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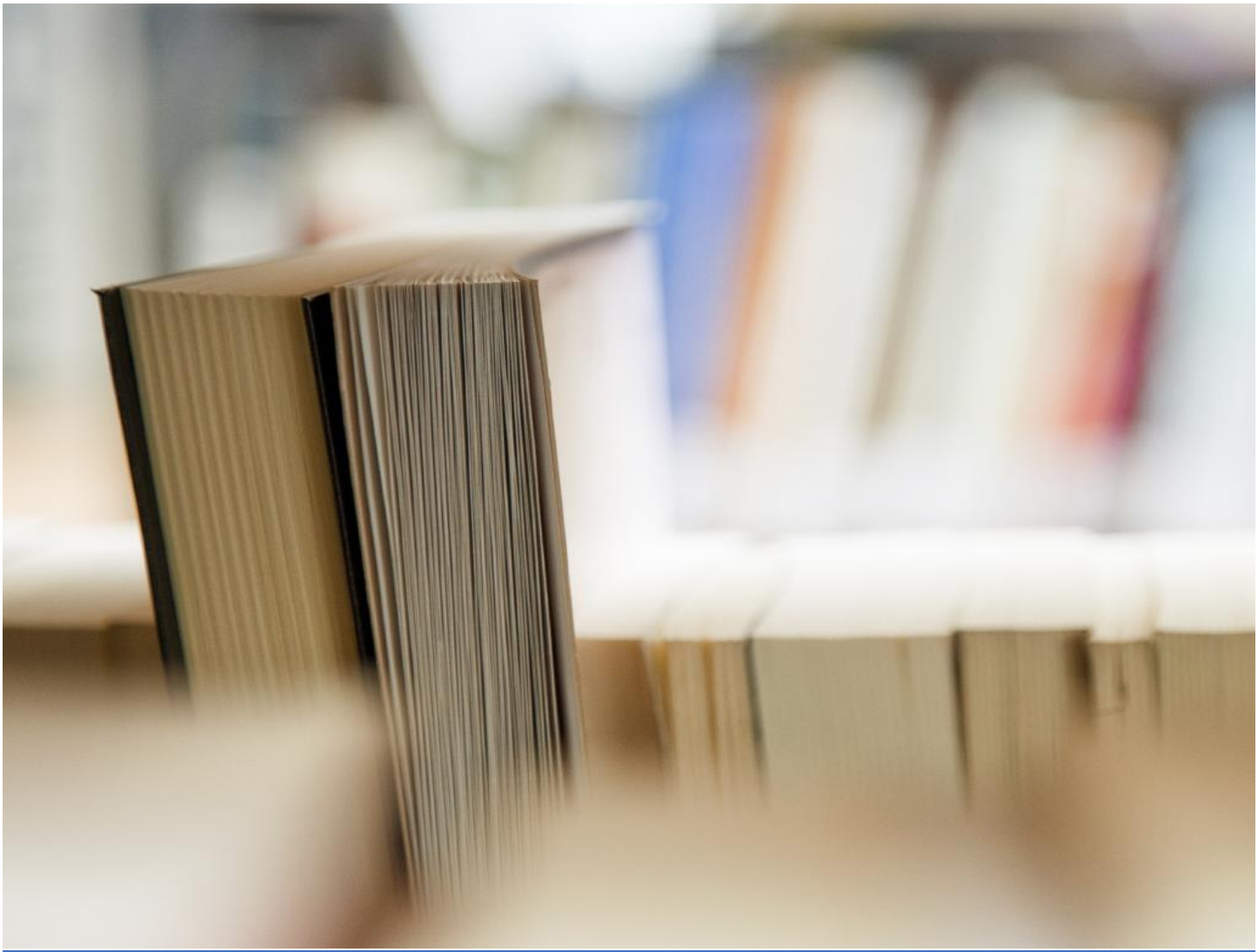

Methods for Integrating ESG into the Investment and Stock Selection Process

ESG & Sustainability Transformation

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Methods for Integrating ESG into the Investment and Stock Selection Process

An investment organization can use a variety of approaches to integrate ESG analysis into its investment process.

Here we provide a brief overview of these approaches. First, it is important to note that ESG analysis can be qualitative or quantitative (sometimes shortened to "quant"). Similarly, the way in which the analysis is integrated can be purely qualitative (e.g., opinions about the quality of a company's management are added to the investment thesis) or quantitative (e.g., the impact on a financial model or valuation). Some techniques can be considered a combination of both, such as scorecards, in which qualitative assessments are translated into quantitative scores.

These tools and techniques cover different types of strategies (passive, systematic, fundamental, active, or active) and different asset classes. Certain tools tend to be specific to asset classes or strategies.

Qualitative ESG Analysis:

Qualitative ESG analysis is likely to be used in investment processes that rely on company-specific research, fundamental analysis, and stock picking.

• Investment teams analyze ESG data to form an opinion on a company's ability to manage certain ESG issues.

• They combine this opinion with their financial analysis by linking specific aspects of a company's ESG risk management strategy to various value drivers (e.g., costs, revenues, profits, and capital expenditures).

• Analysts and portfolio managers then seek to integrate their opinion quantitatively into their financial models by adjusting the assumptions used in the model (e.g., growth, profit margins, or costs of capital).

Certain qualitative techniques may be more appropriate (or weighted differently) for different asset classes. For example, the assessment of management incentives (part of Pillar G analysis) may be of greater importance to listed equity and private equity, less important to fixed-income investors, and considered irrelevant to sovereign bond investors.

Quantitative ESG Analysis:

Quantitative ESG analysis (QESG) may be used in investment processes that use quantitative models to identify attractive investment opportunities. In such cases, ESG data is often aggregated into an ESG factor (ESG score), which is added to quantile models. This may be a screening that creates an investable range or a quantitative model that is used to adjust valuations based on a number of factors (including ESG).

Quantitative, Systematic, and Thematic Methods for Integrating ESG Analysis:

Quantitative investors may assess ESG factors at the research stage, typically using third-party databases or a combination of third-party and proprietary internal data. This assessment is typically done with large datasets of stocks or bonds, rather than individual company ratings, although some institutional investors will create their own proprietary scores from individual company ratings. The data collection can be similar to that done by

fundamental investors but tends to focus on larger datasets. For example, a global dataset might contain 2,000 to 4,000 companies with 100 data points per company. Quantitative investors often incorporate ESG factors along with other factors, such as value, size, momentum, growth, and volatility. Some of these factors may come from third-party models.

ESG data is incorporated into their investment process and may result in adjustments to the weighting of securities, including to zero. For example, a high score on Environmental factors may be sought. Systematic approaches may attempt to draw correlations to understand how ESG factors may influence financial performance over time and then weight those ESG factors appropriately. Investors may attempt to assess the relationship between ESG scores produced by third parties as well as proprietary scores produced in-house. Algorithmic approaches use ESG data (e.g., pulled from online news articles to adjust company or sector weights after analyzing ESG data through rules-based formulas).

Passive and index approaches can be biased toward ESG factors chosen by the investor. For example, the Japanese Government Pension Investment Fund has created, in conjunction with index providers, rules-based, gender-biased indices to invest in. These can be considered rules-based strategies. This suggests that asset owners can set certain proxy rules appropriate to integrate ESG across different strategies and in line with their own ESG policies and philosophies.

Thematic funds can assess alignment with priority themes, which may be ESG in nature (e.g., climate, gender). This alignment can be done using a material opportunity mapping process or using ESG data to adjust weights accordingly.

Application Programming Interfaces (APIs):

Investors use application programming interfaces (APIs) to aggregate and evaluate data. APIs are used to more easily access and communicate with underlying databases and other data sets.

Companies are becoming more forthcoming about their sustainability practices and financial professionals are increasingly open to using APIs to compile and integrate this rapidly growing data set into their processes. The total number of unique ESG data points captured is growing.

Artificial Intelligence (AI) and Algorithms:

Much of the ESG data available about companies is unstructured. Artificial Intelligence (AI) and machine learning algorithms attempt to bring structure and numerical value to a portion of that unstructured data set. Some investors are:

• Focusing on using AI techniques to measure ESG performance in line with measures developed by the Sustainability Accounting Standards Board (SASB),

• Trying to provide immediate access to scores based on material ESG events as they occur, or

• Focusing on intangible ESG factors, such as corporate culture, that can drive company value. Natural language processing (NLP) and other quantitative techniques are likely to continue to evolve over time.

NLP is broadly defined as the automated manipulation of natural language, such as speech and text, by software. In particular, investors are interested in how to program computers to process and analyze large amounts of ESG-related natural language data. The goal is to have a computer brain that can "understand" the content of ESG documents, including the contextual nuances of the language within them. The technology can then accurately extract information and insights from the documents, as well as classify and organize the documents on its own.

Highlights Between Quantitative and Qualitative Methods and Terminological Confusion:

Combining this information can be confusing because of the different meanings that investors give to the term "quantitative." As a description of an analytical technique, it tends to be used when assigning scores. But it can also be used to describe an entire class of investment strategies that tend to use stocks, bonds, derivatives, or other equity-based assets as the primary basis for investing.

In terms of investment strategies, quantitative investing can be called "systematic investing." This may include the following strategies:

- High-frequency trading
- Using algorithms based on news or factors and statistical arbitrage
- Trend following
- Risk parity
- Using beta strategies

This approach tends to use a lot of mathematical models, computing power and data analysis, potentially including machine learning and natural language processes. Some firms use these methods exclusively, and some use them to supplement human decision making.

Typically, computer and mathematical models are built and then back-tested. Where these models use ESG data or information (e.g. through raw data or from a rating agency), this is considered a form of ESG integration. This creates many reliability challenges because the time series length for ESG data (typically only 7–15 years, depending on the series) is much shorter than that of financial data, which can span tens or hundreds of years across economic and business cycles. This can often be viewed as a form of quantitative investing that incorporates ESG techniques.

Qualitative forms of analysis typically use human judgment over non-numerical forms of analysis. However, advances in technology are blurring these traditional lines. For example, the use of natural language processing (NLP) and machine learning screening of management comments from meeting transcripts are using those qualitative words in a quantitative fashion.

Fundamental active strategies, which use human judgment, tend to use ESG techniques that have both qualitative and quantitative elements but are not typically considered quantitative investing. And similarly, with quantitative investment strategies that use ESG ratings data, that ESG ratings data may be based on qualitative human judgment.

In general, ESG techniques can be considered quantitative or qualitative or have elements of both. Investment strategies are often categorized as:

- Quantitative (systematic, algorithmic),
- Fundamental,
- Active,
- Passive, or
- Beta.

Investors use the term quantitative interchangeably but give it different meanings when applying it to overall investment strategies and processes rather than specific ESG integration techniques.

ESG Analysis Tools and Elements:

Regardless of whether ESG analysis is classified as qualitative or quantitative, investors use a variety of tools. These ESG analysis tools and elements may include:

Red flag indicators – Securities with high ESG risks will be flagged for further investigation or excluded. For example, a company whose board lacks a majority of independent directors may be flagged for scrutiny regarding management incentives or simply excluded from investment.

Company questionnaires and management interviews – For example, if details about management aspects or other material ESG information are not complete, investors may request specific data from the company. Or investors may prepare a list of standard ESG data they require. These questionnaires are also used in conjunction with regular company meetings, where investors and the company meet to discuss the most important ESG issues.

External expert checks – For example, an investor may interview key industry thought leaders or other stakeholders of the company, including customers, suppliers, or regulators. These checks may be supplemented by interviews, surveys, or third-party data sourcing, such as the use of expert networks.

Watchlists – These lists may include securities with high ESG risks that are added to a watchlist for monitoring or securities with high ESG opportunities that are added to a watchlist for investment. For example, once an investor has assessed ESG risks or opportunities, a news watchlist or stock price tracker would be created and track initial stock price levels or changes in ESG events. For example, a high-carbon company identified as having high E-risk could be monitored in anticipation of changes in carbon tax policy.

Internal ESG Research – This research may draw on a variety of techniques and data sources. Proprietary ESG research and analysis is conducted and the output may be provided in the form of scores, ratings or reports. The research may draw on a variety of data sources and may produce proprietary ESG research or scores. In addition, the research may include the following elements:

- Materiality frameworks;
- ESG-integrated research notes;
- Research dashboards;
- Strengths, weaknesses, opportunities and threats (SWOT) analysis with ESG factors;

• Scenario analysis; and • Relative rankings.

External ESG Research - For this research, either the sell-side, ESG experts, or third-party databases can be used and a materiality framework created.

ESG Agenda Items at Investment Committee Meetings – or CIO Meetings – One technique to ensure consistent integration is to ensure ESG is a standing item at committee meetings. This approach can ensure close scrutiny from senior investors and signal importance to the portfolio company.

ESG Integration Factors:

ESG integration factors include:

• Adjusting forecast financials. For example, revenue, operating costs, book value of assets, capital expenditure

• Adjusting valuation models or multiples. For example, discount rates, terminal values, and ratios

• Adjusting credit risk and duration

• Managing risk, including exposure limits, scenario analysis, and value-at-risk models

• ESG factor tilts

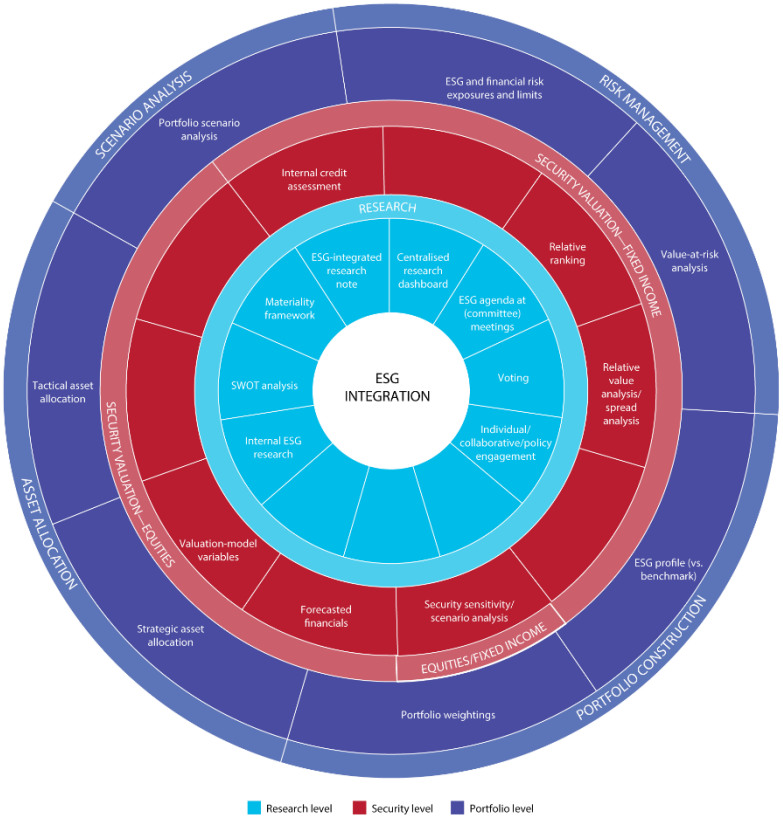
• ESG momentum tilts

• Strategic asset allocation, including thematic and ESG objective tilts • Tactical asset allocation

• ESG controversies and positive

ESG events These elements can be summarized using the ESG integration framework presented in Figure.

ESG Integration Framework:



Source: CFA Institute 2018, in collaboration with PRI.

The ESG integration framework presented in the Figure is not intended to illustrate a perfect ESG integration investment process. Because each investment organization is unique, the ESG integration techniques of one firm will not necessarily be the right techniques for all firms. However, many investment firms will use some of the techniques mentioned in the Figure.

Investment firms typically use a variety of tools and techniques to identify material factors. These tools may be qualitative or quantitative or a combination of both.

Differences Between Company or Business Analysis and Securities Analysis:

Many investment practitioners make two basic distinctions in fundamental investment analysis:

• The difference between evaluating a company or business and

• Evaluating securities, stocks, bonds, or convertibles (or other tradable structures, including derivatives).

While the distinctions are often used in common language, many investors attach different meanings to them. Stocks and bonds may have characteristics that companies do not have, such as beta or volatility, which can be expressed in different ways.

Company or business evaluations often consider fundamental characteristics of the business, such as a competitive advantage (or lack thereof), sometimes described as a business moat (in Warren Buffett's famous Annual Letter). These characteristics may appear in a company's products or services, suppliers, employees, management, organizational

structure, incentives, corporate culture, or resources (natural, intellectual, or innovative). Many of these attributes could be considered ESG. For example, natural capital might fall under the E umbrella, corporate culture or supplier analysis under the S umbrella, and governance structure or incentives under the G umbrella.

A company may have strong ESG aspects that lead to a perceived strength or competitive advantage, leading analysts to rate the company or firm positively.

The statistical characteristics of a company's stock or bond may differ from its underlying business characteristics. For example, the beta or volatility of a stock is an attribute of a stock, not a company or firm. This distinction is important because there is a debate among investors who use stock factors to invest. The debate here is whether these attributes are ESG components that strongly drive QESG (quantitative ESG) factors in bonds or stocks. This debate is important because assessing the strengths or weaknesses of a company or business can lead to how its securities are valued.

To learn more about ESG and sustainability-related models, please contact **YTT Consulting**!