

Environmental data and scores

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The views expressed herein are those of the speaker and do not necessarily represent the views of the Bank of Italy.

Introduction

Back to the Salone.SRI 2022 - ESG under scrutiny

- Do ESG scores allow investors to identify the most sustainable companies?
- Different assessments for the same company: confusion or complementarity?

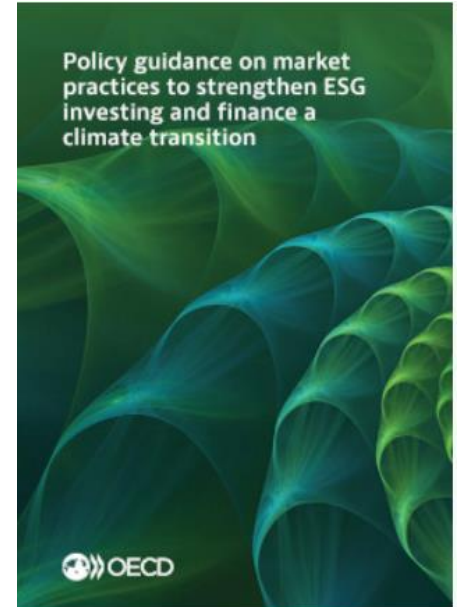
2023. Research on environmental data and scores

Motivation

Concerns about growing climate change risk and environmental degradation

Request for more quality and consistency about climate and environmental scores

Greenwashing



Nature-related Financial Risks: a Conceptual Framework to guide Action by Central Banks and Supervisors

September 2023

The final TNFD recommendations

Governance

Disclose the organisation's governance of nature-related dependencies, impacts, risks and opportunities.

Strategy

Disclose the effects of nature-related dependencies, impacts, risks and opportunities on the organisation's business model, strategy and financial planning where such information is material.

Risk & impact management

Describe the processes used by the organisation to identify, assess, prioritise and monitor nature-related dependencies, impacts, risks and opportunities.

Metrics & targets

Disclose the metrics and targets used to assess and manage material nature-related dependencies, impacts, risks and opportunities.

Environmental data and scores: Lost in translation, mimeo (2023)

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Focus

Assess the **link between E-row indicators and E-scores**.

Environmental and climate-related measures among ESG profiles have become the most prominent given the rising awareness of the urgency of climate-change

Research questions

1. How much the E-scores rely on E-data?
Is there a judgmental component?
2. Can investors set a classification based on raw data in line with E-scores?

Related literature

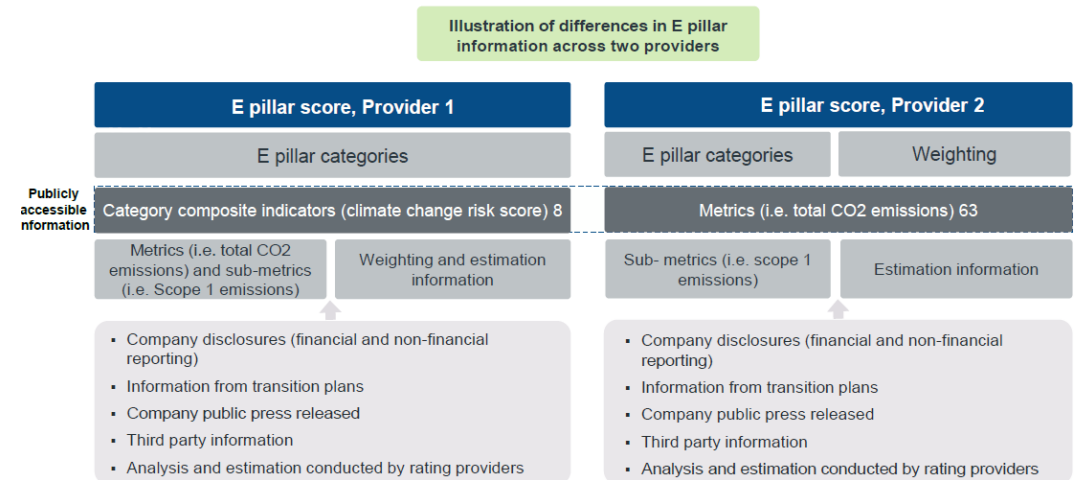
1. **Effects of ESG profiles on business performance and corporate evaluation**
(Friede et al, 2015; Atz et al, 2023; Lanza et al, 2020)
2. **Divergences in ESG scores** are widely documented (Berg et al, 2019 ; Billio et al., 2021)
The correlation among ESG ratings at around 60%, lower than the nearly over 90% correlation among credit ratings.

The divergence of ESG scores can derive from **Scope, Measurement, Weights** but it could depends also on:

- (i) **different concept of materiality**
- (ii) **weaknesses of the sustainability reporting**

Complementarity or confusion?

Not necessarily some providers are always wrong and someone else is always right about ratings. Different point of view and different methods may complement each other, if properly combined



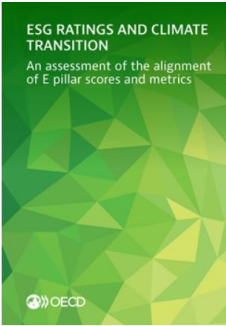
OECD (2022), 'Esg ratings and climate transition. an assessment of the alignment of e pillar scores and metrics'

3. Few studies focus on E-data and scores, considering multiple providers and years

OECD (2022). A disconnect between E-scores and the raw data is found. There are areas to improve the alignment of E-pillar scores to low-carbon objectives and to give higher weight to forward-looking climate measures.

Lee et al. (2020). Some E-indicators (e.g. carbon emissions) have long-lasting effects because they tend to accumulate, while the G indicators are more influential in the short term.

Papadopoulos (2022). Discrepancies in GHG emissions data among providers across time and sectors. Such discrepancies (a) increase moving from direct to indirect emissions and (b) can translate into diverging carbon performance assessments and might affect E-pillar scores and the ESG ratings as a whole.



Environmental data and scores

Initial set. 209 environmental raw metrics

Collinearity. Selection of 62 variables

Key themes

1. carbon emissions
2. climate and environmental
3. energy
4. green/clean opportunities
5. waste and pollution
6. water and biodiversity

Listed equities in the euro area market

211 constituents of Eurostoxx index

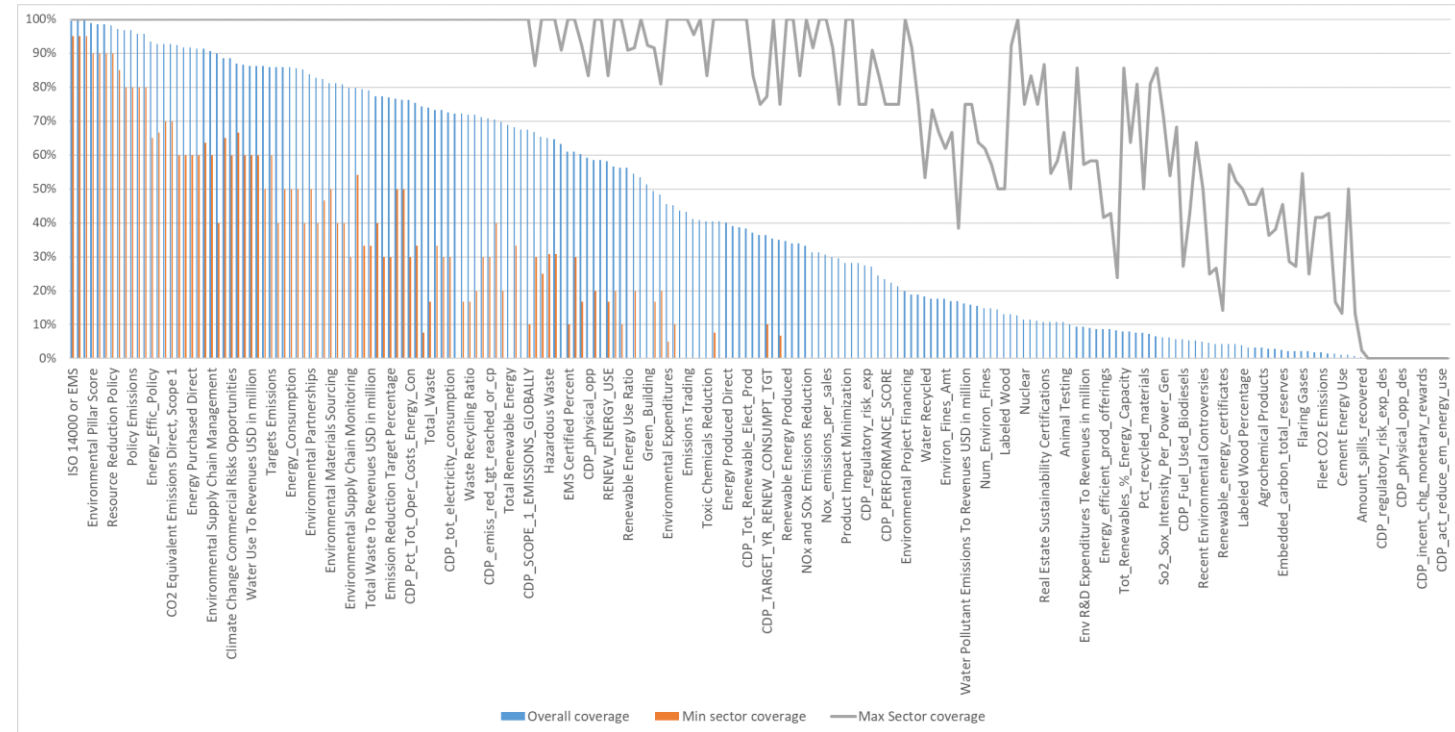
2011 - 2021, all sectors except financials

E-scores of 7 data providers

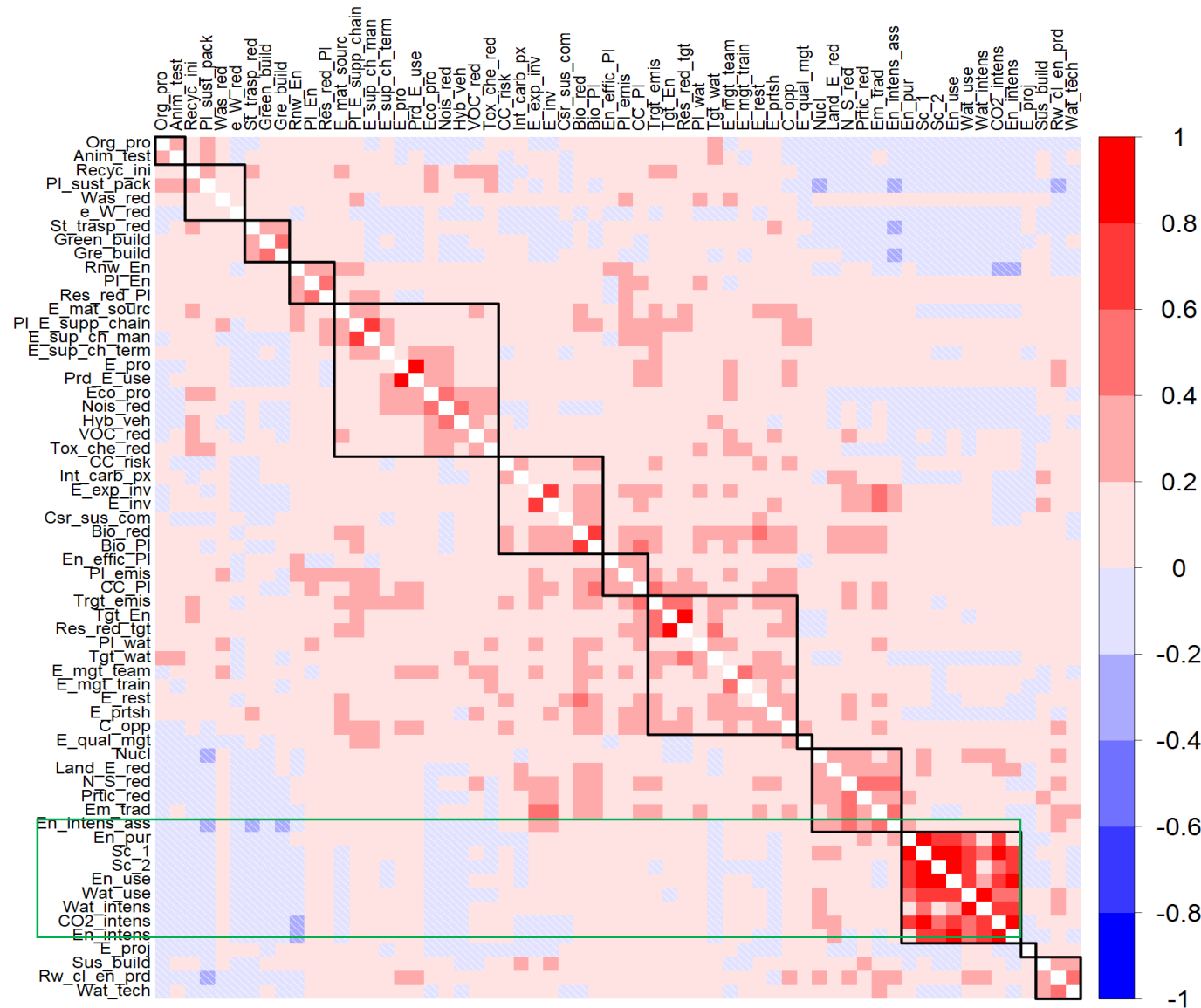
MSCI, Bloomberg, ISS, RobecoSAM/S&P, Sustainalytics

CDP-Carbon Disclosure Project, Datastream-Asset4

Data coverage varies per metric and sector

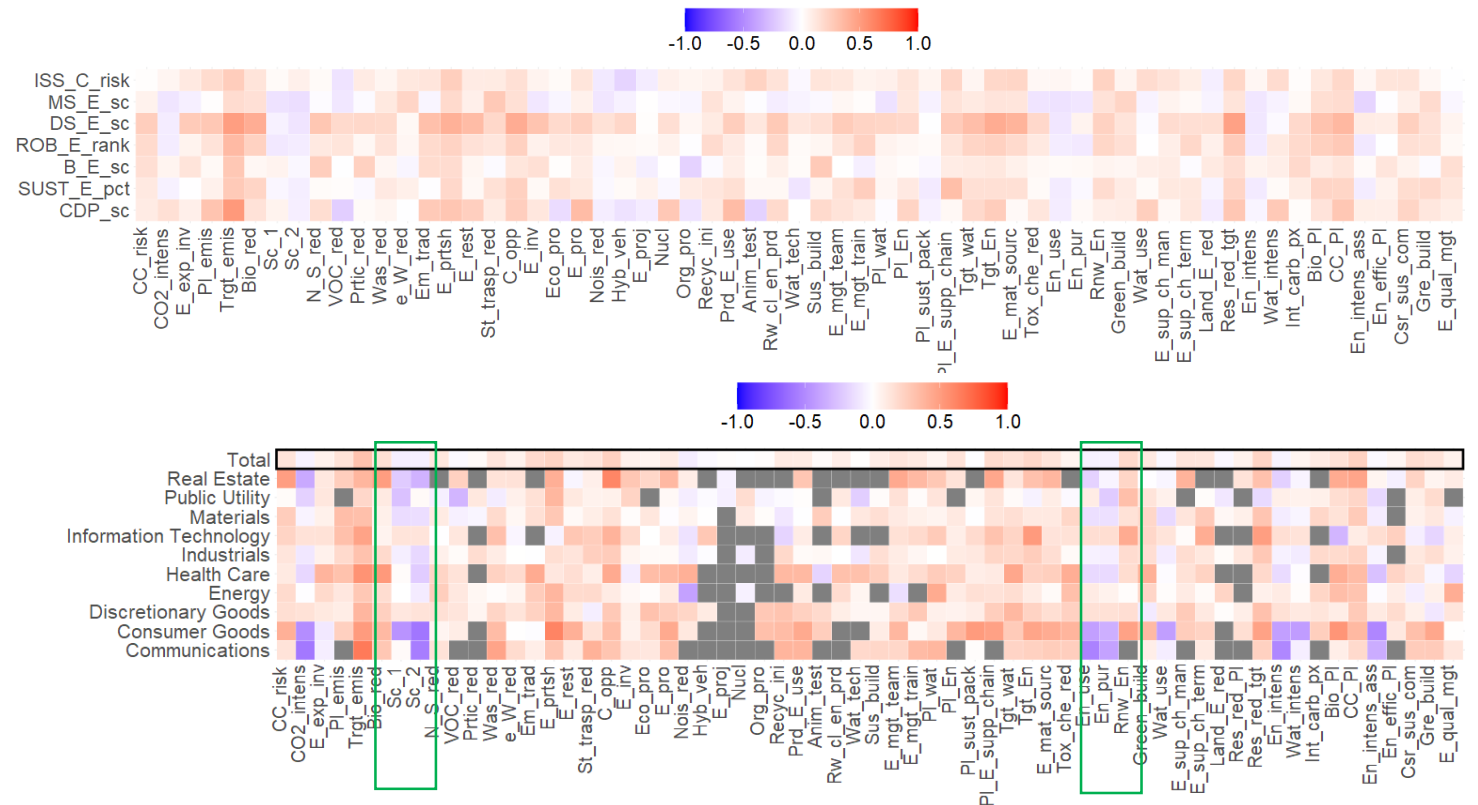
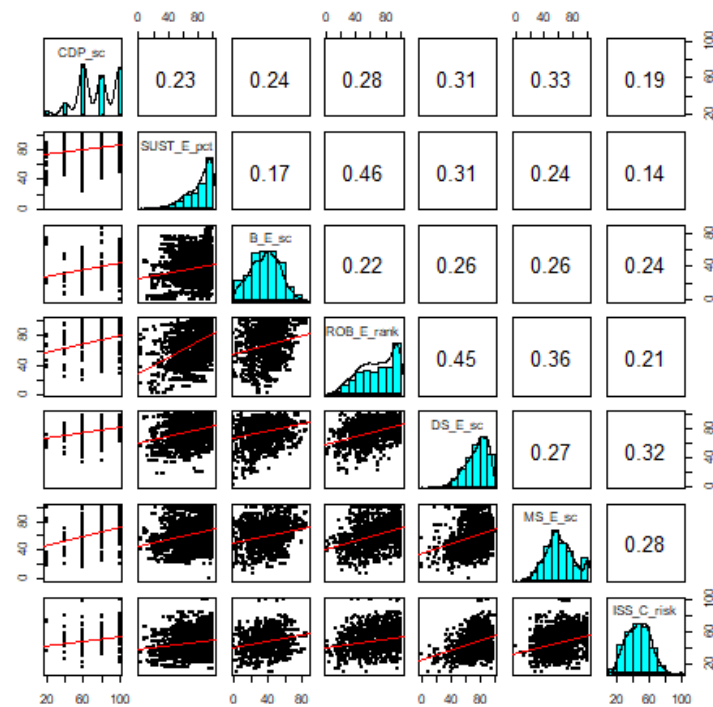


Environmental data and scores



Environmental data and scores

- E-scores' average correlation (0.14-0.46, around 0,27 on average) vs credit rating correlation (0.7-0.9)
- Low correlation seems dependent on the (skewed) shape of the score distribution.
That can depend on heterogeneity of providers' methodologies
- Some raw data are more relevant for some **providers** and in specific **sectors**

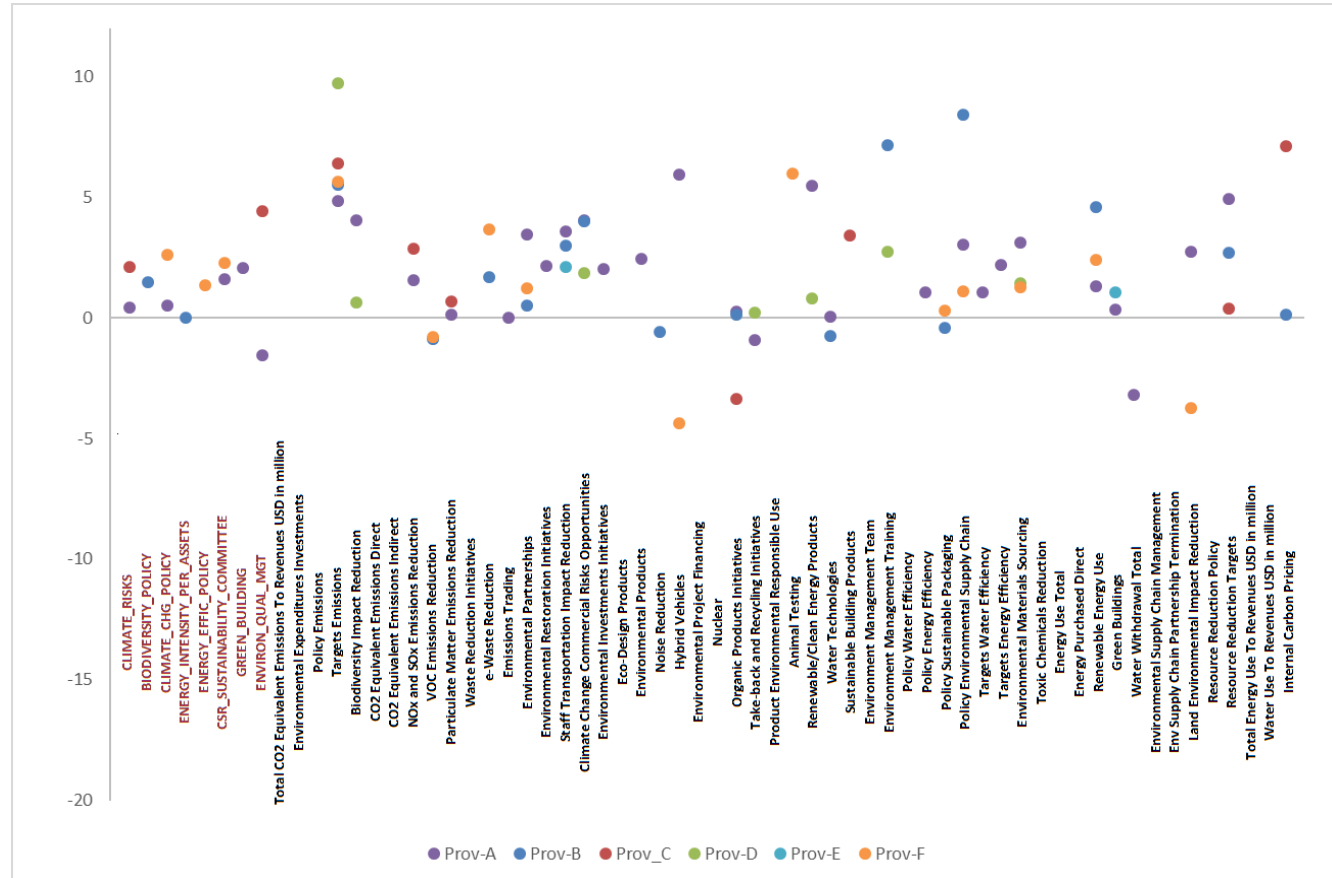


Research question: How much the E-scores rely on raw data?

Regression analysis (Lasso and Quantile regressions)

- The more significant variables show the higher explanatory power
- The most meaningful variables are common across E-scores:
targets for emissions and resource use, environmental and renewable energy policies
- For some variables different parameters may hint to different materiality among providers

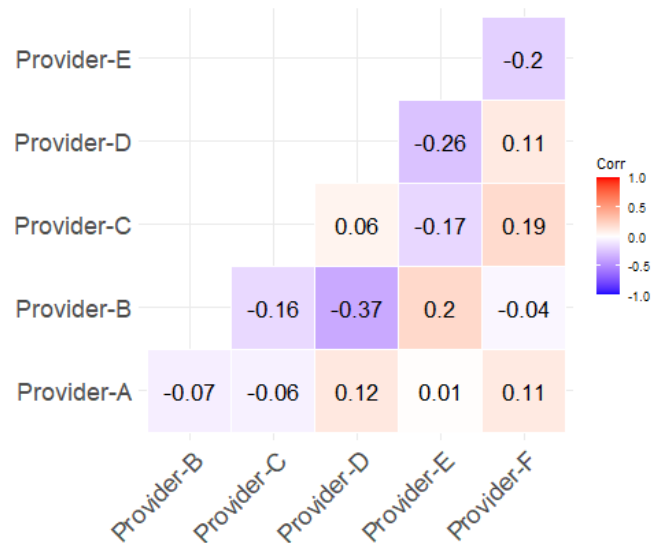
Provider	No. Variables	R^2	Correlation
Provider-A	31	62%	0.76
Provider-F	14	21%	0.48
Provider-B	17	20%	0.49
Provider-C	9	17%	0.46
Provider-D	7	13%	0.44
Provider-E	2	3%	0.29



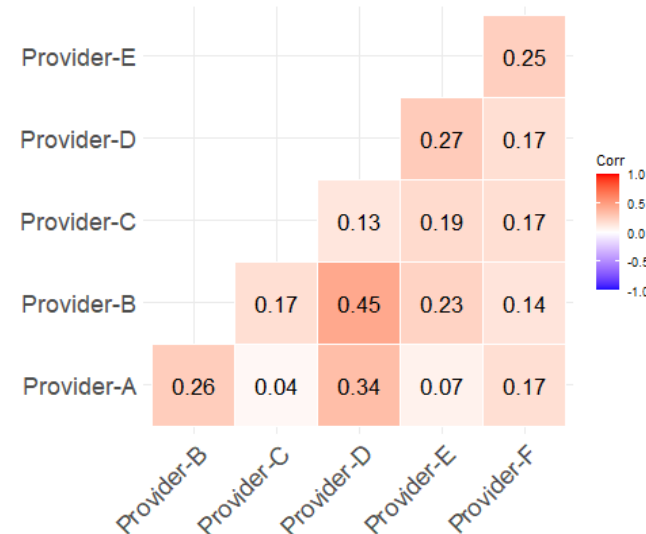
Research question. Is there a judgmental component?

Unexplained component

- Environmental scores are only partially explained by raw data
- Given the rich dataset, unknown factors (qualitative judgment) could play a role
- Latent variables appear not related to each other
 - ❖ different sustainability definitions and focus (risk, impact, both)
 - ❖ different raw data treatment (non-linearity or judgmental considerations)



CORRELATION OF LATENT VARIABLES



CORRELATION OF E-SCORES

Research question. Can investors set a classification based on raw data?

Classification

Two techniques (LDA and KNN)

Three E- classes based on actual E-scores
(worst, intermediate, best, 20%/60%/20%)

Training (2-year time window, 2017-2020) and Testing (1-year, 2019-2021)

- KNN consistently outperforms the LDA in classifying
- Promising results for the **correlation between actual and rule-based E-classes**

Portfolio simulations

Exclusion strategy. Tilting market portfolio by filtering out worst-rated companies, reinvesting proceeds into best- and intermediate-rated companies within each sector

Best-in-class. Investing only in best-rated companies within each sector

- Portfolio E-scores slightly lower than those built upon the providers' scores
- Higher TEV for the best-in-class strategy, different risk-adjusted returns
- Return patterns differentiated by providers (financial materiality)

KNN

Provider	Correlation
Provider-A	0.68
Provider-B	0.45
Provider-C	0.46
Provider-D	0.54
Provider-E	0.68
Provider-F	0.48

LDA

Variable	Correlation
Provider-A	0.67
Provider-B	0.28
Provider-C	0.49
Provider-D	0.40
Provider-E	0.50
Provider-F	0.20

Conclusions

- Raw data have meaningful, although **limited**, explanatory power for the E-scores
 - Some providers rely more on raw data than others
- The unexplained component (judgmental assessment) is uncorrelated among providers. It maybe due to **different focus** of assessment (risk, impact, double materiality)
 - Investors need to carefully select providers that fit for their SRI preferences
- By simplifying the environmental assessment into discrete grading system improves predictability and help investors to set 'green' equity strategies
- Environmental grading reliant only on raw data would allow to extend the assessment to cover companies not rated by providers (perspective EU CSRD)
- Improving **data disclosure** and **providers' transparency** is key for investors and authorities, fostering the development of sustainable finance
 - The EU proposal on ESG rating providers goes in this direction

Thank you for your attention!

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