Environmental, Social and Governance

ESG measurements

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Overview

- Why ESG ratings are important
- Conduct-based ESG measurements at firm-level
- Rating disagreements
- Rewriting history
- Financial materiality
- Product-based ESG measurements at firm level
Why ESG ratings are important?

- Many institutional investors view the third-party ESG ratings as important as hedging, divestment, exclusionary screening, and shareholder proposals when incorporating climate risks into their investment process (Krüger, Sautner, and Starks (2020)).

<table>
<thead>
<tr>
<th>Climate risk management approaches taken in the past 5 years</th>
<th>Percentage that took this measure</th>
<th>Significant differences in mean response vs. rows</th>
<th>Classification of approaches for Table 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Analyzing carbon footprint of portfolio firms</td>
<td>38.0</td>
<td>4-14</td>
<td>Passive</td>
</tr>
<tr>
<td>(2) Analyzing stranded asset risk</td>
<td>34.6</td>
<td>5-14</td>
<td>Passive</td>
</tr>
<tr>
<td>(3) General portfolio diversification</td>
<td>33.9</td>
<td>6-14</td>
<td>Passive</td>
</tr>
<tr>
<td>(4) ESG integration</td>
<td>31.7</td>
<td>6-14</td>
<td>Passive</td>
</tr>
<tr>
<td>(5) Reducing carbon footprint of portfolio firms</td>
<td>29.3</td>
<td>1-2, 10-14</td>
<td>Active</td>
</tr>
<tr>
<td>(6) Firm valuation models that incorporate climate risk</td>
<td>25.9</td>
<td>1-4, 12-14</td>
<td>Passive</td>
</tr>
<tr>
<td>(7) Use of third-party ESG ratings</td>
<td>25.6</td>
<td>1-4, 12-14</td>
<td>Passive</td>
</tr>
<tr>
<td>(8) Shareholder proposals</td>
<td>25.1</td>
<td>1-4, 12-14</td>
<td>Passive</td>
</tr>
<tr>
<td>(9) Hedging against climate risk</td>
<td>24.6</td>
<td>1-4, 13-14</td>
<td>Passive</td>
</tr>
<tr>
<td>(10) Negative/exclusionary screening</td>
<td>23.7</td>
<td>1-5, 13-14</td>
<td>Active</td>
</tr>
<tr>
<td>(11) Reducing stranded asset risk</td>
<td>22.9</td>
<td>1-5, 13-14</td>
<td>Active</td>
</tr>
<tr>
<td>(12) Divestment</td>
<td>20.2</td>
<td>1-8, 12-14</td>
<td>Active</td>
</tr>
<tr>
<td>(13) None</td>
<td>7.1</td>
<td>1-12, 14</td>
<td>n/a</td>
</tr>
<tr>
<td>(14) Other</td>
<td>3.7</td>
<td>1-13</td>
<td>n/a</td>
</tr>
</tbody>
</table>

This table reports the percentage of respondents that in the previous 5 years took a given approach to incorporate climate risks into the investment process (Question B1). Responses were not mutually exclusive. We rank results based on their relative frequency. Column 1 presents the percentage of respondents that took a certain measure. Column 2 reports the number of respondents. Column 3 reports the results of a $t$-test of the null hypothesis that the percentage for a given approach is equal to the percentage for each of the other approaches, where only differences significant at the 10% level are reported. Column 4 classifies the motives into more active and more passive approaches for the analysis in Table 5.
Credit rating agencies incorporate ESG in credit ratings

- “In January 2019, Fitch Ratings revealed that it would produce relevance scores to explain how environmental, social, and governance factors influence its rating decisions. Shortly after, Standard & Poor’s announced that it would include an ESG considerations section in its credit rating reports. In April of this year, Moody’s acquired a majority stake in ESG research firm Vigeo Eiris. Moody’s announced this acquisition amidst the expansion of its ESG teams and ESG reporting efforts across asset classes.”

Source: https://www.theimpactivate.com/credit-agencies-take-esg-into-consideration/
https://www.ft.com/content/59f60306-d671-11e9-8367-807ebd53ab77
Credit rating agencies incorporate ESG in credit ratings

• “These developments follow a concerted effort by the United Nations Principles for Responsible Investment (PRI) to encourage credit agencies and investors to better emphasize sustainability. Since 2016, PRI worked with credit agencies and called for increased transparency on how ESG factors are reflected in corporate credit ratings. This year, PRI hailed the progress made by the three major ratings agencies as a “race to the top.” PRI expects credit agencies and investors to continue to engage with debt issuers to improve awareness, disclosure, and transparency.”

Source: https://www.theimpactivate.com/credit-agencies-take-esg-into-consideration/
https://www.ft.com/content/59f60306-d671-11e9-8367-807ebd53ab77
ESG ratings at firm level

• Measuring ESG at the firm-level typically focused on two dimensions

• **Conduct:** How sustainable/responsible are the operations of a firm?
  – e.g., pollution, employer-employee satisfaction, health and safety, etc.

• **Product:** Are the products and services of a company sustainable?
  – e.g., renewable energy, pollution prevention, access to education, fossil fuels.

• Most data providers concentrate more on the conduct-based measurements.
ESG ratings at firm level

- Conduct-based approach aims at quantifying the quality of a firm’s ESG policies.
- There is no one exhaustive list of ESG issues.

**Table 1. Examples of ESG Issues**

<table>
<thead>
<tr>
<th>Environmental Issues</th>
<th>Social Issues</th>
<th>Governance Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate change and carbon emissions</td>
<td>Customer satisfaction</td>
<td>Board composition</td>
</tr>
<tr>
<td>Air and water pollution</td>
<td>Data protection and privacy</td>
<td>Audit committee structure</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Gender and diversity</td>
<td>Bribery and corruption</td>
</tr>
<tr>
<td>Deforestation</td>
<td>Employee engagement</td>
<td>Executive compensation</td>
</tr>
<tr>
<td>Energy efficiency</td>
<td>Community relations</td>
<td>Lobbying</td>
</tr>
<tr>
<td>Waste management</td>
<td>Human rights</td>
<td>Political contributions</td>
</tr>
<tr>
<td>Water scarcity</td>
<td>Labor standards</td>
<td>Whistleblower schemes</td>
</tr>
</tbody>
</table>

Source: CFA Institute
Example: Refinitiv
- Analysts collect firm-specific data on ESG dimensions (ESG related data points) from a variety of mostly public sources
**ESG ratings at firm level**

Example: Refinitiv

- Raw data mapped into predefined ESG categories and firms are ranked according to proprietary methodology
- E (a weight of 34% in the total ESG score), S (35.5%) and G (30.5%)

Source: Refinitiv
Example: Refinitiv

- Biases in self reported data: Self reported data could be misleading
- Firms can “greenwash”: self-report predominantly positive ESG information; pretend to care about ESG
- Occurrence of controversies results in lower ESG scores
- Examples of controversies: Employees related health & safety accidents, bribes, stakeholder related lawsuits, etc.

ESG Combined Score
The ESG framework is divided into three main categories: Environmental, Social, and Governance. Within these categories, there are specific measures and metrics used in the ESG scoring. A total of 450+ measures are considered, with 186 comparable measures specifically used in the ESG scoring. More than 450 data points, ratios, and analytics are used to assess the ESG performance of companies.
ESG Ratings Service Providers

- MSCI KLD
- MSCI IVA
- Thomson Reuters ASSET4
- Refinitiv
- Vigeo EIRIS (Moody’s)
- Sustainalytics (Morningstar)
- Bloomberg ESG
- TruValue Labs
- RepRisk
- Inrate
- RobecoSam (S&P Global)
- ISS-Oekom Research
- Owl Analytics
- FTSE Russell
- Ecovadis
- CSRhub
- ......
Rating disagreement

- ESG ranking methodologies of different rating agencies can differ:
  - number of ESG issues;
  - how issues are measured;
  - weighting of ESG issues;
  - how companies are benchmarked (industry, country, etc.)
“MSCI gives Tesla a near-perfect score for environment, because it has selected two themes as the most important for the car industry: the carbon produced by its products, and the opportunities the company has in clean technology.

FTSE gives Tesla a "zero" on environment, because its scores ignore emissions from its cars, rating only emissions from its factories.

Tesla highlights another major difference in scoring: what to do when a company doesn't disclose. FTSE says it has to assume the worst if no information is provided about issues that matter to a company - and that giving it the worst score encourages more disclosure.

Tesla, which discloses little about its operations compared with other automakers, suffers from FTSE's approach, particularly on social issues. MSCI is more generous, assuming that if there's no disclosure the company operates in line with regional and industry norms.”

Source: Wall Street Journal
“Facebook, for example, was docked to a rating of 21 out of 100 last year by S&P Global, which worried about its privacy and transparency standards. Yet MSCI’s rating for the social media platform has hovered in the “average” range, fluctuating between double-B and triple-B.”

Source: Financial Times
Companies that certify information on these criteria need “strong registration and supervision to prevent greenwashing,” said Steven Maijoor, chair of the European Securities and Markets Authority, in February. “Personally, I believe that, where ESG ratings are used for investment purposes, [accrediting] rating agencies should be regulated and supervised appropriately by public sector authorities.”

Source: Financial Times
Low correlations of ESG ratings

Correlations between ESG ratings at the aggregate rating level (ESG) and at the level of the environmental dimension (E), the social dimension (S), and the governance dimension (G) using the common sample. The results are similar using pairwise common samples based on the full sample. SA, RS, VI, A4, KL, and MS are short for Sustainalytics, RobecoSAM, Vigeo Eiris, Asset4, KLD, and MSCI, respectively.

|       | KL  | KL  | KL  | KL  | KL  | SA  | SA  | SA  | SA  | VI  | VI  | VI  | VI  | RS  | RS  | A4  | A4  | Average |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| ESG   | 0.53| 0.49| 0.44| 0.42| 0.53| 0.71| 0.67| 0.67| 0.46| 0.7  | 0.69| 0.42| 0.62| 0.38| 0.38|        |
| E     | 0.59| 0.55| 0.54| 0.54| 0.37| 0.68| 0.66| 0.64| 0.37| 0.73 | 0.66| 0.35| 0.7  | 0.29| 0.23|        |
| S     | 0.31| 0.33| 0.21| 0.22| 0.41| 0.58| 0.55| 0.55| 0.27| 0.68 | 0.66| 0.28| 0.65| 0.26| 0.27|        |
| G     | 0.02| 0.01| -0.01| -0.05| 0.16| 0.54| 0.51| 0.49| 0.16| 0.76 | 0.76| 0.14| 0.79 | 0.11| 0.07|        |


Low correlations of ESG ratings across different raters, especial for the G dimension.
Companies with largest discrepancies in ESG ratings

Divergency

Scope (0.48 std dev)

Measurement (0.54)

Weights (0.34)

- Scope and measurement divergence are the predominant sources of ESG rating divergence.

- Weights divergence plays a relatively minor role in comparison.

**Significant divergences: The rater effects**

- The rater effect describes a sort of bias, where performance in one category influences perceived performance in other categories.

- The rater effect of ESG rating agencies establishes an interesting parallel to finance research on credit rating agencies.

- Griffin and Tang (2011) and Griffin et al. (2013) study how credit rating agencies deviate from their own model when rating collateralized debt obligations, resulting in overly optimistic credit ratings.

Table 2: Descriptive statistics and correlations

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>StdDev</th>
<th>Asset4</th>
<th>Sust.</th>
<th>Inrate</th>
<th>Bloom.</th>
<th>KLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset4</td>
<td>26,313</td>
<td>0.501</td>
<td>0.289</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Sustainalytics</td>
<td>27,592</td>
<td>0.498</td>
<td>0.289</td>
<td>0.768</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inrate</td>
<td>25,945</td>
<td>0.501</td>
<td>0.284</td>
<td>0.233</td>
<td>0.303</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Bloomberg</td>
<td>27,349</td>
<td>0.501</td>
<td>0.289</td>
<td>0.747</td>
<td>0.719</td>
<td>0.122</td>
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<tr>
<td>KLD</td>
<td>27,434</td>
<td>0.501</td>
<td>0.288</td>
<td>0.587</td>
<td>0.619</td>
<td>0.290</td>
<td>0.537</td>
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<tr>
<td>MSCI IVA</td>
<td>27,587</td>
<td>0.501</td>
<td>0.289</td>
<td>0.428</td>
<td>0.469</td>
<td>0.319</td>
<td>0.316</td>
<td>0.469</td>
</tr>
<tr>
<td>Average correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.462</td>
</tr>
</tbody>
</table>

Low correlation of ESG ratings across different data providers

Rating disagreement

- More profitable firms are subject to lower ESG rating disagreement
- No credit rating, more disagreement
- Larger firms might be more diversified and complex, more disagreement

Why do ESG ratings diverge?

• Eccles and Stroehle (2018) argue that ratings disagree because of differences in data vendors’ **foundining principles**, legal status, or purpose strongly influence
  – Definition of materiality of ratings (stakeholders vs. shareholders)
  – Propose a distinction between values- and value-based organizations

• Gibson, Krueger, Riand, and Steffen (2019) suggest that **legal origin** of data provider’s headquarter country should strongly influence the definition and understanding of sustainability
  – Civil law: strong views regarding labor issues and social protection
  – Common law: emphasize investor protection; stronger protection of shareholders rights, and a stronger view on other governance issues
Rewriting history

- Berg, Fabisik and Sautner (2020) compare two versions of the Refinitiv ESG data: 2018 (initial) and 2020 (rewritten)

- Columns Up and Down add up to one since no single ESG score is the same across the two data versions
The rank changes occurred in all sample years, with the most extreme rank changes materializing in the later years of the sample.

Rewriting history: ESG ratings

• A change in their ESG scoring methodology which came into effect on April 6, 2020 (link)
  – Materiality matrix: Not all ESG metrics making up the ESG scores have the same importance to every industry
  – Transparency: A changes in the treatment of unreported items: 0.5->0

<table>
<thead>
<tr>
<th>Panel A: Incremental R-Squared (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent variable</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>Time Fixed Effects</td>
</tr>
<tr>
<td>Industry Fixed Effects</td>
</tr>
<tr>
<td>Industry x Time Fixed Effects</td>
</tr>
<tr>
<td>Country Fixed Effects</td>
</tr>
<tr>
<td>“Firm level”</td>
</tr>
<tr>
<td>Sum</td>
</tr>
</tbody>
</table>

Rewriting history: ESG ratings

• The retrospective rating changes have important implications for researchers and investment professionals.

• These changes affect tests that relate ESG ratings to stock returns.
  – Albuquerque et al. (2020) show that firms with higher Refinitiv ES ratings prior to Covid-19 exhibited better stock market performance during the pandemic.
  – This study shows that when the authors classify firms based on ESG scores in the initial data download, they find no evidence that high-E&S firms performed better during Covid-19. However, if using a classification based on the rewritten data, they find strong evidence that high-E&S firms exhibited outperformance relative to other firms.

• This is an important caveat for the use of the current, and thereby rewritten, Refinitiv ESG data.

Financial materiality

- **Sustainability Accounting Standards Board** (SASB), founded in 2011, aims at providing a clear set of standards for reporting sustainability information that matters most to their investors.

- Because the SASB standards are designed from an investor viewpoint, financial materiality is the underpinning for the standard-setting process.

- The SASB standards focus on sector-specific sustainability factors.
  - e.g., regarding the environmental issues, greenhouse house emissions are a material issue for the extractives & minerals processing sector but are immaterial for the finance sector.
  - e.g., among the social issues, data security is a material issue for the consumer goods sector, but not for the transportation sector.
Example: Materiality map at sector-level: financial

Source: SASB
Example: Materiality map at sub-sector-level: financial

Source: SASB
Financial materiality

- Firms with good ratings on material sustainability issues outperform firms with poor ratings on these issues.
- In contrast, firms with good ratings on immaterial sustainability issues do not significantly outperform firms with poor ratings on the same issues.

Increasing interest in quantifying whether a firm’s products contribute to sustainable development
  – Conduct-based ESG assessments not necessarily informative in this respect

Product-based measures use segment reporting on sales to evaluate if a company’s products and services provide solutions to environmental and social challenges
  – Product based approach not necessarily new
    ▪ Early data providers interested in firm’s involvement in “controversial business” (e.g., tobacco, alcohol, …)
    ▪ Novelty: product-based approach but looking at “sustainability themes”
Product-based measure

• Builds on United Nations Sustainable Development Goals (SDGs)
  – Intergovernmental set of 17 aspiration goals with 169 specific targets that were adopted in 2015 by the UN General Assembly
  – SDGs broadly address environmental and social challenges of our time
  – Replace the 8 Millennium Development Goals (MDGs) 1990-2002

• Allows identifying companies that sell products and services that contribute positively to solving major environmental and social challenges
Example: FTSE Green Revenues

- FTSE Russell’s Green Revenues data allows identifying companies that generate revenues from environmentally oriented products and services (=green revenues)

- **Green Revenues**: revenues derived from products and services that have positive environmental utility (e.g., preventing environmental degradation, adapting to climate change, etc.)
### Green Revenues Classification System

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Bio Fuels</td>
<td>Buildings &amp; Property (Integrated)</td>
<td>Bio Fuels</td>
<td>Advanced &amp; Light Materials</td>
<td>Environmental Consultancies</td>
</tr>
<tr>
<td>Cogeneration</td>
<td>Controls</td>
<td>Cogeneration Equipment</td>
<td>Key Raw Minerals &amp; Metals</td>
<td>Finance &amp; Investment</td>
</tr>
<tr>
<td>Clean Fossil Fuels</td>
<td>Energy Management Logistics &amp; Support</td>
<td>Clean Fossil Fuels</td>
<td>Recyclable Products &amp; Materials</td>
<td>Smart City Design &amp; Engineering</td>
</tr>
<tr>
<td>Geothermal</td>
<td>Industrial Processes</td>
<td>Fuel Cells</td>
<td></td>
<td></td>
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<tr>
<td>Hydro</td>
<td>IT Processes</td>
<td>Geothermal</td>
<td></td>
<td></td>
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<tr>
<td>Nuclear</td>
<td>Lighting</td>
<td>Hydro</td>
<td></td>
<td></td>
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<tr>
<td>Ocean &amp; Tidal</td>
<td>Power Storage</td>
<td>Nuclear</td>
<td></td>
<td></td>
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<tr>
<td>Solar</td>
<td>Smart &amp; Efficient Grids</td>
<td>Ocean &amp; Tidal</td>
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<td></td>
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<tr>
<td>Waste to Energy</td>
<td>Sustainable Property Operator</td>
<td>Solar</td>
<td></td>
<td></td>
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<tr>
<td>Wind</td>
<td></td>
<td>Waste to Energy</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>Wind</td>
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</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>Aviation</td>
<td>Railways Operator</td>
<td>Advanced Irrigation Systems &amp; Devices</td>
<td>Cleaner Power</td>
</tr>
<tr>
<td>Aquaculture</td>
<td>Railways</td>
<td>Road Vehicles</td>
<td>Desalination</td>
<td>Decontamination Services &amp; Devices</td>
</tr>
<tr>
<td>Land Erosion</td>
<td>Road Vehicles</td>
<td>Video Conferencing</td>
<td>Flood Control</td>
<td>Environmental Testing &amp; Gas Sensing</td>
</tr>
<tr>
<td>Logistics</td>
<td>Shipping</td>
<td></td>
<td>Meteorological Solutions</td>
<td>Particles &amp; Emission Reduction Devices</td>
</tr>
<tr>
<td>Food Safety, Efficient Processing &amp; Sustainable Packaging</td>
<td></td>
<td></td>
<td>Natural Disaster Response</td>
<td>Recycling Equipment</td>
</tr>
<tr>
<td>Sustainable Plantations</td>
<td></td>
<td></td>
<td>Water Infrastructure</td>
<td>Recycling Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Water Treatment</td>
<td>Waste Management</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Water Utilities</td>
<td></td>
</tr>
</tbody>
</table>

**10 SECTORS**

**64 SUBSECTORS**

**133 MICRO SECTORS**

Source: FTSE Russell
**Reading list**

Reading list

• Mackintosh, J.: 2018, Is Tesla or Exxon more sustainable? it depends whom you ask, Wall Street Journal . URL: https://on.wsj.com/2MQCC4m
• Wigglesworth, R.: 2018, Rating agencies using green criteria suffer from ’inherent biases’, Financial Times. URL: https://on.ft.com/2H5E0kJ