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Responsible Investing: Guide to ESG
Data Providers and Relevant Trends

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Abstract

Increased demand for information on corporate environmental, social, and governance (ESG) performance has driven increased ESG data availability. With growing regularity, companies report data in corporate responsibility reports, non-governmental organizations gather and report ESG data, social media makes corporate ESG behavior public, and governments and stock exchanges increase reporting requirements. Many investors attempting to include ESG in their investment strategy purchase ESG data from a growing and diverse field of ESG providers. This paper reviews the landscape of major ESG data providers along three axes. One, their *objectives*: a focus on either market, ESG-exclusive, or specialty ESG data, target audience, unique product offerings, and governance structure; two, *data quality*: companies covered, number of issues included and metrics considered, means of data collection, and company engagement; and three, *rating methodologies*: model method, transparency and complexity, and ability to assess future performance. Related developments and trends are also discussed such as the consolidation of data providers and new ESG investment vehicles. For ESG data to meet its potential to help investor (and management) decision making, ESG metrics need to be standardized, ESG data providers need to adopt a common code regarding their methodologies, and financial performance related to ESG investments needs to be tracked and monetized.

Introduction

Many investors today proactively use environmental, social, and governance (ESG) factors in investment strategy, as strong ESG performance has been correlated with positive financial performance and risk mitigation (Friede, Busch, & Bassen, 2015). U.S. domiciled assets under management using sustainable, responsible, and impact strategies grew 33% to US$8.72 trillion from 2014 to 2016, and now represent $1 in every $5 under management (US SIF Foundation, 2016). An exponential growth in corporate reporting on social and environmental performance has, in part, made this increase possible. The percentage of S&P 500 companies producing corporate social responsibility (CSR) or sustainability reports grew from less than 20% in 2011 to 81% in 2015 (Governance & Accountability Institute, 2016).

In response to significant stakeholder demand for robust ESG performance information, data providers have emerged with a variety of product and service offerings aimed at helping investors and companies with their needs. These include incorporating ESG data into equity screens, portfolio construction and analysis, relative value analysis, competitive benchmarking, and risk analysis. Many data providers offer overall ESG as well as separate environmental, social, and governance ratings and use different data sources and proprietary methodologies for these ratings. Due to the erratic quality and lack of standardization of ESG data at the source (company reporting), data providers operate with subpar data. They augment these data with surveys and publicly available records.

In this paper we review the characteristics, limitations, and key differences between major data providers as a navigational tool for integrating ESG factors in decision While ESG indices and databases primarily target making. We also highlight the challenges presented by low-quality ESG data, opaque rating methodologies and governance structures, and the lack of integrated financial data – all factors that complicate investor decision making. While standardized reporting (by companies) and ratings (by data providers) may evolve over time due to growing investor and regulator pressure, the burden of due diligence now rests on the user.

Methods

Below we outline our methods for rating ESG data providers.

Sampling

There are more than 150 providers of ESG research, ratings, rankings, and indices that follow more than 50,000 companies in total (GISR, 2016). In this paper, we consider 17 well-known organizations that *each* independently rate a minimum of 450 companies

(Table 1) and offer ESG ratings, market indices, and rankings. Three of the 17 providers manage ESG investment funds – mutual funds that incorporate sustainability strategies or that combine sustainability information with stock selection. Four of the providers offer proxy voting advisory services.

Analysis

To assess the current landscape of major ESG data providers, we focused our research on the qualities of best-in-class providers identified in SustainAbility's "Rate the Raters" report (SustainAbility, 2011). We organized these qualities along three axes and added a categorization of data providers to increase clarity regarding their objectives. These axes are: First, their *objectives*: a focus on either market, ESG-exclusive, or specialty ESG data, target audience, unique product offerings, and governance structure; second, their *data quality*: companies covered, number of issues included and metrics considered, means of data collection, and company engagement; and third, *rating methodologies*: model method, transparency and complexity, and ability to assess future performance.

Results and Discussion

We break down our results and discussion along the key differences in data providers: provider objectives, data quality, and rating methodologies.

Provider Objectives

Data provider objectives incorporate their purpose, areas of core strength, target market, and governance structure.

Classifications of Purpose. All companies reviewed provide ESG data for ratings, rankings, or indices.[36] They primarily serve investors by providing data, analysis, and risk assessment tools that are used for stock selection as well as portfolio construction and management. While providers offer multiple types of data, their core strengths can be grouped into three types: *market*, *ESG-exclusive*, and *specialized,* as shown in Table 1.

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[36] Rankings compare a company's ESG performance relative to other companies'; ratings evaluate a company based on an objective standard; indices track the trading value of a select set of assets and are used as benchmarks for investment offerings, such as mutual and Exchange Traded funds.

Table 1: Data providers and major product offerings (See Appendix for data sources)

Company	Indices[37]					Ratings[38]				Ranking[39]		Investment Funds	Proxy Voting
	ESG	E	S	G		ESG	E	S	G	ESG		Other Services	
Market													
Bloomberg	✓	✓	✓			✓	✓	✓	✓				
FTSE Russell	✓	✓				✓	✓	✓	✓				
MSCI	✓	✓	✓			✓	✓	✓	✓				
Thomson Reuters	✓	✓	✓	✓		✓	✓	✓	✓				
ESG-Exclusive													
Arabesque						✓	✓	✓	✓			✓	
Covalence	✓					✓	✓	✓	✓	✓			
CSRHub						✓	✓	✓	✓				
Ethos				✓		✓	✓	✓	✓			✓	✓
Inrate		✓				✓	✓	✓	✓				✓
Oekom Research	✓					✓	✓	✓	✓	✓			
RobecoSAM	✓	✓				✓				✓		✓	✓
Sustainalytics	✓	✓	✓	✓		✓	✓	✓	✓	✓			
VigeoEIRIS	✓					✓			✓	✓			
Specialized													
ISS/IW Financial						✓			✓	✓			✓
CDP		✓					✓						
RepRisk						✓				✓			

[37] **Index** – composition of an investment portfolio, made up of the % of companies that reflect the highest ESG ratings. These provide investors exposure to sustainability profiles and have a low tracking error to the overall equity or fixed-income markets.

[38] **Rating** – an evaluation or assessment of ESG performance, overall or in the aggregate of Environmental "E", Social "S" or Governance "G" factors, based on a unique methodology.

[39] **Ranking** – listing of companies based on selected sustainability factors.

Market Data Providers. The *market* data providers include Bloomberg L.P., FTSE Russell, MSCI, and Thomson Reuters. They collect broad market data on equities, fixed income, foreign exchange, and commodities to characterize market trends. They also provide analytic tools for investors to assess these trends and investment performance. Bloomberg L.P. and Thomson Reuters provide global financial data delivered through proprietary technology platforms. MSCI and FTSE Russell are the leaders in research-based indices providing investor analytics and data solutions. Today all *market data* providers offer ESG research, ratings, and indices as a subset of their product and service offerings. These providers also offer specialized thematic indices,[40] like the Bloomberg Financial Services Gender-Equality Index, which provides standardized aggregate data across company gender statistics, employee policies, gender conscious product offerings, and external community support and engagement (Bloomberg L.P., 2016). Relatively few companies track and/or report this data, so the Index is driving more companies to report on it. Thomson Reuters, in addition to several general ESG indices, offers a Diversity and Inclusion Index measuring relative performance of companies against factors that define diverse and inclusive workplaces. MSCI offers faith-based indices for investors interested in companies with religious values, and even ratings and rankings on ESG characteristics.

Market data providers also offer specific risk-centered metrics and tools. On climate change, for example, MSCI analyzes fossil fuel reserves, carbon emissions, and sector-specific applications to screen carbon risk and exposure (MSCI, 2017). FTSE Russell has carbon-focused capabilities similar to MSCI and offers a Coal Asset Data Model that identifies a company's coal revenues, production, and reserves (FTSE Russell, 2017). Thomson Reuters offers a Carbon Data and Estimation Model (Thomson Reuters, 2017). MSCI also offers indices that exclude companies engaged in high-risk weapons (i.e., cluster bombs, land mines, chemical or biological weapons, and depleted uranium weapons).

ESG-Exclusive Data Providers. The *ESG-exclusive* class of data providers focuses solely on ESG research, ratings, and analysis, as compared to the *market* data providers, which offer ESG as a subset of products and services. Of these, Arabesque, Covalence, CSRHub, Ethos, Inrate, Oekom research, and Sustainalytics provide a comprehensive set of ESG data, often with a unique approach to evaluating the issues. One might expect more commonality among ESG-exclusive data providers, but they differ in a number of ways: evaluating distinctive ESG factors, such as reputation and product implications; having a unique rating methodology; and/or providing services beyond research and ratings, including specific risk analysis tools.

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[40] Investors who seek to capture the impact of long-term structural or cyclical trends across asset classes use thematic indices. Sustainability performance is one example.

Covalence covers the full ESG spectrum, and provides a grade for a company's reputation on sustainability. CSRHub offers a software platform that incorporates information from other research firms and then normalizes these data to create a broad ESG rating system. This allows direct comparison of ESG performance across competitors.

Arabesque, a relative newcomer, has launched its S-Ray tool. This uses analyst insights, big data, and machine learning to provide ESG ratings based on more than 200 ESG metrics gathered from Sustainalytics and MSCI as well as news data from RepRisk. Arabesque also analyzes corporate performance against the United Nations Global Compact principles to derive a Global Compact or GC score, which is a normative assessment. Arabesque freely provides an aggregated ESG measure. Subscribers can access additional, more detailed data.

Oekom research and Inrate focus on how environmental and social performance affect company products and processes. Inrate, for example, evaluates how companies integrate environmental and social issues through a proprietary framework focused on the sustainability of management and operations, products and services, and on certain controversial business practices.

Sustainalytics is the only *ESG-exclusive* provider that owns and maintains an index, the Jantzi Social Index of 50 leading Canadian companies in sustainability. It is far more common for companies to offer ESG-specific research to various index providers, stock exchanges, and financial institutions. Only Oekom research, Sustainalytics, and VigeoEIRIS offer direct data feeds for use in portfolio composition and analysis.

Some providers within the *ESG-exclusive* category offer unique products and services in addition to ESG ratings. Ethos, Inrate, and RobecoSAM offer proxy-voting services. They accumulate data on voting issues and may support studies of corporate governance. VigeoEIRIS ranks companies operating in emerging markets on the basis of human rights, employment practices, environmental protection, corporate governance, and social and economic development (Vigeo Eiris, 2017). Arabesque, Ethos, and RobecoSAM are also asset managers that offer investment funds comprised of companies selected on the basis of their ESG rating.

In terms of specific, risk-centered offerings, Oekom research offers a Carbon Risk Rating that considers a company's carbon-related performance in assessing how they manage industry-specific climate risk (Oekom Research AG, 2015). Inrate's envIMPACT quantitative input-output model uses Life Cycle Approaches to assess risks and opportunities related to climate change ("Inrate - Climate Change Assessments," 2014).

Specialized Data Providers. The third category is *specialized* data providers who focus on one or more aspects of ESG, but not all three. The Carbon Disclosure Project (CDP) offers extensive information and ratings on company performance and risks related to climate change and water. Trucost analyzes environmental risks, such as natural capital costs. Both provide the research and analysis to measure carbon footprints along with exposure to fossil fuels, stranded assets, and renewable energy. These tools can be used for assessment of risks and opportunities in major global equity indices.

Institutional Shareholder Services, Inc. (ISS) is a provider of governance solutions and proxy-advisory services. ISS began expanding into ESG advisory services with the 2015 acquisition of Ethix SRI Advisors (ISS, 2015). They recently acquired IW Financial, which provides an ESG research and a technology platform that allows asset managers and other investment professionals to comparatively rate companies based on user-defined criteria (ISS, 2017a). With the expanded capabilities of IW Financial, they now offer a breadth of ESG data and services.

RepRisk focuses on reputational risk. They gather data daily from 80,000 sources (media, stakeholders, and other public sources), and deliver analytics and metrics assessing the impact of ESG issues on company compliance, financial, and reputation risks. In addition to being included in the CSRHub platform and Arabesque, RepRisk data are incorporated in CDP, FTSE Russell, and RobecoSAM rating models. They also partner with ISS/IW Financial to add the evaluation of additional governance issues to their client offering (ISS, 2017b). Today there are fewer *specialized* providers because they have merged and formed strategic alliances to address the needs of their expanding client base.

Provider Governance Structures. While most of the data providers are public or private for-profit companies, some have unique governance structures. CDP is a nonprofit. CSRHub is a B-Corp. Orix, a publicly owned Japanese financial services company, runs RobecoSAM. Oekom research is a private company with an environmental foundation, a publishing company, and two religious orders as major shareholders. Foundations, pension funds, and other tax-exempt entities own both Ethos and Inrate. Before Eiris merged with Vigeo, a charity, the Eiris Foundation, owned it. Vigeo was previously a limited company with asset and pension fund managers and trade unions as majority shareholders. In the combined VigeoEIRIS, civil-society organizations remain a major shareholder group (24%) of the combined entity (EIRIS, 2015).

Data Quality

All investors should be aware that ESG data are not going to meet financial quality standards because companies do not use one standard to report their performance. Companies can choose to report on material or immaterial ESG factors, on their own

operations or the entire supply chain, on clear targets or on general policies. They can choose to use a globally accepted ESG standard such as the Global Reporting Initiative (GRI), or they can follow their own criteria. They can choose whether or not to have their ESG reporting audited by a third-party.

Financial reporting is rarely integrated with ESG reporting. Firm managers tend not to track the financial impact of their ESG initiatives, other than operational efficiencies such as energy savings, and even these linkages are not reported explicitly. It is impossible for ESG data providers to assess specifically how financial performance results from ESG practices when the linkage is not tracked or reported.

Data providers attempt to address these weaknesses by augmenting the company's reporting with external sources and/or surveys, and by tracking correlations between ESG performance and financial performance. However, ratings of individual companies produced by different rating providers themselves are often not comparable because ratings providers focus on different issues, indicators, and data. Consequently, one of the most important aspects of selecting a rating provider is assessing the quantity and quality of data they provide, how they source their data, and what methodology they use to synthesize these data into ratings.

Given the number of providers to choose from, deriving a successful investment strategy from ESG data requires understanding the criteria behind each rating, including the source of data, the key issues assessed, and how the data are weighted. (For a summary of the data providers we analyzed, see Table 2.) Ratings providers gather both qualitative and quantitative indicators to judge a company's performance. These data come from public sources, surveys, government reports, news reports, and interviews. The providers evaluate companies on two (CDP) to 178 (Thomson Reuters) key issues, depending on the provider. Among others, these issues include: impact on climate change, energy efficiency, equal opportunity and nondiscrimination, board composition, and transparency. In turn, these issues are assessed using between 70 and 1,000 indicators – water usage, greenhouse gas emissions, investment in low-carbon technologies, safety record, and so on.

Not all providers report how many indicators they track, but for those that do, Bloomberg and MSCI (both market data providers) track the most ESG indicators: 700 and 1,000, respectively. ESG-exclusive providers often follow fewer indicators. Indicators tracked by VigeoEIRIS, CDP, Oekom research, and Sustainalytics range between 70 and 330.

Most providers target investors as their primary clients and cover 2,000 to 17,000 companies.[41] CSRHub, an aggregator of ESG provider ratings, sits at the high end, covering

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[41] Some data providers target use in supply chain evaluations.

17,000 companies. Bloomberg provides ESG data on 10,000 companies, a transparency of disclosure (but not performance) rating, and access to a subset of third-party ESG performance ratings. Factoring in its 2014 acquisition of GMI, MSCI provides ESG ratings for 7,000 companies (MSCI, 2014).

Table 2: Target market and scope of data considered in rating methodology (See Appendix for data sources)

Rating Provider	Target Market	Market Coverage (#of firms)	Indicators (#)	Key issues (#)
Market				
Bloomberg	Investors & Companies	>10,000	700	120
FTSE Russell	Investors	>4,000	350	125
MSCI	Investors	>6,000	1,000	37
Thomson Reuters	Investors	>6,000	400	178
ESG Exclusive				
Arabesque	Investors	>4,000	200[42]	NA
Covalence	Investors & Companies	>3,400	NA	50
CSRHub	Companies	>17,000	NA	NA
Ethos	Investors	>1,650	NA	NA
Inrate	Investors	>2,600	NA	NA
Oekom Research	Investors	>3,500	100	37
RobecoSAM	Investors & Companies	>2,400	survey[43]	120
Sustainalytics	Investors	>6,500	70	21
VigeoEIRIS	Investors & Companies	>3,200	330	38
Specialized				
CDP	Investors	*>2,000*	175	2

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[42] Also include over 50,000 news sources gathered daily

[43] RobecoSAM sends its Corporate Sustainability Assessment (CSA) surveys to over 3,400 companies and had 867 responses in 2016. The survey covers 80-120 questions (RobecoSAM, 2016a). In addition, they also rate 2,400 companies as part of their Sustainabiity Yearbook (RobecoSAM, 2016b)

The *market* data providers have broader market coverage and also work with more indicators and key issues since they started tracking market data well before mainstream investors became interested in ESG. Sustainalytics is the sole *ESG-exclusive* provider offering a similar breadth of coverage as *market data* providers, at 6,500 firms. *Specialized* ESG provider CDP analyzes solicited information from roughly 2,000 companies and holds the largest collection of voluntarily reported climate change, forest, and water data in the world. This includes companies' environmental policies and practices as well as impact and dependence on the environment (CDP, 2016). CDP was rated the most credible rating provider of ESG data in GlobeScan/SustainAbility's 2013 "Polling the Experts" research survey, which captured stakeholder views on sustainability ratings agencies (Sadowski, 2013).

As discussed earlier, a major data quality challenge is the inconsistency of metrics used by companies. The most widely used reporting framework is GRI, an international, independent organization "that helps businesses, governments and other organizations understand and communicate the impact of business on critical sustainability issues such as climate change, human rights, corruption and many others (GRI, 2017)." Participating companies can pick and choose which GRI indicators to report on, complicating a comparison. Another ESG data framework is provided by the International Integrated Reporting Council (IIRC), a global coalition of regulators, investors, companies, standard setters, the accounting profession, and NGOs that believe that communication about value creation should be the next step in the evolution of corporate reporting (IIRC, 2017).

Investors are concerned with issues that are material to financial performance (Khan, Serafeim, & Yoon, 2015), while regulators and NGOs are interested in broader datasets. Investor concern that neither GRI nor IIRC provided sufficient focus on material ESG factors that most interest investors led to a new reporting standard developed by the Sustainability Accounting Standards Board (SASB). SASB leverages GRI and IIRC frameworks but puts more emphasis on material ESG factors. Despite it being an accounting standard, it is focused exclusively on ESG metrics and does not include metrics that would track the financial impact of a firm's ESG practices. GRI and IIRC have both focused more on materiality of their metrics in response. Currently, only a handful of companies use SASB, but it benefits from the leadership of Michael Bloomberg and broad investor interest; it aims to be adopted by the Securities and Exchange Commission (SEC). The EU has also issued directives mandating sustainability reporting, but it was not prescriptive on the reporting format.

While reporting to GRI, IIRC, or SASB greatly improves data quality, much reporting is voluntary, not audited, and prone to selective disclosure, with companies reporting favorable data and withholding everything else. This creates problems in data consistency

and comparability. Another consideration is that small and medium-sized companies may be underrepresented if they don't have the resources required to complete surveys and publish CSR reports.

Company Engagement

Engaging with companies can help the ratings process by facilitating data verification. But this engagement can also introduce bias. Most providers that we reviewed share their rating results with firms before publishing them. Covalence and Ethos state that they actively engage with companies in the information gathering process. Since Covalence focuses on ESG "reputation," they mitigate bias by sourcing information from multiple news reports. Ethos relies on company engagement to assess ESG exposure and how well ESG issues are being managed.

Several data providers never engage with the companies they evaluate. Thomson Reuters, for example, states that they only use publicly available information to preserve objectivity (Thomson Reuters, 2017). RepRisk, CSRHub, and IW Financial rely solely on third-party sources to assess whether a company's policies, processes, and commitments translate into practice.

When companies have a third-party audited report that complies with the requirements of GRI, IIRC, or SASB, company engagement may not be as important. But when company reporting is opaque or incomplete – often the case – more engagement and supplementary information are often required, either through public record searches or direct engagement.

Data objectivity may be questionable if the rating provider offers advisory services to a company it rates. Inrate, for example, makes it clear on their website that they offer no advisory or consultative services in the interest of objectivity. Ethos also claims to be independent of the companies they analyze and transparent about potential conflicts. Rating providers generally do not disclose their reliance on advisory fees.

Rating Methodology

Beyond feedback from the company under scrutiny, a number of steps can provide assurance regarding data quality and risk of subjective judgment errors in a rating. Some rating providers validate their rating using internal processes (e.g. reviews or statistical analyses), independent boards or committees, or third-party oversight. VigeoEIRIS and oekom research have their methodologies accredited by ARISTA® 3.0 quality standard and RobecoSAM has Deloitte audit the Corporate Sustainability Assessment (CSA) process annually.

Rating models vary from computer-driven models or algorithms, to analyst-based evaluations, to a hybrid of the two. Most providers favor a hybrid approach, as shown in Table 3. Each provider outlines its methodology online, often providing further details on request. Providers help users understand their ratings data, and do address some concerns around consistency and comparability, but because methodologies are proprietary they generally remain opaque. For example, MSCI, which is not alone, limits explanation of its weightings and scoring schemes. Though they examine 37 key issues, they typically select 6-10 of these to rate a company (MSCI, 2015). Why some issues are selected and others are eliminated is unclear.

All rating providers weigh ESG factors for relevance and impact; some consider time-horizon. Most rating providers also factor major incidents and controversies into their ratings, though the weighting of these factors is not well understood. CSRHub normalizes ESG scores from different data sources. The Arabesque model relies on big data and quantitative machine learning models to generate ratings. The model only considers sustainability criteria that have a statistically higher likelihood of predicting future performance and the processing and analysis of that data are not transparent. FTSE Russell, MSCI, Thomson Reuters, Covalence, RobecoSAM, and VigeoEIRIS all have complicated hybrid methodologies, perhaps because they also construct ESG indices. Sustainalytics stands out as an analyst-based model with the largest scope in terms of number of companies covered. The tradeoff is that they cover fewer issues: 21 in comparison to Thomson Reuters' 178. In all cases providers are opaque about which metrics are incorporated and their weighting.

Table 3: Model Characteristics of Market and Broad ESG Data Providers
(See Appendix for data sources)

Data Provider	Model Methodology	Rating Scale	Advisory Offered to Companies
Market			
Bloomberg	Model	100-0	No
FTSE Russell	Hybrid	5.0-1.0	No
MSCI	Hybrid	AAA to CCC	Yes
Thomson Reuters	Hybrid	A+ to D-	No
ESG exclusive			
Arabesque	Model	100-0	No
Covalence	Hybrid	100-0[44]	Yes
CSRHub	Model based	100-0	No
Ethos	Analyst based	-	No
Inrate	Hybrid	A+ to D-	No
Oekom Research	Analyst based	A+ to D-	Yes
RobecoSAM	Hybrid	Gold, Silver, Bronze	Yes
Sustainalytics	Analyst based	100-0	Yes
VigeoEIRIS	Hybrid	Double+ to double-	Yes

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[44] 100-0 is the ESG Rating: A-D Reputation Index

Differences in the analytical model can result in different assessment outcomes for the same company (Allen L. White, 2012). In 2011, for example, Coca-Cola ranked number #14 out of 100 in Corporate Responsibility (CR) Magazine's Best Corporate Citizens ranking, with ratings provided by IW Financial; yet it didn't make the Dow Jones Sustainability Index (DJSI) that year. In 2016, CR's Best Corporate Citizens ranked Intel #2, but that same year Intel was dropped from the DJSI. Also, in 2016 Dow was dropped from the CR ranking because they settled a lawsuit on price-fixing, but they remained in the DJSI. Without standardized ESG reporting and consistent application of quantitative and non-quantitative ESG metrics, the burden of understanding data and determining its usefulness falls to the user.

Due to opacity in the field, investors ought to first look for third-party assurance that the data provider meets industry standards; second, review the provider for independence from the companies they rate; and third understand oversight and complaint mechanisms in order to ensure that the process is fair.

Future Outlook

Rating providers that rely heavily on past performance or ignore indicators that help predict future performance can provide misleading insights into a company's ESG profile. To address this problem, Ethos, Inrate, MSCI, Oekom research, Sustainalytics, and VigeoEIRIS incorporate company policies and management processes, along with their effectiveness, into their methodologies. This is in contrast to Thomson Reuters, which only uses publicly available information and relies more heavily on quantitative data absent company input. They believe that this improves the reliability of their results.

Select specialized data providers include future-oriented metrics. CDP measures a company's influence on managing future climate change risks and opportunities. Trucost identifies natural-capital dependencies and evaluates these environmental costs by gathering data across a company's operations, product life cycles, and supply chains. Using an in-house academic panel, they convert these metrics into prices to reflect current and future resource constraints and environmental costs. One of RepRisk's models takes data from sources *external* to the company – from media, stakeholders, and other public sources – and combines these with company data to assess whether a company's intention translates into practice. The outcome of this measure affects a company's future risks.

Some data providers that do not provide a future outlook may nevertheless have a wider range of data. Investors may want to combine data from several providers to get a more chronologically holistic view.

Trends and Outlook

For mainstream financial investors, ESG data must be comparable, reliable, and cheaper than currently priced (Amel-Zadeh & Serafeim, 2017); it must match financial data in quality; and disclosure should be required (Park & Ravenel, 2013). SASB has pushed improvements in disclosure by asking public U.S. companies to incorporate in their financial reports specific disclosures on material ESG factors. Governance data will likely improve as of this year, when the SEC will require mandatory disclosure of the pay ratio between CEO and employee average (U.S. Securities and Exchange Commission, 2015). Shareholder engagement, too, will continue to pressure companies into more transparency and data disclosure on ESG issues (Skroupa, 2016).

Government and company efforts related to the Paris Climate Accord will improve data on climate change, but, as of today, investors do not have the information needed to evaluate effects from climate change and vulnerability to losses from stranded assets. Companies need to articulate both how they manage these risks and how they will remain competitive moving forward. For example, in 2017, ExxonMobil's shareholders asked for additional assessment of long-term portfolio impacts from the risks and potential business impact of climate change and new energy technologies. While ExxonMobil argued against the proposal, stating that they already provided sufficient disclosures, investors countered that more useful data and analysis was needed. Sixty-two percent of the shareholders voted in favor of this measure, signaling to other companies a likely increase in future data requests around environmental issues. Finally, as data providers help companies evaluate and implement successful sustainability strategies, they may learn how to improve data validity.

Growing investor interest will help bring ESG data into the mainstream. Today mainstream investors use ESG data to improve investment performance, satisfy client demand, drive company changes, and consider ethics (Amel-Zadeh & Serafeim, 2017). There are now over 1,700 institutional investment companies – asset owners, investment managers, and service providers – that signed on to the Principles for Responsible Investment (PRI), an agreement that promotes responsible investment (and requires annual reporting by signatories on how they are meeting the broad aspirations of the PRI).[45] Growth in "smart beta" investing, which improves passive investment returns, led RobescoSAM and Dow Jones to launch the first index series using ESG factors (S&P Dow Jones Indices, 2016). Retail investment funds that are sold to individuals are now being rated on ESG performance. For example, Morningstar, Inc., the independent research provider,

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[45] PRI is an independent organization sponsored by the United Nations that works to understand the implications of ESG factors on investments and incorporate ESG factors in investments and ownership decisions.

incorporates Sustainalytics research in its Morningstar Sustainability Rating of mutual funds (Katie Gilbert, 2016). Similarly, Barron's, the U.S. financial weekly newspaper published by Dow Jones & Company, used research from Morningstar and Sustainalytics to compile its recently announced ranking of the Top 200 Sustainable Mutual Funds (Norton & Kim, 2016). Responsible Property Investments has developed a framework for real estate investors to integrate ESG and climate change information into investment decisions (Bosteels & Sweatman, 2016). Green Bond issuance was $90 billion in 2016, double what was issued in 2015, much of it financing renewable energy in China (Reuters 2017). Most notably, traditional investment firms are entering ESG investing. Goldman Sachs, for instance, bought Imprint Capital, an asset-management firm that advises clients on investing based on their ESG values (Goldman Sachs, 2015).

Role of Future Regulation

Regulation will likely play a role in the future of ESG investment. The U.S. Department of Labor considers ESG factors as "acceptable" under the right circumstances regarding fiduciary duties under the Employee Retirement Income Security Act (ERISA) of 1974 (US Department of Labor, 2015). The SEC requested public comment on disclosure effectiveness in 2016 and groups including SASB (Jean Rogers, Ph.D., 2016), MSCI (Eric Fernald, 2016), and Hermes Investment Management (Tim Goodman, 2016), among others, asked for a greater focus on ESG data.

Standardized data require regulation. Market demand can push only so far. In addition, an industry certification standard for data providers might ensure the quality of the process, especially while provider methodologies remain proprietary. Investors and data providers could develop this as a voluntary certification scheme, or regulators could mandate it.

Conclusion

The proliferation of ESG data, research, and rating providers has fueled the growth of responsible investment and the incorporation of ESG factors into investment decision making. Data providers have consolidated in light of these trends, as increased size, coverage, and scope of service provide competitive advantage. The recent acquisitions of IW Financial by ISS and Trucost by S&P Global, along with the merger of EIRIS and Vigeo, indicate that this trend will likely continue. With growth in responsible investment, we see mainstream finance integrating ESG factors.

However, ESG data must improve if it is to meet its potential. SustainAbility's "Rate the Raters" provides a useful framework for analysis, but improving the usefulness of ESG for investor decision making requires additional criteria. First, we need consistency in the material data tracked and published by companies; SASB provides a first step. Second, we

need a widely adopted and verified data provider standard that sets guidelines for a credible approach and reduces discrepancies across same-company ratings; the Global Initiative for Sustainability Ratings and Arista 3.0 have made a start. Clearly, investors should be able to choose from different approaches to suit their objectives, but the lack of transparency and basic guidelines create industry-wide credibility challenges. Third, corporations must track and report ROI on sustainability investments in order for ESG data to offer managers and investors insights into correlation with financial performance. And standards such as SASB, GRI, and IIRC should include tracking of financial performance related to ESG policies and investments by firms. If, for example, adoption of GHG targets results in process innovation, reduced costs, risk mitigation, and better employee retention, those impacts need to be monetized and reported in addition to the reduction in GHG emissions.

The next generation of ESG data is needed to drive better decision making and financial performance in the responsible investment movement – now $1 in every $5 in the US, and growing. Better and more consistent measurement will also help the listed companies improve their own decision making and performance. *What* gets measured and *how* it gets measured, matters.

Appendix: Data Sources

Sources of company information:

Global Initiative for Sustainability Ratings (GISR) ratings directory: http://ratesustainability.org/

Arabesque http://www.arabesque.com/

Bloomberg http://www.bloomberg.com/professional/sustainable-finance/,

CDP https://www.cdp.net,

CSRHub https://www.csrhub.com/

Ethos https://www.ethosfund.ch/

FTSE Russell http://www.ftse.com/

Inrate http://inrate.com/

ISS/IW Financial https://www.issgovernance.com/esg/iwfinancial/

MSCI https://www.msci.com/

Oekom Research http://www.oekom-research.com/

RobecoSAM http://www.robecosam.com/

Sustainalytics http://www.sustainalytics.com/

Thomson Reuters https: http://financial.thomsonreuters.com/

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This special issue of the *Journal of Environmental Investing* marks our 8th year of publication and provides for the first time a comprehensive review of the **state of Environmental/Social/Governance (ESG) data and metrics**. With two leading Yale Professors, Dan Esty and Todd Cort, as guest editors, this issue offers a sweeping perspective on the analytic underpinnings—present and future—of sustainable investing.

While still a nascent field, every fund manager now knows that he or she must be in the sustainable investing game. The race is on to develop the best investment tools and processes that will allow investors, who have wide ranging sustainability interests, to steer their portfolios into better alignment with their values.

In addition to bringing a degree of academic rigor and systematic analysis to the realm of sustainability data, this special issue helps to blaze the trail towards the next generation of ESG metrics. The articles cover a great deal of ground—and will be an invaluable resource for investors, fund managers, data providers, academics, environmental advocates, and others interested in sustainable investing. As a group, the articles highlight the weaknesses in the existing data sets, spell out opportunities for improved ESG metrics, and signal to policy makers where government intervention may be required to deliver an ESG data framework that is more carefully constructed, methodologically consistent, trusted, and capable of directing capital flows toward more sustainable enterprises.