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BlackRock®

Systematic investing

Investing, evolved

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Summary

- Today, advisors and institutions face many challenges. How to consistently generate outperformance in a portfolio while keeping costs down? How to build portfolios that incorporate elements of index, factor-based and alpha-seeking strategies? How to find managers that can produce excess returns in markets where alpha is becoming harder to generate? And finally, as investment returns remain essential for investors, they are looking to see how managers are incorporating sustainability information into the investment process.

- Systematic investing is adapted to address these challenges. By leveraging data and technology to modernize the investment process, systematic investment strategies seek to offer cost-efficient, risk-managed solutions with a clear focus on delivering intended investment outcomes.

- Systematic investment strategies are managed with a clear understanding of index, factor and alpha return sources. Most importantly, systematic strategies are designed to utilize these distinct sources of return to seek their highest and best use.

- Systematic investing is driven by data and innovation and seeks to take advantage of the digital age that has created an ocean of data, providing the potential for better decision making and new potential sources of alpha.

- The quantitatively-driven, systematic investment process can explicitly balance a number of portfolio considerations — incorporating estimates of risk, return and correlation alongside ESG-related metrics.

- BlackRock has been at the forefront of systematic investing for over 35 years, continuously evolving the way we invest in an effort to meet the growing needs of our investors.

While the approach described herein seeks to control risk, risk cannot be eliminated.
Diversification does not guarantee a profit or eliminate the potential for loss.
The opinions expressed are those of the BlackRock Systematic Investing team as of February 2024 and subject to change with market conditions.

Systematic investing at BlackRock

We combine cutting-edge technology, scientific research and human insight in the relentless pursuit of investment performance.

Empowered by data & technology

We use vast datasets and technological innovation to find investment insights amidst market complexity.

Guided by science

We vigorously test and validate insights through a deliberate scientific method to continuously refine and redefine our approach.

Enlightened by experience

We draw on over 35 years of experience, augmented by intellectual curiosity and diverse thought, to inform our investment process every step of the way.

Source: BlackRock, as of February 2024. Investment process is shown for illustrative purposes only and is subject to change. History reflects predecessor firms.

Systematically different

Systematic investing is an approach that emphasizes data and quantitative techniques to build portfolios — relying less on the discretionary decisions of individual portfolio managers.

Systematic investing, sometimes called quantitative or "quant" investing, applies rigorous research and measurement techniques to all aspects of the investment process. While systematic investment approaches can come in the form of **alpha-seeking** strategies or **factor-based** portfolios, they are unified by a set of uncompromising principles.

To start, our investment teams develop an investment thesis that is grounded in sensible economic theory and supported by empirical evidence. These theories are modeled into an investment insight that is composed of a set of quantifiable metrics that have shown to be indicators of future asset price behavior. Inputs in our investment insights must be directly measurable, and typically combine fundamental, sentiment and relative value metrics.

Research teams conduct rigorous testing to validate investment insights through a scientific process. This process involves a detailed examination of empirical evidence, ancillary tests to identify how the insight works and an independent confirmation of research results. Only those investment insights that are both economically sensible and consistently additive are considered for inclusion in portfolios.

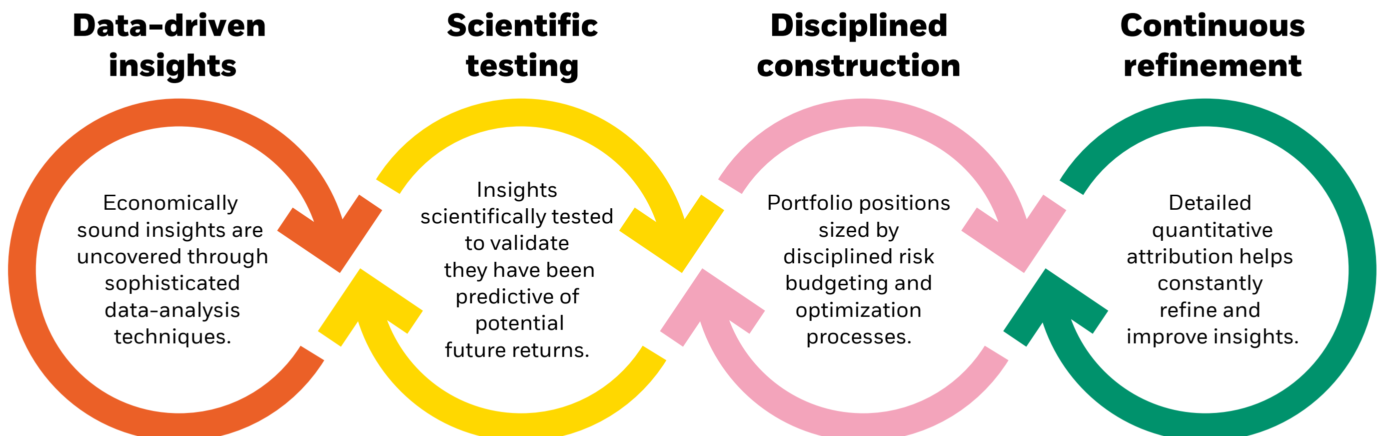
Next, all insights coming from the research process are transformed into security weights through a quantitative process that explicitly trades off expected return alongside risk, correlation and cost. This helps identify and limit the unintended biases and hidden concentration risks at the portfolio level that often arise from more heuristic or discretionary portfolio construction methods. For example, a portfolio that appears broadly diversified across economic sectors may actually be making outsized bets on a single source of return if the manager doesn't have proper risk management to quantify and manage for underlying factor exposures or cross-correlations across securities.

Finally, a continuous feedback loop connects portfolio results to the research process, providing an avenue for constant improvement and innovation. Quantitative attribution for each return driver reveals which data and other inputs were successful and which were not. This creates a continuous cycle of refinement which helps to pursue better portfolio outcomes.

Each step in the investment process is based upon data-driven insights and empowered by technology. Importantly, experienced investment professionals oversee every aspect of the process — guiding the research process and ensuring the end portfolio holdings are well understood. A systematic approach helps scale the investment research and portfolio management process in an effort to help deliver repeatable investment results.

A carefully crafted system of investing

Key elements of a systematic investment process



There is no guarantee that research capabilities will contribute to a positive investment outcome.

Source: BlackRock, as of February 2024. Investment process is shown for illustrative purposes only and is subject to change.

How do systematic and fundamental investment approaches differ?

In practice, fundamental and systematic approaches share many characteristics; however, they employ differentiated processes and techniques in pursuit of a similar goal — alpha.

	Systematic	Fundamental
Daily portfolio management	Model driven with portfolio manager oversight	Portfolio manager centric with full discretion
Primary form of analysis	Quantitatively and qualitatively testing ideas	Collective expertise, debate and team consensus
Core competency	Breadth of holding analysis	Depth of holding analysis
Alpha source	Time-varying, repeatable insights	Idiosyncratic opportunities
Positions sizing	Portfolio optimization and risk-budgeting	Conviction
Downside risk management	Defensive portfolio construction	Flexibility and adaptability

Source: BlackRock. The above list is shown for illustrative purposes only, is subject to change and is not an exhaustive list. There may be other differences between investment approaches that are not material and are not detailed above.

Risk management cannot fully eliminate the risk of investment loss.

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Designed for an Index | Factor | Alpha approach

An innovative approach to portfolio construction can help investors target cost-efficient, above-market return sources.

Investors have traditionally considered portfolio construction through the lens of two types of investment approaches: index or alpha-seeking strategies. Today, investors increasingly recognize factor solutions alongside traditional index and alpha investments.[1] **Index, factor** and **alpha-seeking** strategies are complementary sources of return, each offering unique benefits and risks. Understanding each of these components empowers investors to make explicit choices about the optimal mix of return, risk and fees that best fits their investment objectives.

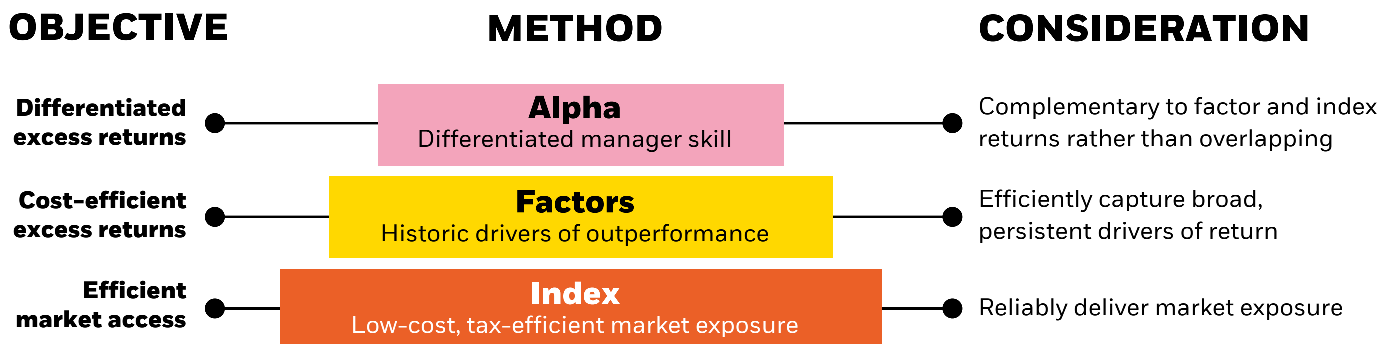
By design, a systematic investment process makes it possible to fine tune investment strategies based on different sources of return, varying levels of risk and a variety of potential investment outcomes. For instance, many investors seek to modestly outperform the broad market with a limited level of active risk. An enhanced index strategy may tilt the portfolio towards certain securities that have favorable fundamentals or market sentiment, while keeping the sector allocation and key characteristics of the portfolio largely in line with the benchmark.

For investors seeking incremental returns with low costs, we can employ factor-based insights to target historically rewarded sources of return. These strategies are grounded in long standing investment ideas driven by an enduring economic rationale, resulting from a risk premium, structural impediment or behavioral bias. A systematic process can target exposure to a single factor (e.g. value, quality, momentum, size or low volatility) or blend multiple factor exposures in a diversified factor portfolio to seek incremental returns versus a market benchmark. Factor strategies target the same traditional investment ideas used by fundamental managers for decades, such as allocating to high quality or undervalued securities. However, factors do so in a way that emphasizes the importance of a low-cost, rules-based and transparent investment approach.

Alpha-seeking strategies strive to outperform what can be delivered by index or factor strategies. Alpha-seeking strategies are based on the differentiated investment insights of an active manager that may not be accessible or well understood by the broad market. Importantly, systematic alpha strategies will typically take into account factor exposures in the portfolio construction process — often explicitly eliminating or minimizing unwanted factor risk exposures. As a result, the correlations between systematic alpha-seeking strategies and factor strategies can likely be very low by design, helping to reduce overlap and potentially making them complementary sources of return in the aggregate portfolio.

Building an Index | Factor | Alpha portfolio requires the right set of tools

Illustrative portfolio construction example



Diversification and asset allocation may not fully protect you from market risk.

Source: BlackRock, as of February 2024. For illustrative purposes only and subject to change.

1 Ang, Chen, Gates, and Henderson. "Index + Factors + Alpha." Financial Analysts Journal. Vol. 77, Issue 4, September 2021, https://doi.org/10.1080/0015198X.2021.1960782.

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Active ≠ alpha

Why is it important to understand what is driving your portfolio returns?

Some strategies may rely on a simple beta tilt to boost returns — suggesting you could be paying active fees for index exposures. Other strategies may rely on traditional factor exposures — either intentionally or unintentionally — which may generate above market returns, but can be highly cyclical and may not justify alpha-like fees. Increasingly, factor returns can be packaged and delivered separately at a lower fee. Alpha, on the other hand, is inherently rare and difficult to duplicate, requiring managers with specialized skill and processes to deliver it consistently. Understanding the source of returns across index, factors and alpha helps investors bring together the right exposures and pay the right fees, increasing the potential likelihood of meeting investment objectives.

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Decoding the markets to help find an edge

Finding an investment edge increasingly requires specialized expertise in transforming a sea of raw data into useful investment insights.

In today's digital age, investment managers have the blessing and the curse of the proliferation of data. The sheer amount of available information makes for a challenging task of cleaning, mapping and interpreting data to uncover the inefficiencies that can potentially lead to above-market returns. Asset managers recognize the potential opportunity to unlock new sources of alpha within the mountain of unstructured data available today. Increasingly, managers rely on modern computational techniques like natural language processing, image recognition and machine learning to generate new investment insights.

Decades ago, hedge funds led the adoption and use of alternative data, but the use of novel data sources has grown significantly within the asset management industry. But far more important than the quantity of data is its utility in investment decision-making. Unstructured data is just that — information gathered from satellites or foot traffic do not come neatly mapped to company tickers. What's more, only a small subset of the data available may be predictive of potential future returns. We believe the true mettle of a systematic alpha manager is the ability to make sense of and potentially gain meaningful insight from the digital exhaust that surrounds today's markets.

The graphic on page 9 highlights the evolution of the types of data that have become accessible over time to be transformed into information, and ultimately into investment ideas. For example, in the 1980s, investment insights were drawn largely from readily available company financial reports and industry analyst opinions. In the 1990s, the availability of exchange data illuminated quantitative trends. In the 2020s, ideas may originate from just about anywhere: from social media and search activity, text mining patent applications, to analyzing firm job postings.

We believe that only managers with specialized skill, resources and infrastructure are equipped to benefit from the abundance of data available today. Insights that were differentiated last year may become available to others and swiftly priced into markets, making innovation a critical aspect of any investment process.

Past performance is not a reliable indicator of current or future results.

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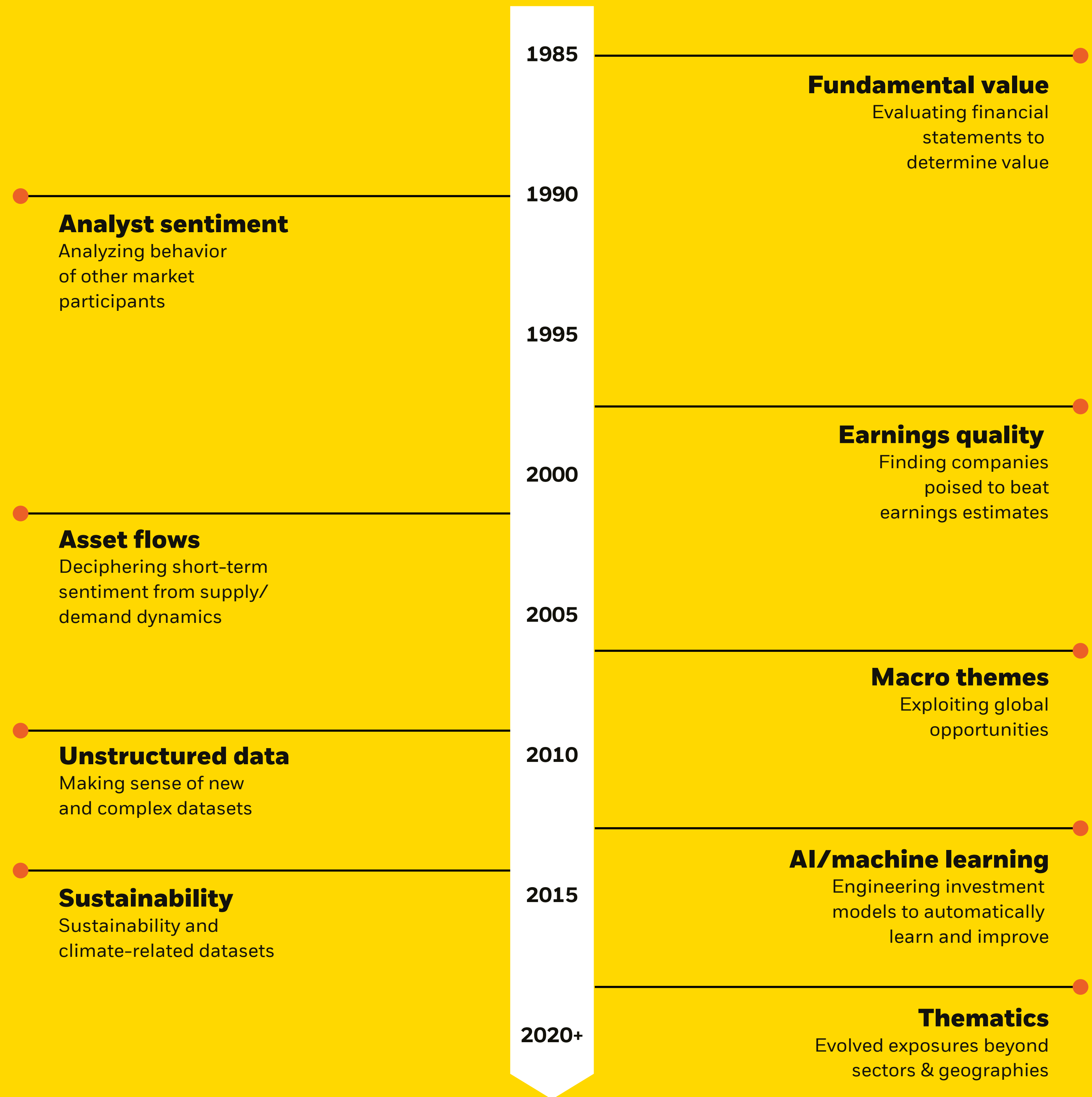
Transforming big(ger) data into better information

Evolution in sources of investment-relevant information



Source: BlackRock, as of February 2024. For illustrative purposes only. Timeline reflects predecessor firms.

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Seeking to solve for alpha + sustainability

While investment return remains paramount for investors, they are also looking to see how managers are capturing sustainability risks and opportunities.

A systematic process can offer investors a meaningful way to integrate Environment, Social and Governance ("ESG") considerations into a portfolio. The scientifically-driven and innovation-focused investment process of systematic investing is ideally suited to incorporating such considerations, where the industry standard and investor expectations are evolving rapidly. ESG reporting can be sparse, incomplete and inconsistent, making it critical for investors to be able to interpret data from unconventional sources. While some investors assume there is an inherent trade-off between portfolio sustainability outcomes and return potential, we do not. A quantitatively-driven, systematic investment process can explicitly balance a number of portfolio considerations — incorporating estimates of risk, return and correlation alongside ESG-related metrics.

Source: BlackRock, as of February 2024. Investment process is shown for illustrative purposes only and is subject to change.

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Systematic strategies can meaningfully integrate sustainable investment considerations in three distinct, but complementary, ways:

Align

As a foundation, we can **align** portfolios to match the preferences of our investors. This can be done through a simple screening process to remove specific securities and/or industries from the investment universe.

Uplift

Next, we can seek to **uplift** portfolios by targeting securities with improved ESG metrics without materially altering the risk and return characteristics of the portfolio. A systematic portfolio construction approach can help avoid overly-simplistic incorporation and implementation of sustainable insights. Risk-budgeting and portfolio optimization — essential tools in the systematic investment process — help simultaneously optimize multiple variables and develop views that are both subtle and precise. For example, the carbon risk of a portfolio can be greatly reduced by adjusting the carbon exposure across all the securities in a portfolio. This type of portfolio construction allows dynamic use of an active risk budget to express views without clinging to static perspectives about geographies or industries.

Enhance

Finally, we can strive to **enhance** portfolios by seeking incremental returns or to mitigate potential downside risks using ESG-based insights. Broad ESG measures from third-party providers often provide common measures of portfolio characteristics, yet they aren't developed to predict investment performance. Our research is designed to identify sustainable measures that may be additive in security selection. For example, understanding controversies at companies provides insight about risk mitigation. Measures such as company patent applications for forward-leaning technology may be a measure of a firm's commitment to environmental issues, but also an indicator of future technological and product innovation. From a company governance perspective, measuring employee sentiment may be a useful quantitative indicator of management quality. In our sustainable investing research, we aim to use the same scientific testing process developed over decades to uncover previously overlooked information that may be a driver of security performance. The wider availability of ESG-related data provides an opportunity to assess new information and ideas, making this an exciting field of research for systematic managers.

Align

Seek to align a portfolio with investor preferences by removing controversial securities

Uplift

Seek a more sustainable portfolio by targeting improvements along ESG and carbon intensity dimensions

Enhance

Seek incremental returns or mitigate potential downside risks in a portfolio through ESG-related insights

By aligning with investor preferences, creating a potential uplift in sustainable characteristics and seeking enhanced returns, systematic strategies can embrace sustainability throughout the investment process — helping to make the "maximize returns" vs. "be sustainable" debate a conversation of the past.

Risk management cannot fully eliminate the risk of investment loss.

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Systematic investing explained

BlackRock's quantitative investment experts address common misconceptions about systematic investing.

Q **Are systematic strategies managed by computers?**

A One common misconception of a quantitative approach is that it is a "black box," with high frequency trades being spit out by a completely autonomous machine that will eventually spell investment disaster. However, in reality, human intellect is central to systematic investing, though the primary skill sets may differ from fundamental disciplines. Data scientists, mathematicians and investment professionals are essential to a systematic process. We cannot find new insights and create models that can capture them without the skill of human experts. We believe all the data and computing power in the world will not generate consistent investment returns.

Raffaele Savi
Head of Systematic Investing
& Co-Head of Systematic Equities

Q **Is there a difference between "Quantamental" and Systematic?**

A Systematic is different than what is sometimes referred to as a "quantamental" approach. The term quantamental is commonly used to describe a traditional manager employing quantitative techniques to analyze data or assess a market insight. Such analysis is used either for a specific part of the manager's portfolio or to inform a fundamental investment decision. The overall investment process and approach is still driven by subjective portfolio management decisions, determining which securities to buy or sell in proportions of their own 'gut feel' — which could include down weighting or even completely ignoring the quantitative insights. A truly systematic approach goes beyond just hiring a team of quants, it requires a consistent investment process. Systematic investing is quantitatively-driven at all levels: research, risk budgeting, portfolio management, trading and performance attribution.

Jeff Shen, PhD
Co-Head of Systematic Equities

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Q Does systematic investing work in fixed income?

A A systematic alpha-seeking fixed income approach would have been extremely difficult to implement just a few decades ago, as there simply was not sufficient data available to build robust quantitative models. Today that has changed completely. Everyday tens of thousands of bond trades take place, allowing for the measurement of transaction costs and liquidity. There are millions of newspaper articles and research reports available electronically that provide sentiment information that can be extracted from natural language processing algorithms. Exchange listed equities, futures and options create billions of ticks of data that can be researched with machine learning techniques and used to forecast price movements in less transparent fixed income assets. Today, the availability of data is no longer a gating factor, but for the most part, data alone does not create alpha. We believe alpha can only be created through a deep understanding of the data and how to utilize it to identify market opportunities.

Tom Parker, CFA
Head of Systematic Fixed Income

Q Will factor investing be effective in the future if it is now well-known in the market?

A Importantly, investors should know that factors are cyclical. However, there is a large body of academic work[2] that has shown that factor premiums have historically arose due to three enduring economic phenomena. 1) Rewarded risk — some factors have earned higher long-term returns to compensate investors for taking on more risk. 2) Structural impediments — market rules or other constraints can place restrictions on certain large investors. Those off-limits investments can become opportunities for others. 3) Investor biases — investor behavior is not always perfectly rational, giving rise to mispricings. Until investors are no longer risk averse, markets have no more structural impediments, and humans generally stop acting like humans, factor premiums should continue to persist. Just because a good idea becomes well-known, or widely accepted, doesn't make it any less effective.

Andrew Ang, PhD
Head of Factor-Based Strategies

Past performance is not a reliable indicator of current or future results.

2 "Foundations of Factor Investing"; Jennifer Bender, Remy Briand, Dimitris Melas, and Raman Aylur Subramanian; December 30, 2013; MSCI.

Glossary

(Terms listed in order of appearance)

Alpha (alpha-seeking): Alpha is the return generated by an investment strategy in excess of a benchmark return. An alpha-seeking investment strategy seeks to outperform an investment benchmark through, amongst other things, asset allocation, market timing and/or security selection.

Factors (factor-based): Factors are the broad, persistent forces that have been long recognized drivers of investment returns, supported by decades of scientific research and six Nobel prizes. Factor-based strategies seek to capture factor exposures in an investable vehicle.

Portfolio optimization: Portfolio optimization is a computer-driven process of selecting the best asset distribution, out of the set of all portfolios being considered, according to a target objective. The optimization process typically seeks to target a portfolio that will maximize expected return but minimize expected risk and transaction costs.

Risk budgeting: Risk budgeting is a quantitative method that brings logic and scientific rigor to the portfolio management process that helps one to understand the risks they are taking as they attempt to maximize returns. Risk budgeting is the process of identify, quantifying and spending “risk” in the most efficient manner possible.

Unstructured data: Unstructured data is information that is not organized in a pre-defined manner such as numbers or statistics. Unstructured datasets can take many forms, such as text from social media posts and news articles, satellite imagery or geolocation data. Advanced analysis techniques such as machine learning and natural language processing are often used to make sense of unstructured data.

Machine learning: Machine learning, a form of artificial intelligence, is the study of computer algorithms that improve automatically through experience. Machine learning focuses on finding complex patterns within datasets using computers and making predictions based on those discovered relationships.

Natural language processing (NLP): A form of artificial intelligence that deals with the interaction between computers and humans using the natural language. The ultimate objective of NLP is to read, decipher, understand and make sense of the human languages in a manner that is valuable.

Sustainable investing: Sustainable investing is an investment discipline that considers Environmental, Social and Governance (ESG) criteria.

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