

Green Alpha!

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Investment Philosophy

We consider the greatest growth drivers of the twenty-first century to be high-functioning, inventive companies generating and accelerating solutions to system-level risks like the climate crisis, resource degradation, worsening inequality, and human disease burdens. Consequently, those companies are our chief opportunity for investments that preserve and grow clients' purchasing power.

Green Alpha's investment philosophy is straightforward: seek enterprises creating smart, scalable and rapidly evolving, economically-competitive solutions. Don't invest in companies causing global systemic risks.



Why Invest in the Social Index?

- Active research and stock selection; passively managed through an annual rebalance
- Uniquely rigorous gender and social inclusion criteria applied to the Next Economy thesis creates a powerful combination of innovative companies led by diverse, empowered teams
- ~88 global, market-leading companies developing solutions to core economic and environmental risks
- Fossil fuel free since inception

Inception Date: December 31, 2015

Style: All-Cap Global Equities

Vehicle: Separately Managed Accounts

Portfolio Construction

The Social Index construction is based on the science that the cognitive capacity, execution abilities, and risk management skills of groups exceeds that of individuals, and the more diverse the group, the greater the potential. Diverse teams make better long-term decisions. To manage the portfolio, we start by seeking companies:

- with products and/or services lowering the global economy's risk profile by creating solutions to our most pressing economic and environmental risks
- committing more capital to R&D and owning more intellectual property than their peers
- run by effective, diverse executive teams and boards with track records of increasing revenues and expanding margins, leading to earnings growth
- that trade at compelling valuations relative to proven and expected growth, within acceptable levels of risk

We set initial weights by market cap., then assign additional weighting to companies where women hold significant decision-making authority, have especially strong representation, and/or those companies with policies that are eminently inclusive of all demographics.

Harness the Possibilities

Segment	Demand Outlook	Tailwinds	Headwinds		
Zero-emission Transportation	•	 Scaling rapidly Competitive total cost of vehicle ownership Global gov't policies to limit or end ICE sales Lethality of ICE emissions increasingly well known Unbeatable user experience; ranges improving 	 Incumbent ICE makers resistant to change Incumbent dealer network resistant to selling EVs due to low maintenance profile Non-universality of charging solutions Length of charging time 		
Biotechnology	•	 Disruptive & transformative in medicine – limitless addressable market One-and-done therapies less expensive than continuous legacy treatments of symptoms Removing disease burden will greatly increase the productivity of the global economy Also transforming materials & agriculture 	 Still in preliminary stages Extensive R&D required Resistance from treatment providers Gov't regulations slow to adapt Progress is nonlinear & setbacks are inevitable 		
Renewable Energy	0	 Growing rapidly, gaining market share, represents large majority of new generation Cheapest sources of energy Key contributor to solving one of the greatest causes of the climate crisis 	• Resistance from industry (e.g., fossil fuels & utilities) interests, including via gov't policies like no net metering, subsidies to fossil fuels companies, & red tape around renewable energy deployment		
Technology & Data Infrastructure	•	 Wired, broadband, & satellite efficiency improving rapidly Quantity of data flow increasing exponentially in era of data proliferation Requires speed, accuracy, & security Key to digitalizing, decarbonizing, & dematerializing the economy 	 Threats from bad actors Stock-specific valuations can get relatively high, as the productivity gain benefits & need for the most innovative solutions is relatively obvious, & no major legacy incumbency is resisting 		
Artificial Intelligence & Machine Learning	Ð	 Al advancements make economic segments more productive, from advanced materials to medicine Confluence between AI & ML is synergistic & transformative, enabling upstream advances Al allows positive-sum confluence of multiple areas of new tech, including energy, fintech, biotech, medicine, robotics, & automation 	 Some industries have slower adoption; key is selecting companies prioritizing beneficial AI acquisition Adoption potentially slowed by workforce composition misperceptions Could pose security threats if improperly deployed; can accelerate threats 		
Financials	•	 Huge addressable market of underserved population; Alenabled fintech makes serving them possible & profitable Best-in-class sustainable REITs are preferred homes to leading innovators, command premiums; sector includes renewable energy-powered data center REITs Providing renewable energy financing for utilities, etc. 	 Largest banks & investment institutions still investing to accelerate the climate crisis; careful stock selection is imperative Greenwashing is pervasive in financial services; difficult for clients to disambiguate Industry suffering from lack of inclusive banking & insurance options 		
Agriculture & Food	•	 Biotech & AI are making possible the end of pesticides, herbicides, & chemical fertilizers; farmland could regenerate Consumers shifting to natural & organics Transparent chain of custody: food safety, ethical labeling 	 Clean freshwater is under threat Distribution infrastructure often inadequate Enormous levels of food waste exists 		
Water	•	 Elemental requirement for life Opportunities to create more freshwater, track & measure where it is, & where it needs to be Tech to find leaks & quickly resolve them 	 Investment in old & aging infrastructure woefully insufficient Regulations insufficient to protect supplies Degradation by harmful industries 		
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Macroeconomic Commentary

The first quarter of 2022 was historic for the world, and dramatic for economies and markets. The dynamics involved are ongoing, so the geopolitical and economic story will continue to unfold, doubtless in surprising and unforeseen ways. Nevertheless, we can see new trajectories being established, and the picture thus far, though incomplete, provides some context.

First, the war in Ukraine. It is an unprovoked, needless, tragic, horribly destructive, ongoing series of war crimes, and must be condemned in the strongest terms. Geopolitically, it is a binary test for participatory democracy: will it stand up to and overcome authoritarianism, or will it, as it has so often before, dither and make excuses for why the dictator must be placated? The answer to this question will have severe and long-lasting impacts on civilization, scientific and cultural progress, and certainly on the world's economies. For example, will conflict erode social cohesion and trust, thereby reducing investment and trade, or will a resolute, unified response to the undisguised power grab foment trust and collaboration? These are medium and long-term questions; more proximally, the advent and continuation of the invasion has had several effects.

The economic picture is already complicated: an ongoing pandemic, supply chain shocks, inflation, tightening monetary policy. The invasion has added to each, further complicating the totality. The world must now deal with greater uncertainty around energy supplies and prices. If Europe should make the hard, but arguably correct, decision to cut off Russian oil and gas immediately and completely, Russia's war machine may be starved, but Europe's GDP would surely decline, potentially serving as a contagion for global recession.

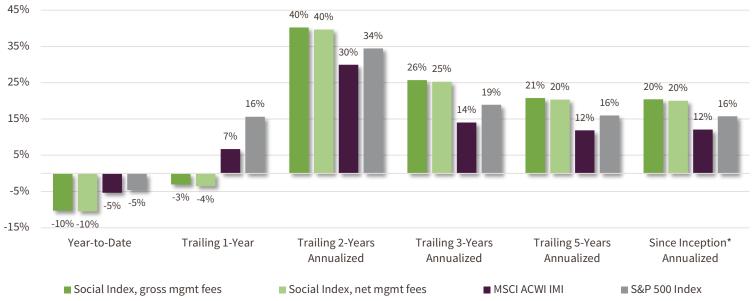
The other side of that coin, one that so far has been beneficial to Green Alpha portfolios, is a growing conviction that renewable energies—being locally sourced, inexpensive, and non-volatile in price once installed—make a fantastic fortification against the current global paradigm of energy-as-a-potential-weapon. Renewable energy stocks were generally in decline in the year preceding the invasion but has since made a significant recovery. It seems likely the conflict will continue to catalyze the trends away from investing in fossil fuels and toward acceleration of renewables (albeit paired in the shorter run by a search for new sources of gas). This shift is fortunate on the climate front as well, as the IPCC warned us early in Q2 that the world has been dangerously underfunding the transition to renewables, to the extent that the COP26 agreements will be difficult to meet. Despite all the national, corporate, and financial services hollow words to net-zero goals, emissions of CO₂, CH₄, N₂O, and so on, are still not decreasing—they're accelerating. And yes, that's the result of the world's investment activities.

All this is causing a surge in energy prices, which is exacerbating inflation and leaving the world's central banks scrambling to determine appropriate responses to perhaps slow inflation without strangling economies and companies, the more indebted of which can ill afford large rate hikes.

The invasion of Ukraine is revealing the interconnectedness of the commodity systems—sourcing, distribution, and pricing—that underpin the global economy, and the vulnerabilities those systems have always been subject to. Though we've been discussing energy, food is critical in this picture as well: estimates are that combined Russian and Ukrainian grain exports provided 12% of the world's calories in 2021, and Russia is a dominant supplier of agricultural fertilizer. Some metals and other goods are core Ukrainian and Russian products as well. Disruption in these commodity systems adds further inflation pressures, placing additional stressors on central banks, policy makers, and consumers alike.

Still, we can invest to mitigate these risks. The opposite of vulnerability is diversification: diversification of energy sources, food supplies, lithium, and other materials critical to accelerate the energy transition, and so forth. For us at Green Alpha, the key to navigating all these risks—climate, geopolitical, and economic—is what it has always been: secure our portfolios against the destructiveness of these shocks by investing in the solutions to the risks that fuel them. Invest in and channel capital to greater energy security and independence, to lessen global warming, to greater social cohesion and trust. By believing that only solutions to these systemic risks have long term value—and investing that way—we position ourselves to earn competitive returns on a long-term average annual basis.

Portfolio Commentary & Performance



Predicated on this thesis, Green Alpha's portfolios consist of the most dynamic, innovative companies we can find, across all sectors, actively disrupting the destructive legacy economy and making the Next Economy safer and more economically productive. By selecting what we believe are the most fundamentally sound and well-managed exemplars, we are confident we've constructed portfolios positioned to resist the complicated risks of our economic future, and furthermore, to increase our clients' buying power into that future. We have conviction this will continue to be the case for our strategies, even during shorter-term periods of underperforming index benchmarks.

Rest assured: we won't revise our investment philosophy in response to short-term volatility, and you won't see style drift within our strategies. We're not here for that; we're here to build and benefit from the de-risked Next Economy.

For the first quarter of 2022, the Green Alpha's Social Index portfolio returned -10.48% net of management fees, compared to its benchmark, the MSCI All Country World Investible Market Index (MSCI ACWI IMI), which returned -5.37%.

The Technology and Health Care sectors were the portfolio's two largest detractors.

- Within Technology, declines came from the semiconductor industry, with geopolitical and supply chain concerns weighing on shares across the value chain, from upstream capital equipment providers to midstream designers, developers, and manufacturers, and downstream to end users. Losses in the tech hardware and software industry also contributed to declines, particularly application and financial transaction processing software.
- Negative contributions from the Health Care sector were the result of declines in the biotech, and medical equipment & devices manufacturing industries. The biotech industry led the pullback, as traders shied away from growth names in a perceived flight to safety amid political and economic uncertainty. The healthcare services industry also added to losses as telemedicine and contract research companies declined on a narrative of a slowing in the COVID-19 pandemic.

This quarter's top contributors to the Social Index were the Communications and Energy sectors.

- Energy added the second most returns, with a rally by renewable energy equipment manufacturers, both wind and solar, driven by the war in Ukraine. This shed light on energy risks and the importance of locally-generated renewables, for both energy and geopolitical security, in addition to renewables' other established benefits.
- Gains in Communications were provided by North America's most sustainably run and technologically advanced data centers, as demand for data use, storage, analysis, and transmission continues to grow.

*Portfolio Inception: December 31, 2015. All returns presented above that are greater than 1 year in length have been annualized. Performance data quoted represents past performance. Past performance does not guarantee future results and current performance may be lower or higher than the data quoted. Please see the final page of this document for important disclosures about portfolio, benchmark, and characteristic information.

Ticker Weigh

Largest Positions

How the Social Index is driving progress toward the Next Economy

NVIDIA (Sector: Technology)

- NVIDIA's processors are dominant in data centers, machine learning, and AI. Their processors are used by many of the most advanced companies. NVIDIA is critical for cloud computing companies AWS, Google Cloud, and Microsoft's Azure, because its processors are among the fastest and highest throughput—factors that are key as cloud companies offer more AI-based capabilities.
- NVIDIA's CEO coined 'intelligence manufacturing:' "Accelerated computing, at data-center scale, and combined with machine learning, has sped up computing by a million-x. Accelerated computing has enabled revolutionary AI models like the transformer, and has made self-supervised learning

company Name	TICKCI	Weight.	
NVIDIA	NVDA	2.89%	
Arista Networks	ANET	2.44%	
Palo Alto Networks	PANW	2.33%	
Box	BOX	2.30%	
Switch	SWCH	2.22%	
Vertex Pharmaceuticals	VRTX	2.21%	
Apple	AAPL	2.13%	
Iron Mountain	IRM	2.11%	
Atlassian	TEAM	1.93%	
American Water Works	AWK	1.75%	
% of Portfolio		20.31%	

Company Name

possible. AI has fundamentally changed what software can make, and how you make software."

• 40% of execs are women, including the CFO and EVP of Ops, and the BOD comprises three women, including comp comm chair.

Arista Networks (Sector: Technology)

- ANET is a computer networking company providing networking solutions for hyper-scale data centers. The company primarily
 designs and sells multilayer network switches, and it additionally offers a software operating system for managing rapid growth of
 large and hyper-scale data centers. Their proprietary Extensible Operating System (EOS) runs ANET's fleet of switching and
 routing products, enabling clients to deploy an integrated and efficient network across public, private, and hybrid-cloud
 environments. ANET offers a leading cybersecurity suite, Arista NDR (Network Detection and Response) platform, which is part of
 their zero-trust security positioning.
- Arista's climate goals are measured by carbon intensity by revenue, which they have decreased over 50% since 2014.
- Executive leadership is comprised of 29% women, and Arista is one of few large, American companies where the President and Chief Executive Officer, and Chief Financial Officer are both women. The board of directors is composed of 75% independent directors and is 37% diversified by gender and ethnicity.

Palo Alto Networks (Sector: Technology)

- Palo Alto's cybersecurity offering centers around its advanced firewall, which is a combination of physical devices and software/virtual services. PANW has had success growing revenue with their leading firewall by upselling customers additional services, like Prisma, its cloud security suite; and Cortex, its AI-powered threat detection engine. All these have been strong sellers in the current environment of cyber-attacks and ransomware intrusions.
- The management team is 31% women, including the CMO, CHRO, Chief Customer Officer, and Deputy CFO; the board of directors is 33% female and includes the Audit Committee Chair.

Box (Sector: Technology)

- Box provides secure content management, workflow, and collaboration, and their offering also embeds security and analytics. Box is arguably the globe's leading cloud content (not data) platform, making it well positioned for continued growth as the addressable market of large content providers continues to grow, and as content teams continue to fragment geographically.
- The Chief Operating Officer and Chief People Officer at Box are female, and the board of directors is 44% women, including the Chairperson, the Chair of the Nominating and Corporate Governance Committee, and the Chair of the Operating Committee.

Switch (Sector: Communications)

- Switch is a data center builder and manager providing co-location, telecommunications, cloud services, and other services to corporate clients of all sizes, but primarily medium and large enterprises. They provide among the most technologically advanced data centers available today, with 750 issued and pending patents.
- Switch is the most sustainable technology infrastructure provider covered by Green Alpha, with all of their data centers powered 100% by renewable energy, in some cases with Switch owning large solar generating capacity co-located with facilities.
- 20% of Switch's executive team is female and 33% of the board of directors are women, including the Audit Committee Chair.

Please see the final page of this document for important disclosures about portfolio, benchmark, and characteristic information.

Social Index

How the portfolio compares to the MSCI All Country World Investible Market Index (MSCI ACWI IMI) and other Green Alpha portfolios

Characteristics

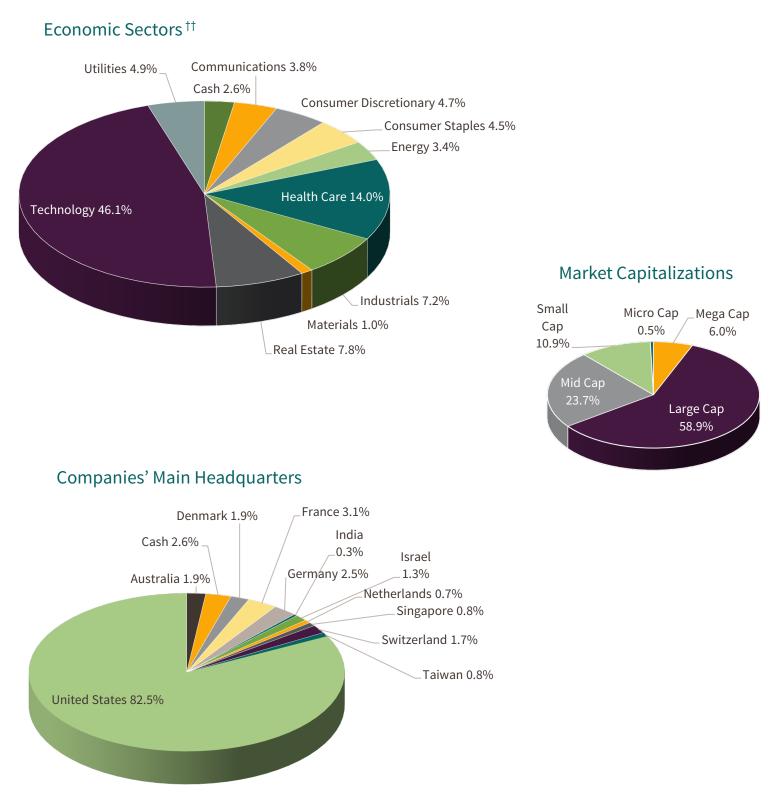
- Next Economy innovators, diversity leaders harnessing the performance enhancing and risk reducing potential offered by diverse teams, we apply rigorous gender and social inclusion criteria to our Next Economy universe
- Fundamentals-driven: the underlying quality of companies and the price paid for their shares are key drivers of LT returns
 - ✓ High growth: indicated by Sales Growth, and a decrease from Current P/E to Forward P/E as revenue and earnings grow
 - ✓ Compelling valuation: demonstrated by Price/Sales and Price/Book metrics relative to growth expectations
 - ✓ Strong balance sheet and management execution: conveyed by capital stewardship, LT Debt/Equity, and Current Ratio
- Fossil fuel free since inception: we have never invested in companies that prospect, extract, refine, or transport fossil fuels, nor in fossil-fired utilities or internal combustion engine manufacturers
- Diversified we seek solutions wherever we can find them: across the globe, in companies of all sizes, and every industry
- Public equities, long-only: most investors' largest asset class; largest opportunity for impact

Characteristics	Green Alpha Next Economy Social Index	Benchmark: MSCI ACWI IMI (SPGM)	Green Alpha Next Economy Index	Green Alpha Next Economy Select	Green Alpha Growth & Income	Sierra Club Green Alpha
# of Securities	88	2,430	139	57	35	47
Active Share	95%	-	93%	96%	97%	96%
Sales Growth, Trailing 1-Yr	504%	39%	671%	4,261%	1,864%	2,640%
P/E, Current	24.64	17.26	21.82	17.79	16.16	19.86
P/E, 1-Year Forward [†]	23.88	15.71	21.09	20.10	18.28	22.99
Price/Sales	2.57	1.89	2.67	1.88	1.90	1.69
Price/Book	4.07	2.71	3.88	2.87	2.36	3.22
LT Debt/Equity	0.92	0.84	0.82	0.94	1.40	1.02
Current Ratio	2.71	1.90	2.87	3.12	1.77	2.80
Dividend Yield	1.89%	2.36%	1.85%	2.35%	3.50%	2.04%
Market Capitalization, Weighted Avg (US\$B)	\$119.24	\$381.33	\$121.92	\$149.09	\$69.79	\$134.94
Market Capitalization, Median (US\$B)	\$11.87	Not Available	\$10.24	\$8.59	\$32.19	\$17.77
Turnover, Trailing 2-Yr Avg Annual	23%	-	20%	6%	25%	20%
Beta, Trailing 2-Yrs	1.09	1.04	1.11	1.19	1.07	1.21

[†]Bloomberg consensus estimates. Please see the final page of this document for important disclosures about portfolio, benchmark, and characteristic information.

Portfolio Allocations

Our search for Next Economy companies is unconstrained. For the Social Index portfolio, we seek solutions to systemic risks wherever they exist – across sectors, market caps, and geographies.



^{††} Bloomberg Industry Classification Standard. Please see the final page of this document for important disclosures about portfolio, benchmark, and characteristic information.

Important Disclosures

- Green Alpha Advisors, LLC is a registered investment advisor. Registration as an investment advisor does not imply any certain level of skill or training.
- Green Alpha is a registered trademark of Green Alpha Advisors, LLC. Green Alpha Advisors also owns the trademarks to "Next Economy," "Next Economics," "Next Economy Portfolio Theory," "Investing in the Next Economy," and "Investing for the Next Economy."
- Performance quoted throughout this document represent past performance. Past performance does not guarantee future results, and current performance may be lower or higher than the data quoted. Investment returns and principal will fluctuate with market and economic conditions, and investors may have a gain or loss when shares are sold.
- Beginning July 31, 2021, the Next Economy Social Index performance results are a composite of discretionary client accounts invested in the strategy on specific custodial platforms. Green Alpha's discretionary client accounts that are not included in the composite are those custodied at Folio Institutional due to operational limitations of Folio's data feeds to Green Alpha's portfolio accounting system Advent APX. The Next Economy Social Index composite performance results reflect actual performance for a composite of discretionary client accounts, net of actual management fees and transaction costs. Some assets managed in the Next Economy Social Index strategy within the composite receive a reduced fee from the standard management fee schedule. Actual client returns experienced will vary from the composite returns based on a variety of factors, and we encourage you to ask about specific factors. Accounts are included in the composite for full-month periods under management with Green Alpha Advisors, LLC. Next Economy Social Index performance results do not reflect the reinvestment of dividends and interest.
- Actual advisory fees may vary among clients with the same investment strategy. Green Alpha's standard fee schedules are available within Form ADV Part 2. For those details and additional legal information, please see information and files here: http://greenalphaadvisors.com/about-us/legal-disclaimers/.
- From the strategy's inception through July 31, 2021, Next Economy Social Index performance results reflect performance of a model portfolio. The Next Economy Social Index model performance does not reflect any transaction costs. The Next Economy Social Index model performance results do reflect the reinvestment of dividends and interest. Model performance has inherent limitations. The returns shown during that time period are model results only, and do not represent the results of actual trading of client assets. The model performance shown does not reflect the impact that material economic and market factors had, or might have had, on decision making if the account held actual client capital. Actual client accounts in this strategy are managed by Green Alpha based on the model portfolio, but the actual composition and performance of these accounts may differ from those of the model portfolio due to differences in the timing and prices of trades, and the identity and weightings of securities holdings.
- The Next Economy Social Index strategy contains stocks that are managed with a view towards capital appreciation. Extreme periods of underperformance or outperformance are due to the concentrated nature of the strategy, and the impact of specific security selection. Such results may not be repeatable.
- Regardless of time frame, all characteristics data are sourced from Bloomberg Finance L.P. based on a model Next Economy Social Index portfolio that may or may not be exactly what is delivered and available on each custodial or wrap account platform.
- Green Alpha portfolios may invest in companies with small and medium market capitalizations, which may have more limited product lines, markets, and financial resources than larger companies. In addition, their securities may trade less frequently and in more limited volume than those of larger companies. Small or mid-cap stocks may be more volatile than those of larger companies and, where trading volume is thin, the ability to dispose of such securities may be more limited. Green Alpha portfolios may also invest in foreign domiciled companies. Investing in foreign securities may involve additional risks, including exchange-rate fluctuations, limited liquidity, high levels of volatility, social and political instability, and reduced regulation. Emerging markets are often more volatile than developed markets and investing in emerging markets involves greater risks. International investing may not be suitable for everyone. An investment in Green Alpha portfolios should be considered a long-term investment.
- The holdings identified throughout this document do not represent all the securities purchased, sold, or recommended for advisory clients. You may request a list of all recommendations made by Green Alpha in the past year by emailing a request to <u>info@greenalphaadvisors.com</u>. It should not be assumed that the recommendations made in the past or future were or will be profitable or will equal the performance of the securities cited as examples in this document.
- The MSCI All Country World Investable Market Index (ACWI IMI) captures large, mid, and small cap representation across 23 developed markets and 27 emerging markets countries. With more than 8,750 constituents, the index is comprehensive, covering approximately 99% of the global equity investment opportunity set. Investors cannot invest directly in this index.
- The SPDR MSCI Global Stock Market ETF (ticker: SPGM) seeks to provide investment results that, before expenses, correspond generally to the price and yield performance of the MSCI ACWI IMI. Investors can invest directly in SPGM.
- The S&P 500 Index is an unmanaged index of 500 common stocks chosen for market size, liquidity, and industry group representation. It is market-value weighted. The S&P 500 Index figures do not reflect any fees, expenses, or taxes. Investors cannot invest directly in this index.
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