

Constructing forward-looking climate-related data

Maurice Fehr and Elena Triebkorn, Sustainable Finance Data Hub, Directorate General Statistics

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Introduction

Constructing forward-looking climate data

1. Why forward-looking data? – Excerpts and results from relevant publications
2. Results from work on the constructing of forward-looking climate-related physical risk indicators
3. Challenges and way forward

1. Why forward-looking data?

Excerpts and results from relevant publications

The Network on Greening the Financial System (NGFS) published a progress report on its Bridging Data Gaps Workstream in May 2021:

- Persistent gaps in climate-related data hinder the achievement of these objectives. Stakeholders report the **need for more forward-looking data** (for example targets or emissions pathways) and granular data (for example geographical data at entity and asset-levels).
- Given the importance of forward-looking assessments of both physical and transition risks, the **current reliance on mostly backward-looking data is unsatisfactory**. Stakeholders reported that they need to understand the point-in-time performance of an exposure against a transition pathway – hence the need for firms to disclose their transition plans – as well as the impact of adaptation and mitigation measures on the evolution of the risks.

The Irving Fisher Committee on Central Bank Statistics (IFC) released a report on Sustainable finance data for Central Banks in December 2021:

- **Many indicators are backward-looking**, it is useful to **complement them with forward-looking data to track commitments towards a greener economy**.
- In general, forward-looking metrics seem to be a **newer area of analysis** for many central banks, with their actual use remaining limited so far.

2. Constructing forward-looking climate-related physical risk indicators

Underlying data and research question

- Bundesbank acquired a **variety of climate-related indicators**. From the same two data providers, we have **physical risk data at the company level** available for internal analysis.
- In one case, the data set consists only of **physical risk scores**; in the other case, it also includes the **underlying financial risks**.
- Both data sets are **forward-looking** and use the IPCC's **Representative Concentration Pathways (RCPs)** that represent different levels of global warming. They can be loosely translated into: **low** (RCP 2.6), **medium** (RCP 4.5) and **high** (RCP 8.5) **levels of global warming**.
- Bundesbank Sustainable Finance Data Hub (Maurice Fehr and Elena Triebkorn) together with Jens Mehrhoff (IMF) are exploring the question:

How can we use existing climate data from private data providers to extract relevant forward-looking aggregates at a sector and/or country level?

2. Constructing forward-looking climate-related physical risk indicators

Coverage Physical Risk from ISS ESG

Number of companies in the ISS physical risk dataset by country* and NACE sector	A	B-E	including:	F	G-I	J	K	L	M-N	O-Q	R-S
			C								
United States	Red	Green	Green	Orange	Yellow	Yellow	Green	Yellow	Yellow	Orange	Orange
Euro Area	Orange	Green	Green	Orange	Yellow	Yellow	Yellow	Yellow	Yellow	Orange	Orange
Japan	Orange	Green	Green	Yellow	Green	Yellow	Yellow	Yellow	Yellow	Orange	Orange
United Kingdom	Red	Yellow	Yellow	Orange	Orange	Orange	Orange	Orange	Orange	Red	Orange
Canada	Orange	Yellow	Yellow	Red	Orange	Orange	Orange	Orange	Orange	Orange	Red
Other AE	Orange	Green	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Orange	Orange
China	Orange	Green	Green	Orange	Yellow	Yellow	Orange	Yellow	Orange	Orange	Orange
India	Orange	Green	Green	Orange	Red						
Other EMDE Asia	Orange	Green	Green	Yellow	Yellow	Orange	Yellow	Yellow	Orange	Orange	Orange
EMDE Europe	Red	Yellow	Yellow	Orange	Orange	Orange	Orange	Orange	Orange	Red	Red
EMDE Latin America Caribbean	Orange	Yellow	Yellow	Orange	Red						
EMDE Middle East and Central Asia	Orange	Yellow	Yellow	Red	Orange	Orange	Yellow	Orange	Red	Orange	Red
EMDE Sub-Saharan Africa	Orange	Orange	Orange	Red	Orange	Orange	Orange	Orange	Red	Red	Red
Rest of the World	Orange	Green	Yellow	Orange	Yellow	Orange	Yellow	Yellow	Orange	Orange	Orange

*Regional aggregates based on the classification from the IMF's World Economic Outlook April 2022

	= not enough issuers for aggregation
	= not enough issuers for statistical analysis
	= barely enough issuers for statistical analysis
	= enough issuers for statistical analysis

2. Constructing forward-looking climate-related physical risk indicators

Preliminary results

- The **coverage for many sector-country-combinations is too low** to construct aggregate indicators.
- Therefore, we **further aggregate the countries and regions** into an AE (Advanced Economies) group and an EMDE (Emerging Markets and Developing Economies) group.
- The next slide shows **physical risk indicators for sector-group combinations** and for **two climate scenarios** from the IPCC 5th Assessment Report, RCP4.5 being the more optimistic scenario, RCP8.5 the more pessimistic one.

2. Constructing forward-looking climate-related physical risk indicators

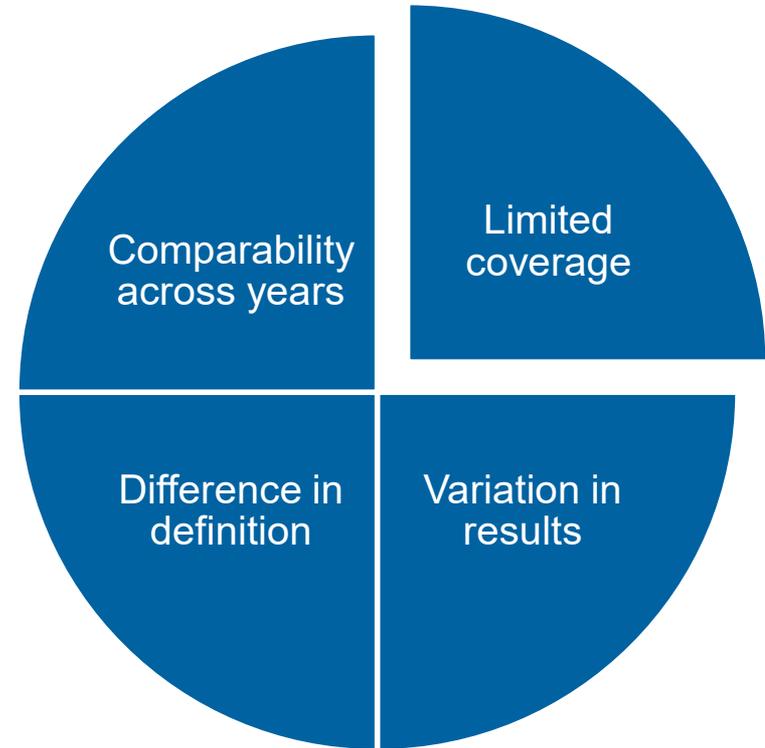
Preliminary results

Total annual physical risk in % of revenue by sector and country group	Advanced Economies		Emerging Markets & Developing Economies	
	RCP 4.5	RCP 8.5	RCP 4.5	RCP 8.5
A	0.37%	0.53%	0.69%	0.98%
B, D, E	0.31%	0.40%	0.75%	1.02%
C	0.17%	0.24%	0.46%	0.64%
F	0.08%	0.12%	0.26%	0.37%
G-I	0.10%	0.15%	0.44%	0.64%
J	0.12%	0.16%	0.63%	0.86%
K	0.12%	0.17%	0.48%	0.68%
L	0.35%	0.47%	0.47%	0.68%
M-N	0.11%	0.16%	0.48%	0.68%
O-Q	0.11%	0.15%	0.76%	1.09%
R-S	0.15%	0.20%	0.81%	1.14%

3. Constructing forward-looking climate-related physical risk indicators

Challenges

- One main issue is **limited coverage** in company level data.
- The **variation** between the data of different providers is high, similar to other composite indicators.
- The hazard types covered and their **definitions are not consistent** across data providers and therefore need to be taken into account when analysing results.
- Physical risk metrics should be comparable across years and scenarios and **reflect financial damages**.



3. Constructing forward-looking climate-related physical risk indicators

Way forward

- Central banks could be a good place to construct physical risk indicators by **combining climate-related with financial data**, which is available in central banks (in the Eurosystem: Analytical Credit Datasets, Security Holding Statistics, Centralised Securities Database).
- In the **short to medium-term**: Making use of existing **enterprise-level data from private sources. Combining them with public data** can bridge data gaps.
- In the **longer-term**: To **be more precise** on detailed physical risks and their financial implications we would need:
 - **New skills**: GIS (Geographic Information System) knowledge required to work with climate-related data on a granular level and close cooperation with climate experts.
 - **Granular financial data**: Exact locations of collateral, counterparties and their branches / facilities as well as their valuation. In addition, data on households is limited.

Thank you for your attention!

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