	~0.5%	~1%	1% target	4–8%
Target Information Ratio	0	0	0	0.5
Exclusion Rules	Yes: ~5% of MSCI World Index is excluded	Yes: ~10% of MSCI World Index is excluded	Yes: ~10% of MSCI World Index is excluded	Companies must be assessed against SSGA proprietary Climate Scorecard
Alignment with SFDR*	Article 9	Article 9	Article 8	Will conform to Article 8 when offered as a Fund

Source: State Street Global Advisors, as of February 29, 2024.
* SFDR is the Sustainable Finance Disclosure Regulation. See: https://eurosif.org/policies/sfdr/.

Climate Metrics Compared

Research shows that forward-looking and backward-looking metrics can bring different perspectives and have distinct impacts, leading to a more holistic view and a greater control of portfolio climate risks.[9] Figure 2 provides a summary of climate metrics for the Global Climate Transition Strategy and the three index portfolios, and shows how the portfolios help improve forward-looking as well as backward-looking metrics. While these are by no means exhaustive, a few high level observations can be made.

- The CTB Overlay ESG Screened Select strategy demonstrates a very low ex-ante tracking error of 0.43%. Even with such a low tracking error, the strategy can achieve meaningful improvements for both historical as well as forward looking-climate change parameters.
- We show three carbon intensity measures (shaded). The inclusion or exclusion of Downstream Scope 3 emissions in these measures can impact the relative numbers significantly.
- The high-conviction Global Climate Transition strategy has the highest adaption score and an Implied Temperature Rise on par with the CTB Overlay and the Sustainable Climate World Equity strategies. This underscores the forward-looking approach used by the Global Climate Transition Strategy when assessing a firm's transition planning.

Figure 2: Forward- and Backward-Looking Climate Change Metrics for the Different Investment Approaches

MSCI World	MSCI World Index	MSCI WORLD EU CTB OVERLAY ESG Screened Select Strategy	SPDR MSCI World Climate Paris Aligned UCITS ETF	State Street Sustainable Climate World Equity Fund	State Street Global Climate Transition Strategy
Number of Securities	1,480	990	545	469	31
Ex-ante Tracking Error (%)	—	0.43	1.11	1.01	4.33
Historical Climate Change Indicators					
Carbon Footprint — Scope 1+2, EVIC based (sourced from MSCI) tCO_2e/$MEUR	45	33	8	14	23
Reduction	—	-26%	-83%	-69%	-49%
Weighted Average Carbon-Intensity — Direct + First Tier Indirect (this takes upstream Scope 3 into account, sourced from Trucost) tCO_2e/$M USD	150	132.0	62.5	64.9	158.4
Reduction	—	-12%	-58%	-57%	6%
Carbon-Footprint — Scope 1+2+3, EVIC based (sourced from MSCI) tCO_2e/$M EUR	387	269	101	291	159
Reduction	—	-31%	-74%	-25%	-59%
Total Reserves Emissions	130.2	60.0	0.0	12.8	0.0
Brown Revenue	2.4	2.0	0.1	0.2	0.0
Green Revenues	3.3	3.6	5.5	12.1	6.6
Forward-Looking Climate Change Indicators					
Adaptation Score (Lower=worse score, Higher=better score)	0.74	0.76	0.74	0.81	0.86
MSCI's Implied Temperature Rise (ITR) in Degrees Celsius (Lower=better score, Higher=worse score)	2.35	2.06	1.63	1.92	1.96

Source: MSCI, State Street Global Advisors. For the definitions of the indicators please refer to the glossary at the end of this paper. Data as of December 29, 2023.

The Benefits of a Core-Satellite Portfolio Construction

We believe the high-conviction nature of the Global Climate Transition strategy makes it suitable for use as a satellite in core-satellite portfolio construction. Assuming that the core portfolio tracks the MSCI World Index or a climate-related MSCI benchmark, the size of the satellite allocation can be adjusted to achieve a targeted tracking error set by the institutional investor. In one example, for a 75% weight in the MSCI World Index and a 25% weight in the Global Climate Transition strategy, the ex-ante tracking error would be 1.1% with a return target alpha of 75 bps per annum (Figure 3).

Figure 3: Different Core-Satellite Constructions Leads to Different Return and Tracking Error Outcomes
Based on USD Return Streams

Universe/Strategy	Ex-ante Tracking Error (%)	Total Risk (%)	Excess Return Target (bps per annum)	Carbon-Intensity Direct + First Tier Indirect Reduction (%)	Implied Temperature Rise
MSCI World	—	15.01	0	0.0	2.3
MSCI World EU CTB Overlay ESG Screened Select Strategy	0.43	15.07	0	-12	2.1
SPDR MSCI World Climate Paris Aligned UCITS ETF (PAB)	1.11	15.15	0	-58	1.6
State Street Sustainable Climate World Equity Fund	1.01	14.93	0	-57	1.9
State Street Global Climate Transition Strategy	4.33	15.78	300	6	2.0
75% Core 25% Satellite					
75% MSCI World, 25% Global Climate Transition	1.12	15.20	75	1	2.3
75% MSCI World EU CTB Overlay ESG Screened Select Strategy, 25% Global Climate Transition	1.23	15.25	75	-7	2.0
75% MSCI World PAB, 25% Global Climate Transition	1.58	15.42	75	-42	1.7
75% Sustainable Climate, 25% Global Climate Transition	1.34	15.16	75	-41	1.9

Source: MSCI, State Street Global Advisors. Data as of December 29, 2023.

The three climate-change index-based strategies all fit well as a core allocation, alongside the Climate Transition strategy as a satellite allocation. We note the following:

- **Tracking Error Control** The climate-change index-based strategies all hold a large number of securities and all have a low ex-ante tracking error versus the MSCI World Index.

- **Climate Change Management Across Core Assets** The use of a climate-change index-based strategy at the core better reflects an investor's strategic decision to implement climate change characteristics across an entire equity portfolio (not just in the satellite allocation).

- **Large Carbon Emissions Reduction** A significant carbon-intensity reduction can be achieved at the total equity portfolio level from such a strategic investment decision.

- **Diversification from Core-Satellite Mix** There are diversification benefits between the core and satellite allocations, in terms of risk and return while benefiting from complementary climate change characteristics and portfolio construction.

The Global Climate Transition Strategy allows for an excess return objective at the total equity portfolio level. In 2023, the Climate Transition Strategy showed a return of +36.2% and an excess return of +14.0% versus the MSCI All Country World Index, demonstrating that financial markets are now actively seeking winners in the space.

The Bottom Line

State Street Global Advisors' core index-based strategies, combined with our satellite, active-oriented high-conviction strategy, can potentially deliver on climate-related investment targets. Used together, they can also add alpha and diversification benefits for a controlled level of tracking error. The beta-based and the high conviction strategies fit well together in terms of a strategic allocation that takes climate change into consideration, and generally are a strong utilization of core-satellite portfolio construction.

Appendix A: Description of State Street Global Advisors Index and Active Strategies

MSCI World EU CTB Overlay ESG Screened Select Strategy

The MSCI World EU CTB (Climate Transition Benchmark) Overlay ESG Screened Strategy has the smallest tracking error versus its parent benchmark, the MSCI World index, of the strategies analyzed in this paper. The strategy exceeds the minimum standards for EU Climate Transition Benchmarks. The ultimate aim of such strategies is to be aligned with the Paris Agreement 10 which is to limit the rise in the mean global temperature to 1.5°C from pre-industrial levels alongside achieving net zero-emissions by 2050.

Key minimum criteria[11] include:

- Baseline exclusions of companies that are involved in controversial weapons, tobacco, violations of the UNGC principles and Violation of the OECD Guidelines for Multinational Enterprises. Also excluded are companies that significantly harm one or more of the environmental objectives as referred to in Article 9 in the EU Sustainable Finance Disclosure Regulation (SFDR).[12]

- The reduction in Green House Gas intensity relative to the parent index is at least 30% and has a self-decarbonization path of 7% per annum.

The Strategy exceeds the minimum standards with the following additional criteria:

- Additional exclusion criteria: involvement with Nuclear Weapons (any ties), 1% revenue cut-off from thermal coal, 10% revenue cutoff from shale oil and gas, artic oil and gas and oil sands.

- ESG improvement score of 10% relative to the parent index MSCI World, based on the MSCI ESG rating scoring methodology.[13]

Altogether, 87 securities were excluded, corresponding to 8.4% of the MSCI World index as of 29 December 2023. After the exclusionary screening, the climate goals and ESG improvement are implemented as constraints in the minimum tracking error optimization versus the parent benchmark.

SPDR MSCI World Climate Paris Aligned UCITS ETF

The SPDR MSCI World Climate Paris Aligned UCITS ETF[14] tracks the MSCI World Climate Paris Aligned index. The index exceeds the minimum standards of the EU Paris-Aligned Benchmarks.

Key minimum criteria include:

- Baseline exclusions of companies that are involved in controversial weapons, tobacco, violations of the UN Global Compact (UNGC) principles and Violation of the OECD Guidelines for Multinational Enterprises, and fossil fuel activities. Also excluded are companies that significantly harm one or more of the environmental objectives as referred to in Article 9 in the EU SFDR.

- The reduction in Green House Gas intensity relative to the parent index is at least 50%.

Additional constraints, beyond the minimum regulatory requirements, include:

- Alignment with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), incorporation of Transitional and Physical Risk objectives and Transition Opportunity objectives.[15]

- A self-decarbonization path of 10% per annum (more than the 7% minimum requirement).

Altogether, 147 securities were excluded corresponding to 9.9% of the MSCI World index as of 29 December 2023. After exclusionary screening, the climate goals are implemented as constraints in the minimum tracking error optimisation versus the parent benchmark.

State Street Sustainable Climate World Equity Fund

The Strategy follows a similar construction approach where exclusionary screening is followed by an optimisation versus the parent benchmark. However the objective function for the portfolio optimisation is different: here carbon reduction is maximised and transaction costs are minimised for a target ex-ante tracking error of 1%.[16,17]

Key criteria:

- The Strategy screens for controversial weapons and for violations as reported by the United Nations Global Compact and Swedish Ethical Council. Additional screening of securities that are involved in activities related to oil & gas exploration, thermal coal, oil sands, artic drilling and shale energy.

    — 142 securities were excluded corresponding to 9.2% of the MSCI World index as of 29 December 2023.

- Historical climate change constraints: Fossil fuel reserves reduction of 90%, Brown revenue score reduction of 90%; Green revenue score increases of 300%.

- Forward-looking climate change parameters: Adaptation Z-score improvement of 0.25.

- Ex-ante tracking error is 1%.

State Street Global Climate Transition Strategy

The high-conviction Global Climate Transition strategy picks 30 to 40 stocks from the reference universe as defined by the MSCI ACWI index. The Strategy is expecting to generate on average +300bps of alpha over a three-year investment cycle. The Global Climate Transition strategy does not take into account historical climate change data in its stock selection process. However, R-Factor™ (see Glossary) and other historical data are important references in the screening process and in portfolio managers' discussions with the FGC team's sector analysts. See Figure 4. The identified stocks will be characterised as having:

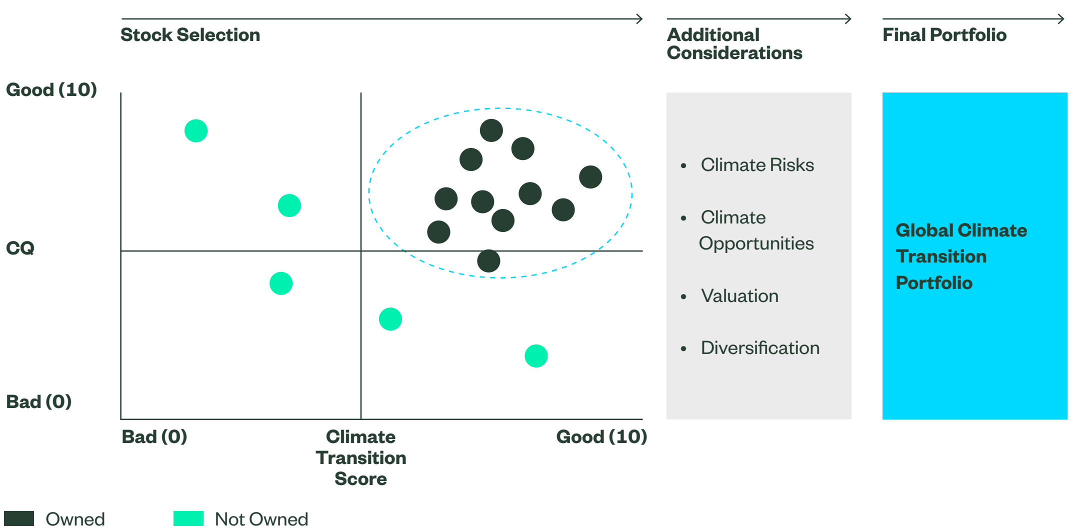
1 A Growth at a Reasonable Price (GARP) valuation.

2 A high Confidence Quotient (CQ) score. The qualitative CQ process integrates ESG features and has been used by FGC for investment analysis since the early 2000s. State Street Global Advisors ESG exclusions are also taken into account.

3 A strong positioning for the transition to Net Zero, with this assessed qualitatively through a proprietary climate scorecard.

The first two metrics derive from longstanding analytical tools used by the FGC team to deliver strong and robust investment portfolio performance.[18] The third metric was developed by the FGC team in 2021.

Figure 4: FGC Approach to Global Climate Transition Portfolio Construction



Source: State Street Global Advisors.

Appendix B: Sustainable Finance Disclosure Regulation (SFDR) Classifications and References

State Street Global Advisors' MSCI World EU Climate Transition Benchmark (CTB) Overlay ESG Screened Select strategy and SPDR MSCI World Climate Paris Aligned UCITS ETF have recently been reclassified as Article 9 as these strategies have a sustainable investment objective.[19] The Sustainable Climate World Equity strategy is available in fund format and is compliant with Article 8 in the EU Commission's SFDR Directive. The Global Climate Transition strategy plans be compliant with Article 8 at launch on 15th April 2024. *For more information, contact your State Street representa*tive.

1 Inflation Reduction Act Guidebook | Clean Energy | The White House.
2 Executive Order on the Implementation of the CHIPS Act of 2022 | The White House.
3 Corporate sustainability reporting — European Commission (europa.eu).
4 https://climate.ec.europa.eu/eu-action/european-climate-law_en.
5 Electrification — Energy System — IEA.
6 Financing clean power, efficiency and electrification — Financing clean energy transitions in emerging and developing economies — Analysis — IEA. What would it take to scale critical climate technologies? | McKinsey Building America's Clean Energy Future | Department of Energy.
7 IEA: Clean energy investment must reach $4.5 trillion per year by 2030 to limit global warming to 1.5°C | World Economic Forum (weforum.org).
8 A Case For: An Active Fundamental Approach to Climate Transition (ssga.com).
9 See: https://ssga.com/content/dam/ssmp/library-content/assets/pdf/global/esg/2024/integrating-forward-looking-climate-metrics.pdf.
10 Paris Agreement — UN Framework Convention on Climate Change — EUR-Lex (europa.eu).
11 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R1818&from=EN.
12 Sustainable Finance Disclosures Regulation — European Commission (europa.eu).
13 ESG Ratings Methodology — MSCI.
14 SPFW : SPDR® MSCI World Climate Paris Aligned UCITS ETF (Acc) (ssga.com).
15 https://www.msci.com/eqb/methodology/meth_docs/MSCI_Climate_Paris_Aligned_Indexes.pdf.
16 a-case-for-sustainable-climate-equity-strategy.pdf (ssga.com).
17 Fact Sheet:State Street Sustainable Climate World Equity Fund, Jan2024 (ssga.com).
18 See: Fundamental Growth & Core Equity: An Integrated Approach to ESG and Quality See: https://www.ssga.com/content/dam/ssmp/library-content/assets/pdf/north-america/mas/2024/strategies-in-core-satellite-portfolio-construction.pdf.
19 JC 2023 18 — Consolidated JC SFDR Q&As (europa.eu).
20 r-factor-for-companies-faqs.pdf (ssga.com).
21 Implied Temperature Rise — MSCI.

Glossary

R-Factor R-Factor is an ESG indicator developed by State Street Global Advisors. R-Factor aggregates and maps the ESG data sourced from different vendors to one common Sustainability Accounting Standards Board (SASB) framework. Based on R-Factor scoring, each security in the reference universe is categorised as a laggard, underperformer, average, outperformer or leader. The Global Climate Transition strategy only retains candidate securities categorised as outperformer or leader (i.e., scoring in the top two quintiles).[20]

The Sustainable Climate World Equity strategy does not utilise R-Factor scoring in its portfolio construction.

Carbon Intensity Direct + First Tier Indirect sourced from S&P Trucost, correspond to Scope 1+ 2 and Scope 3 upstream, reported as CO_2e /$M revenue.

Task Force on Climate-Related Financial Disclosures (TCFD) WACI The TCFD's WACI (weighted average carbon intensity) includes Scope 1 + Scope 2 carbon emissions but not Scope 3 emissions. This carbon intensity measure is therefore smaller than the Trucost definition, which includes upstream Scope 3. Scope 3 emissions are classified as not being under a company's direct control and therefore difficult for it to manage.

EVIC based Carbon Intensity Scope 1+2+estimated 3, reported as CO_2e /MEUR EVIC (enterprise value including cash).

Fossil Fuel Reserves Fossil fuel reserves owned by companies sourced from S&P Trucost are defined as CO_2e emissions that could be generated if the proven and probable fossil fuel reserves owned by companies were burned.

Brown Revenues Realised Brown Revenues sourced from S&P Trucost are defined as the percentage of revenues that a company derives from the extraction of fossil fuels, or use of fossil fuels for power generation.

Green Revenues Green Revenues sourced from FTSE Russell are defined as the percentage of revenues that a company derives from greener business activities, or low-carbon technologies.

Adaptation Score The adaptation score is sourced from ISS ESG, where each company within a given universe will be given a score of between 0 (expected to be least adapted) and 1 (expected to be well adapted). This score is a combination of two indicators that are qualitatively determined. The first indicator evaluates the company's position on climate change. The second indicator evaluates the existence and quality of the company's greenhouse gas emissions reduction targets and measures/action plans to achieve these targets.

Implied Temperature Rise Model (ITR) MSCI's Implied Temperature Rise Model (ITR) translates scoring into an implied temperature rise relative to pre-industrial levels. For the reference index, this is a 2.0°C global carbon budget and the assumption of net-zero emissions by 2070 (assuming that the NDCs' commitments are realised).[21] NDC stands for Nationally Determined Contributions. See: https://un.org/en/climatechange/all-about-ndcs.

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* Pensions & Investments Research Center, as of December 31, 2022.
† This figure is presented as of December 31, 2023 and includes approximately $64.44 billion USD of assets with respect to SPDR products for which State Street Global Advisors Funds Distributors, LLC (SSGA FD) acts solely as the marketing agent. SSGA FD and State Street Global Advisors are affiliated.

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The returns on a portfolio of securities which exclude companies that do not meet the portfolio's specified ESG criteria may trail the returns on a portfolio of securities which include such companies. A portfolio's ESG criteria may result in the portfolio investing in industry sectors or securities which underperform the market as a whole.

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