Chapter 4

ESG Investing: Financial Materiality and Social Objectives

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US-domiciled assets under management (AUM) that incorporate environmental, social, and governance (ESG) or sustainability considerations reached nearly US$17.1 trillion as of the end of 2019, up 42 percent from the prior year, according to the US SIF Foundation (2020).[1] But what do we mean when we talk about 'ESG'? While more and more public funds globally have clearly articulated what it means for their respective institutions (Nikulina 2023), there continues to be confusion over what ESG investing is and how to implement it. Some hurdles include a lack of understanding and confidence in how ESG concepts are measured, when such concepts are material, and how to work with ESG data in the investment process when such data are very different in nature from traditional financial data.

This chapter aims to address these hurdles by providing an overview of the 'state of play' on ESG data. We focus on recent advances in measuring ESG concepts, emerging evidence on the link between ESG and financial performance of equities and corporate bonds, and approaches that funds have used to implement their ESG policies in light of these advances.

In what follows, we begin by setting the context for the multifaceted concepts of ESG and the evolution of ESG data used in capturing those concepts. Next, we summarize the four main sources of ESG data today, and we review recent empirical research that tests the economic rationale for how and when ESG has impacted equity and bond returns. We also highlight emerging research that explains how each of the underlying components of E, S, and G bear on financial performance, including the implications of current thinking about ESG data for practitioners and the principles for the construction and use of ESG scores or ratings. Further, we draw lessons for implementing ESG in portfolio construction as well as considerations for equity allocations. Finally, with the rapid growth in attention to climate risk, we note that this rapidly growing area introduces additional complexity, overarching risk, and opportunity, especially for long-term investors.[2]

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Evolution of ESG Data and Measurement

Among the most often-invoked phrases when discussing ESG are: 'ESG means different things to different people' and 'You can do good and still do well.' As with most popular sayings, there is a grain of truth to each. In fact, while different people often mean different things when they refer to 'ESG,' the concepts embedded in ESG are relatively well delineated, but also multifaceted. Accordingly, there is room for misunderstanding, as some people may emphasize one facet of ESG such as good labor policies, while other people could be talking about something else, such as environmental or governance issues. While some argue that the objectives of different types of ESG investors are separate and distinct, we find that a social values-oriented-investor approach to ESG does not differ materially from one focused on enhancing the risk-adjusted characteristics of a portfolio. Indeed, there has been empirical evidence suggesting significant overlap between serving the public good and doing well financially (Friede et al. 2015), though the overlap is not perfect and can sometimes be in conflict.

As has been described by others, the movement today, broadly referred to as sustainable, responsible, or ESG investing, had its genesis in faith-based and/or ethically conscious investors who sought to align their portfolios with their personal values (see, for example, Eccles and Stroehle 2018; Hammond and O'Brien 2023). In contrast, the use of ESG criteria as valuation tools (e.g., as a way of establishing firms' intangible value) came at a later stage. Today, while the *materiality-based* concept has become the dominant force in the adoption of ESG investing by most mainstream financial players (Giese et al. 2019a), the *values* approach still applies.

The ESG data and ratings that exist in the marketplace today reflect this dual legacy (Eccles et al. 2019). Since values-based investing first shaped early ESG investing, it continues to be reflected in both the underlying components as well as the aggregation of select E, S, and G components into a company-level ESG rating. Global institutional investors' adoption of the United Nations' Sustainable Development Goals (SDGs) in 2015 expanded and refined values-oriented goals, which were intended to provide 'a universal call to action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity by 2030' (UNDP 2015). The creation of the SDGs encouraged growing interest from investors and companies in how E, S, and G data can capture the positive contributions of companies to societal goals.

The materiality–values duality is often evident depending on which factors drive an investor's desire to measure ESG. On the one hand, investors and others primarily motivated by the values dimension wish to determine whether a company's behavior is aligned with social objectives. They are

primarily interested in the characteristics that help identify how companies contribute to societal outcomes (i.e., negatively or positively). On the other hand, those primarily interested in financial materiality tend to focus on the bundle of characteristics that help investors identify the risks or opportunities for a company to create long-term financial value, regardless of their social values or goals.

ESG measures can be selected and constructed to reflect each of these dimensions, yet a single ESG score or rating typically does not reflect both dimensions at the same time. Accordingly, an investor must first define what aspect of ESG he or she aims to measure. Otherwise, it would be difficult to disentangle how and why ESG ratings vary: do they arise from *differences in intention* (i.e., which dimension of ESG he or she aims to capture), or from *differences in effectiveness* (i.e., how well different methodologies capture the same targeted ESG dimension)?

What Counts as ESG Data?

There is far more information *about* companies' ESG ratings than is provided *by* specific companies. The idea that company disclosures are the only reliable source of ESG data is outdated, and it has prevented investors from realizing the potential of technological advances in measurement.

There are four broad categories of ESG data sources: company disclosures, media, alternative data sources, and modeled data. Historically, ESG data have been sourced primarily from company disclosures and from the media, but in recent years, alternative data sources and modeled data have gained traction as the quality and quantity of these data have improved. In addition, these sources measure different aspects of ESG and each has its strengths and weaknesses. For example, company disclosures and analysis of media reports are necessarily backward-looking, while media, alternative data, and modeled data are better suited to projecting where companies might be headed.

Company disclosures

One topic that investors continue to rely on is information that companies provide about their human capital (e.g., employee demographics, workplace practices). There are few third-party data sources to inform investors about the labor-related dimensions of a company, making this the most critical area for investor engagement to improve transparency. Too much reliance on corporate disclosures in the construction of an ESG signal can lead to a size bias and a geographic bias. As a result, studies have often found that ESG ratings are positively correlated with company size.

Media sources

Media sources are frequently used to identify negative events or controversies, and less frequently to identify positive ESG news that could be influenced by a company's public relations and marketing initiatives. Data science and artificial-intelligence techniques have vastly improved our ability to know what companies are doing or not doing in remote locations. These capabilities have allowed media to become a better source than in the past for verifying the robustness of company disclosures on ESG issues. Nevertheless, artificial intelligence can be noisy, and confirming the veracity and identifying bias in media content requires quality-control processes that involve expert human intelligence. Even a company with the resources and technological prowess of Facebook relies on an army of humans to judge content suitability.

Alternative data sources

Alternative data sources on ESG include a broad set of new datasets including government databases on waste or safety or labor violations at very granular levels; weather maps and satellite data; and filings for everything from patents to litigation. As with artificial intelligence techniques, identifying and extracting the relevant components for an investment context requires extensive expertise and the ability to shape and match the data to address specific questions.

Models and estimated data

ESG analysts frequently rely on models to fill in the gaps in corporate disclosures and normalize reported data to allow for apples-to-apples comparisons across firms. What has changed in recent years is that more sophisticated modeling techniques have allowed for projections, such as the future trajectory of emissions based on targets and track records of emissions reductions. Further, these techniques have allowed for assessments that companies themselves may not have the knowledge to disclose, such as the proximity of their operations to areas with sensitive ecosystems.

Just as the concept of ESG is multidimensional, the sources of ESG data are varied and growing. Increasingly, the greater availability of alternative data sources and better models will supplement increased corporate disclosure to build a more robust dataset to inform investment decisions.

Emerging Evidence on ESG and Materiality

There has been no shortage of studies in recent years attempting to confirm or debunk a link between ESG and performance. A metastudy by Friede

et al. (2015) reviewed more than 2,000 research papers examining the relationship between ESG investing and returns, which concluded that most offered a correlational analysis without providing either a specified dimension of ESG, which the ESG variable captured, or an economic rationale for why such a correlation would exist.

However, most of these studies were not designed to separate the two dimensions of ESG: social objectives and materiality. Studies that did so detected differences in effectiveness. In one such study, over a 20-year period, firms with good ratings on material sustainability issues significantly outperformed firms with poor ratings on these issues, while firms with good ratings on immaterial sustainability issues did not significantly outperform firms with poor ratings on the same issues (Khan et al. 2016). In a separate study, based on the May 2013 to December 2018 period, exclusionary screens based on values acted as a portfolio constraint and increased risk, whereas integrating financially focused ESG factors had a positive effect on risk-adjusted returns that outweighed the negative effect of the exclusions (Giese 2019).

More recently, research has sought to better understand the underlying transmission channels through which ESG could impact financial variables (Giese et al. 2019b). We highlight some of the key findings from several recent such studies below, and to ensure data consistency and alignment with a focus on financial materiality, these studies all use MSCI ESG Ratings as the key ESG input. These ratings are designed to capture only the relevant ESG 'Key Issues'[3] in a given industry and are selected based on a fundamental assessment of how financially relevant a given key risk is in a specific industry; that is, how likely it is that the key risk can influence companies' revenue or assets. As such, the number and weights assigned to Key Issues by sub-industry may vary in any given period and over time. The indicators in each Key Issue form a score for that Key Issue, which is used, in turn, to calculate scores for each of the environmental, social, and governance pillars. Ultimately, the separate pillar scores are combined into an aggregate MSCI ESG score, used in creating MSCI ESG Ratings (Giese et al. 2020). Recently, Serafeim and Yoon (2021) found that of the three ESG ratings services, MSCI ESG Ratings had the strongest predictive power in predicting ESG-related news, and thus provided the best signal in predicting future stock returns.

Below, we summarize recent research exploring the relationship between companies' ESG ratings and the performance of equities and corporate bonds. We also discuss research that explores the impact of ESG ratings on the cost of capital.

Finding 1: ESG has impacted company financial performance through three economic transmission channels: cash flow, systematic risk, and idiosyncratic risk. Higher ESG-rated companies were more profitable than their

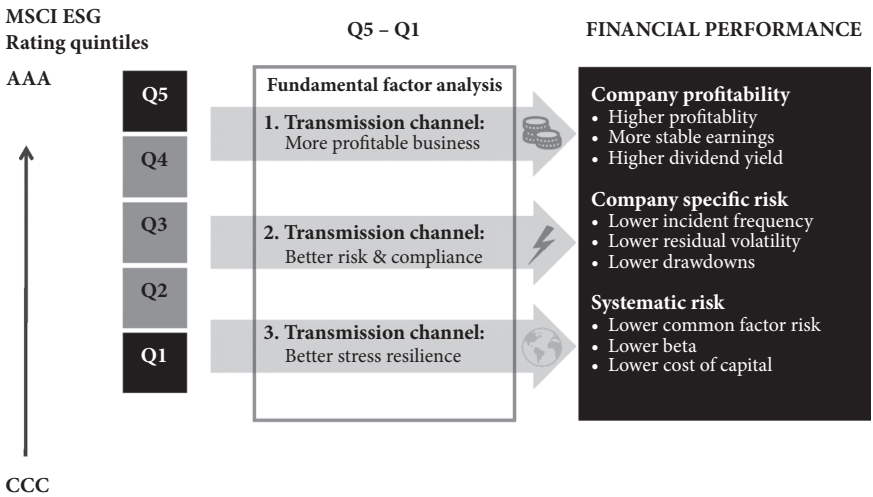

Figure 4.1 ESG's impact on financial performance via economic transmission channels

Source: Author's calculations.

industry peers, paid more dividends, and experienced lower earnings volatility over the period December 2006 to December 2019. The transmission channels and target financial variables for each are described below, and a schematic of the concept appears in Figure 4.1.

(1) *The cash-flow channel*: Companies better at managing intangible capital (such as employees) may have been more competitive and hence more profitable over time.
(2) *Idiosyncratic risk*: Companies with stronger risk-management practices may have experienced fewer incidents, such as accidents, that triggered unanticipated costs.
(3) *Systematic risk*: Companies that used resources more efficiently may have been less susceptible to market shocks, such as fluctuations in energy prices.

We chose one target financial variable as a proxy for financial performance for each of the three channels, as shown in Figure 4.2. We selected gross profitability for the company profitability channel,[4] the frequency of experiencing larger than 95 percent losses over a three-year window for company-specific risk, and risk explained by MSCI's Global Equity Total Market Model (GEMLT) factors for systematic risk.

We have also examined whether mounting inflows into ESG investments have contributed to outperformance of standard MSCI ACWI ESG equity

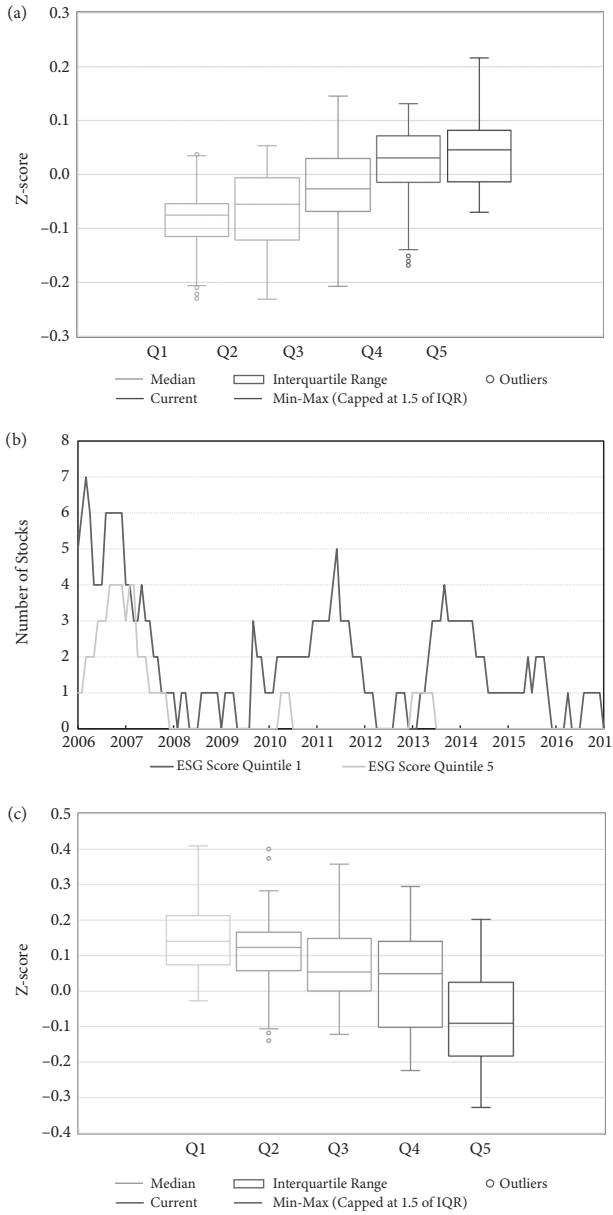

Figure 4.2 Performance of target financial variables

Notes: (a) Gross profitability (z-score) of size-adjusted ESG quintiles is computed as most recently reported sales less cost of goods sold, divided by most recently reported company total assets. Data from December 31, 2006, to December 31, 2020. Distribution of monthly averages by quintiles. (b) For each period, we report the number of stocks that realized a more than 95 percent (%) cumulative loss over the next three years, taking the price at month end as the reference point for return calculation. Data from December 31, 2006, to December 31, 2020. (c) Systematic risk (or common factor risk) of size-adjusted ESG quintiles is computed as the volatility predicted by all the factors of the GEMLT model. Data from December 31, 2006, to December 31, 2020. Distribution of monthly averages by quintiles.

Source: Author's calculations.

indexes. Giese et al. (2021a) found no evidence that ESG-related returns stemmed from rising valuations of high-ESG-rated companies, over the period May 31, 2013, to November 30, 2020. Instead, the main source of ESG-related returns came from high-ESG-rated companies that displayed superior earnings growth and, to a smaller extent, higher investment returns compared with low-ESG-rated companies. These findings provide an economic rationale for categorizing ESG as a fundamental factor that typically derives returns from long-term earnings growth.

Finding 2: Extending our analysis to corporate bonds, we found that ESG considerations have been more helpful in mitigating downside risk than in capturing upside gains. We also found that ESG added value beyond credit ratings. For instance, Table 4.1 shows that the high-ESG-rated issuers (T3) experienced better risk-adjusted returns due to higher excess returns and lower excess risk, over our sample period. We also observe that the high-ESG-rated issuers also had significantly lower drawdowns during the downturn periods, indicating the inherent defensive characteristics of an ESG corporate bond strategy.

Finding 3: During a four-year study period, companies with high ESG scores, on average, experienced lower costs of capital compared with companies with poor ESG scores in developed markets. The relationship between company ESG scores was similar for both the cost of equity and debt.

To calculate the impact of ESG on both equities and debt issued in developed markets, we obtained monthly industry-adjusted ESG scores that underlie the MSCI ESG Ratings; next we classified the companies in the MSCI World Index (comprising developed-market constituents) into ESG-score quintiles, each with the same number of companies.[5] Our study period was from August 31, 2015, to January 29, 2021.[6] In the MSCI World Index,

Table 4.1 High ESG-Score bond issuers had more resilient excess returns

	Excess return (%)	Excess risk (%)	Risk-adjusted excess return	Maximum drawdown (%)	Portfolio Beta
T1 (low)	0.68	9.01	0.08	21.25	1.38
T3 (high)	1.08	4.51	0.24	10.57	0.69

Note: Average equal-weighted excess performance for low- and high-ESG-score terciles from January 2014 to July 2020. Return and risk numbers are annualized. Beta is calculated with respect to an equal-weighted (by issuer) universe. Sample universe restricted to issuers with available ESG scores.
Source: Author's calculations.

the average cost of capital[7] of the highest-ESG-scored quintile was 6.52 percent, compared with 6.81 percent for the lowest-ESG-scored quintile. The average cost of equity of the highest-ESG-scored quintile was 8.05 percent, compared with 8.71 percent for the lowest-ESG-scored quintile; similarly, the cost of debt was 2.88 percent and 3.72 percent for the highest- and lowest-ESG-scored quintiles, correspondingly.

Overall, companies with high ESG scores on average experienced lower costs of capital than companies with poor ESG scores (see Figure 4.3). The cost-of-capital channel was one way that firms' ESG profiles (as measured by MSCI ESG Ratings) could have been linked to corporate financing and investment decisions.

Much of what we have learned about the relevance of ESG for company performance so far applies to the universe of publicly listed equities and bonds. While little research has analyzed these issues for private assets, we can proceed by making certain assumptions. Within private equities, we can apply financially relevant ESG metrics from public companies to assets held in private equity funds. Similarly, the framework used to assess REITs (real estate investment trusts) in the public equities universe is largely applicable to direct real estate holdings. The key challenge with assessing private assets, then, is not the lack of a robust methodology, but a dearth of data. Of the four different sources of ESG data identified earlier, the most readily available source for private companies is the media, provided that the business is of a sufficient size. Given the potentially larger allocations that institutional investors expect to make to private assets in the future (MSCI Investment Insights 2021), there is some urgency to improving data availability in the private asset classes in order to achieve a total portfolio view of ESG exposures.

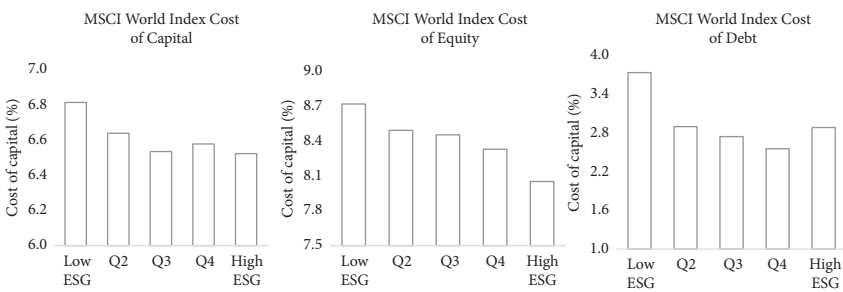

Figure 4.3 Companies with high ESG scores on average had lower costs of capital

Note: Monthly averages were reported over the period from August 31, 2015, to January 29, 2021. On average, there were 1636 companies in the MSCI World Index during this period.
Source: Author's calculations.

Implications for Practitioners

Lessons for constructing an ESG rating

There are several ways to construct an ESG rating system. Some investors set out to construct a proprietary ESG rating methodology because they can customize the selection and weighting of ESG issues to better complement their unique process in security selection or portfolio construction. For example, if an investor's existing investment process already accounts for specific governance risks, she may want to construct a methodology that overweights the additional aspects of environmental or social risks that can be additive to the existing process.

Focusing on the 13 years of data used for MSCI ESG Ratings, we propose three lessons to incorporate when constructing an ESG rating that aims to capture financially relevant risks.

Lesson 1: Overreliance on data inputs from corporate disclosures can yield both geographic and size biases, potentially detracting from the rating's financial relevance.

Many studies have pointed out that most ESG ratings are positively correlated with company size (e.g., Boffo and Patalano 2020). A key driver of this correlation is the overreliance on corporate disclosures in the construction of a score. Our analysis of the MSCI ESG Rating broke each of the underlying ESG scores into two equally weighted components: (1) the issue risk-management score, which includes corporate disclosures on policies, practices, and performance, where available; and (2) the issue risk exposures scores, which consists only of data from third-party sources that are mapped to companies' estimated financial segments. As shown in Figure 4.4, the corporate disclosure-driven scores have maintained a stable positive correlation with company size, while the scores based on independent information have declined in correlation with size over time, potentially reflecting a rise in independent sources regarding companies' ESG exposure.

Lesson 2: Different risks have materialized over different time horizons. Hence, giving more weight to some issues than others in the rating construction will impact the time horizon over which a rating might indicate financial relevance.

As an example of this, we found that governance issues were consistently more significant for point-in-time financial fundamentals, while environmental and social issues contributed to stock-price performance over a longer period (Giese et al. 2020). We suggest that markets appear to price in ESG event risks quickly over a shorter time horizon, particularly environmental and social issues. Thus, when the focus of an ESG rating was to measure risks that can impact a company's short-term exposure to financial

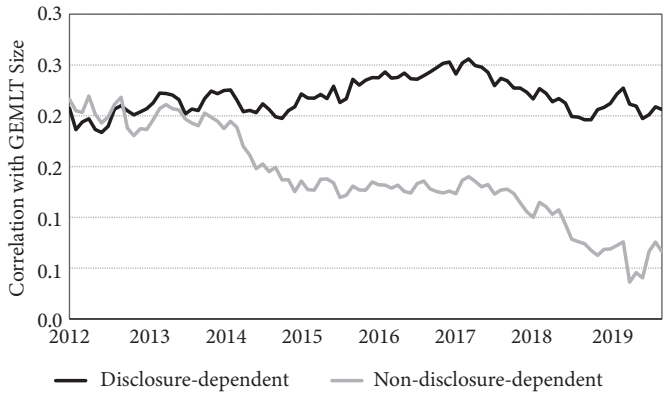

Figure 4.4 Correlations between corporate and independent disclosures and size

Note: Disclosure-dependent score is the weighted average key issue management score, the non-disclosure dependent score is the weighted average key issue risk exposure score. Data from December 31, 2012 to August 31, 2020 (end date was subject to data availability).
Source: Author's calculations.

shocks, then governance indicators showed the best financial results. Yet, over longer time periods, a more balanced overall signal that aggregated industry-specific environmental and social issues was associated with better financial results than any of the individual pillar indicators, including the governance score.

Lesson 3: Weights play a big role. Specifically, ESG weightings have been neither static nor uniform over time, and ratings that capture industry-specific and dynamically evolving weights do better at predicting financial performance.

Static weighting has the benefit of being simple and transparent. Moreover, when an investor lacks specific views about the relative importance of environmental, social, or governance issues, this 'naïve' method could be appropriate. By contrast, selecting and weighting E, S, and G issues for each industry more precisely reflects industry exposures to relevant risks. Nevertheless, it has the drawback of introducing complexity and less comparability across industries. On average, each of the 158 Global Industry Classification Standard (GICS®)[8] sub-industries uses six ESG Key Issues in assigning weights in the MSCI ESG Ratings. The selection of Key Issues and their respective weights are readjusted on an annual basis.

In the short term, the equal-weighted approach gave higher weights to Governance Key Issues and showed slightly stronger financial results over a one-year window than the industry-specific approach of the MSCI ESG Rating. Yet, over a longer period of 13 years, we found that a hypothetical portfolio, constructed using the industry-specific approach to weight ESG

issues, outperformed by 7.4 percent (cumulatively) one that equally weighted the ESG issues for all companies. Over time, the Social and Environmental Key Issues became more important, as they tended to unfold more slowly. Another important contributor to performance was that the industry-specific approach shifted dynamically as the weightings were rebalanced annually (Giese et al. 2020).

Lessons for integrating ESG in portfolio construction

Broadly, there are two main methods for integrating ESG factors into portfolio construction:

Select securities either for exclusion or inclusion: Investors can use one or more ESG metrics that target the ESG characteristic to be excluded or included. This method could be applied to meet values-based objectives, such as excluding companies involved in tobacco production or in human rights controversies, or by including companies that meet a target diversity threshold. It could also be applied to financially driven objectives, such as excluding companies scoring poorly on corporate governance, or by including companies offering ESG-themed solutions such as green technologies.

Re-weight securities: Investors can give a greater weight to those reflecting a target ESG characteristic, at the expense of securities lacking that target ESG characteristic. This method could be applied to meet financially or impact-driven objectives, such as tilting toward companies with lower carbon intensity. A variant of reweighting is to employ optimization techniques to re-weight securities to maximize exposure to the target ESG characteristic, while adhering to pre-specific constraints such as sector, geographic, or factor exposure.

Comparing a targeted ESG profile and the portfolio's risk and return with those of the chosen benchmark is critical in selecting an approach. Today, those data are usually readily available for such comparisons. For example, commonly used global and regional equity benchmarks can be characterized by their carbon footprint, their percentage of female directors, and the percentage of companies with exposure to a range of business activities, from firearms to fossil fuels. We can examine such data alongside metrics on a benchmark's performance, risk, and investability (for a list of available ESG metrics, see Kouzmenko et al. 2020).

Once the method for integrating ESG has been chosen, the remaining specific portfolio construction issues need to be addressed. In so doing, we have generated several guidelines that are useful when implementing ESG into portfolios, including the following:

Guideline 1: ESG policies or mandates that impose a limited number of values-based exclusions have not incurred a large tracking error.

How much exclusion is too much? In looking at three model portfolios with increasingly stringent criteria, we found that excluding companies based on alleged corporate wrongdoing had slightly boosted returns but, as the exclusions increased, so did the tracking error, over the period from February 2007 to June 2017. Returns were also impaired as exclusions became more sweeping (Lee et al. 2017).

Examining the historical track record of ESG indexes also indicated that, when values-based exclusions were minimal and introduced few sector biases, the tracking error tended to be low. For example, the MSCI ACWI ESG Screened Index excludes stocks associated with controversies, including civilian and nuclear weapons, and tobacco, that derive revenue from thermal coal and oil sands extraction, and that are noncompliant with the United Nations Global Compact principles. As of February 26, 2021, the set of excluded stocks numbered 158 of the total index universe of 2964. Its tracking error to the parent MSCI ACWI Index was 0.47 (between May 31, 2012, and February 26, 2021).

Guideline 2: Portfolio construction methods that select or overweight better ESG performers within industries (i.e., best-in-class approaches) can lead to unintended factor exposures that may impact portfolio risk and return.

Equities research has found mild positive correlations between ESG ratings and factor exposures such as low volatility, larger size, and higher financial quality. While the level of correlation tends to be low, many of those relationships are stable and highly significant over time (Melas et al. 2016). An analysis of selected ESG indexes in 2020's volatile market also supports the finding that indexes with stronger ESG profiles tend to have higher exposure to low volatility; that exposure has been protective during sharp sell-offs but these firms have struggled to keep up during market rallies.

Advances in analytics allow investors to measure, rather than conjecture about, how much ESG has contributed to explaining portfolio risk and performance over and above these systematic exposures (Dunn et al. 2018). Factor models show that the explanatory power for ESG increased recently, in 2019 and 2020, based on a 13-year study period (Cano and Minovitsky 2021). When we look at corporate bonds, we find that higher ESG-rated bonds have typically offered exposure to higher-credit-quality bonds. Again, however, we can isolate the contribution from ESG, providing complementary information to what is offered by credit ratings (Mendiratta et al. 2020). Overall, the ability to consider the contribution of a portfolio's ESG exposure distinct from and alongside other intended and unintended exposures

to traditional financial factors now offers investors a fuller understanding of portfolio characteristics and performance.

Guideline 3: While various ESG concepts are often correlated, targeting a desired outcome requires using specific inputs, where possible.

In constructing an equity portfolio, targeting a single ESG criterion, such as having more women on the corporate board, could result in unintended ESG benefits (not related to governance), such as better human capital practices (Eastman and Seretis 2018), or better carbon emissions management (Milhomem 2021). Yet when investors aim for a specific outcome, such as greater carbon efficiency, the input variable for portfolio construction should specifically measure companies' carbon efficiency, and not some other ESG criteria that could be broadly related.

To illustrate, two ESG indexes targeting higher overall ESG quality without an explicit carbon reduction goal have shown lower carbon intensity versus the benchmark. As of January 31, 2021, the MSCI ACWI ESG Focus Index and the MSCI ACWI ESG Leaders Index reported carbon intensity levels that represented approximately 31 percent and 36 percent reduction, respectively, versus the MSCI ACWI Index. Because carbon emissions are not used as a direct input into the index construction methodology, however, the carbon intensity is an *unintended byproduct* of the construction methodology that could conceivably differ in other time periods. By contrast, two ESG indexes that explicitly target a reduction in carbon intensity, among other climate-related objectives, showed lower carbon intensity *by design* and hence they seek to retain the reduction over time. The MSCI ACWI Low Carbon Target Index and the MSCI Climate Paris Aligned Index reported carbon intensity levels that represented approximately 70 percent and 80 percent reduction versus the MSCI ACWI Index, respectively.

Guideline 4: Allocators must choose between 'bottom-up' and 'top-down' approaches in integrating ESG across their total equity portfolios.

Investors face complex challenges in integrating ESG efficiently across multiple actively managed and indexed mandates across their portfolio. There are two basic approaches:

(1) A 'bottom-up' implementation addresses each portfolio one by one, leaving the policy (or reference) benchmark unchanged (at least initially). Historically, many asset allocators have followed this approach. From the perspective of an equities investor, Rao et al. (2021) explain that, on the plus side, this can lead to minimal disruption to existing actively managed ESG portfolios. On the minus side, this can lead to inconsistencies in ESG standards across portfolios, and thus generate sub-optimal outcomes at the total portfolio level. For example, in the

Rao et al. (2021) study, 1100 actively managed equity funds that had passed a series of screens for ESG criteria in September 2020 differed widely in how they measured up against the most common values-based criteria, such as those related to weapons or coal exposure.

(2) A 'top-down' implementation starts with the adoption of an ESG benchmark to measure performance of both indexed and active mandates. This offers a more comprehensive approach that applies across all types of mandates, but it may require more significant changes to existing allocations. Such a 'top-down' method could be applied across both equity and fixed-income allocations, as has been demonstrated by leading institutions such as Swiss Re (2018), which adopted a top-down approach in an effort to improve risk-adjusted returns over the long run.

Allocators also may wish to weigh the potential costs of disrupting existing active mandates versus the benefits of adopting a consistent approach across their entire portfolios.

Integrating Climate Risk

Looking forward, an increasingly urgent issue for investor attention will be how to integrate climate risk factors within the investment portfolio. Scientists have warned that the world's emissions are on track to exceed a tipping point that could lead to irreversible, catastrophic climate change (Sautner and Starks 2023). As policymakers grapple with measures to cut emissions and to protect us from severe weather changes, financial regulators are considering the implications for the allocation of capital and the stability of our financial system. Investors are only at the beginning stages of understanding the various paths that these changes could take in our physical world and in regulatory regimes.

The integration of ESG considerations as financially material factors into the investment process, of course, already includes important aspects of mitigating relevant environmental risks for specific industries. Yet because ESG reflects a range of social and governance issues in addition to environmental issues, a holistic ESG view, even one that focuses on capturing only financially material issues, will not substitute for a dedicated accounting of alternative climate scenarios, given the uncertainty around climate risks.

Implementing climate risk considerations into investment decisions may require an approach that supplements and differs from current approaches to implementing ESG. Different asset classes could face quite distinct dimensions of climate risk. Additionally, climate-related risks and opportunities likely will unfold differently across time horizons for different sectors

and asset characteristics within an asset class. In fact, we see evidence in public equities that companies at the 'tails' of climate risk—those with assets at the highest risk of becoming obsolete or 'stranded' during the economic transition versus those representing potential solutions to hasten the transition—have started to face discernible stock-price valuation discounts and premiums, respectively (Giese et al. 2021b).

Furthermore, investors may need to account for feedback loops with the real economy; even a portfolio consisting of only the most 'green' or resilient holdings may not protect against a world in which assets not held in one's own portfolio take the world beyond an emissions tipping point. Hence, standard setters and policymakers are exploring new types of metrics that can account for the externalities, gauging, for example, the alignment of portfolios with a desired temperature pathway over the next several decades.[9] How to integrate these complex considerations—many of which are replete with uncertainties—will require new expertise in measuring exposures, constructing portfolios, and adjusting asset allocations. As standard setters have called for, harmonization of data disclosure requirements and adoption of consistent methodological principles in the construction of climate-related measurement will be needed to provide the critical ingredients necessary for the investment industry to marry climate and financial modeling.

Conclusion

As ESG has entered the mainstream of investing, professionally managed assets that incorporate ESG considerations have grown dramatically in recent years. One key reason for this shift is the increasing evidence of how and when ESG factors have been financially material. We now see clearer distinctions between ESG motivations, especially between values-driven and financially driven objectives. These distinctions are fundamental in understanding why and how ESG measures differ. In addition, differing objectives can cloud views on whether ESG really has added value from a financial perspective. Despite a growing focus and empirical analysis on ESG from a financially relevant perspective, some confusion remains, as legacy approaches still exist that measure different objectives. By focusing on a clear and consistent measurement of ESG, we can obtain a more useful understanding of how it has contributed to financial performance. We believe that this is the way forward for ESG investing.

Our understanding of financial performance can be further improved by expanding data sources beyond corporate disclosures. Improvement of the underlying data holds great promise for constructing more precise measures across a range of ESG concepts. Even with imperfect data and

evolving measurements, the available evidence, spanning over a decade, has supported the investment thesis. That is, industry-specific, financially relevant ESG information collected on a dynamic basis has improved returns by reducing risk and improving profitability. For investors implementing an ESG approach, emerging lessons on portfolio construction include the need to identify both intended and unintended outcomes in ESG and traditional financial factor exposures. Innovations in analytical tools have allowed more targeted applications and measurement of ESG characteristics alongside financial characteristics, improving transparency for investment managers and fund allocators. For asset owners considering implementing their ESG objectives across their portfolios, comparing the ESG and financial characteristics across the equity and fixed-income fund universe versus an appropriate ESG benchmark that reflects their investment objectives, can help inform decisions on whether to apply a bottom-up, fund-by-fund approach or a top-down approach.

Over the past decade, mounting evidence on how ESG has affected financial performance has persuaded many institutional investors to adopt ESG considerations into investment decisions (Lachance and Stroehle 2023). With climate risk, investors, companies, and the wider public may not have the luxury of another decade of wait-and-see. A shift of capital away from a carbon-dependent economy and the physical effects of our changing climate could affect the pricing of assets dramatically and in a compressed timeframe. Prudent investors would do well to pay attention to this next frontier of risks and opportunities.

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Notes

1. Measurements of ESG-related AUM vary widely, but several reports, including the 'Report on US Sustainable and Impact Investing Trends' from the US SIF Foundation (2020), as well as the Principles for Responsible Investment (PRI 2020), have found substantial increases in allocations to ESG investing, in part driven by strong performance during the COVID-19 pandemic.
2. This chapter draws on previous research that uses a broad range of time frames drawn from various papers. Some cover different time periods. We have updated in some instances where possible. This chapter is not intended to compare results across time periods nor is it meant to be representative of performance over any particular time. The analysis and observations in this report are limited solely to the period of the relevant historical data, back-test, or simulation stated. Past performance—whether actual, back-tested, or simulated—is no indication or guarantee of future performance. None of the information or analysis herein

is intended to constitute investment advice or a recommendation to make (or refrain from making) any kind of investment decision or asset allocation and should not be relied on as such.

3. In MSCI's ESG Ratings Key Issue Framework, thousands of data points are grouped across 35 ESG Key Issues that focus on the intersection between a company's core business and the industry-specific issues that may create significant risks and opportunities for the company. The Key Issues are weighted according to impact and time horizon of the risk or opportunity. All companies are assessed for Corporate Governance and Corporate Behavior. Please see https://www.msci.com/our-solutions/esg-investing/esg-ratings/esg-ratings-key-issue-framework. For the most current Key ESG Issues and their contribution to companies' ESG Ratings, please see https://www.msci.com/our-solutions/esg-investing/esg-ratings/materiality-map.
4. As we used a z-score format (which creates a standard unit of measurement), we were able to average these three quintile differences in one aggregated target function.
5. We controlled for size bias in ESG scores by using the residuals obtained from the cross-sectional regression of industry-adjusted ESG scores on size scores.
6. The study period of analysis is limited by data availability on the cost of capital.
7. The data on cost of capital was obtained from Thomson Reuters. It is the weighted average of the cost of equity, debt (after tax), and preferred stock. Cost of equity was derived from CAPM using the risk-free rate and equity risk premium of the company's country, and beta with respect to the country's primary index. Cost of debt took into account both short- and long-term debt, which is a 1- and 10-year yield on the credit curve of the company. Cost of preferred stock was the current dividend yield on preferred stock.
8. GICS, the global industry classification standard jointly developed by MSCI and Standard & Poor's.
9. See, for example, the Task Force report on Climate-related Financial Disclosures (2021a) and the TCFD Portfolio Alignment Team (2021b) report.

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