

Constructing forward-looking climate-related data

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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											
Euro Area											
Japan											
United Kingdom											
Canada											
Other AE											
China											
India											
Other EMDE Asia											
EMDE Europe											
EMDE Latin America Caribbean											
EMDE Middle East and Central Asia											
EMDE Sub-Saharan Africa											
Rest of the World											

*Regional aggregates based on the classification from the IMFs 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

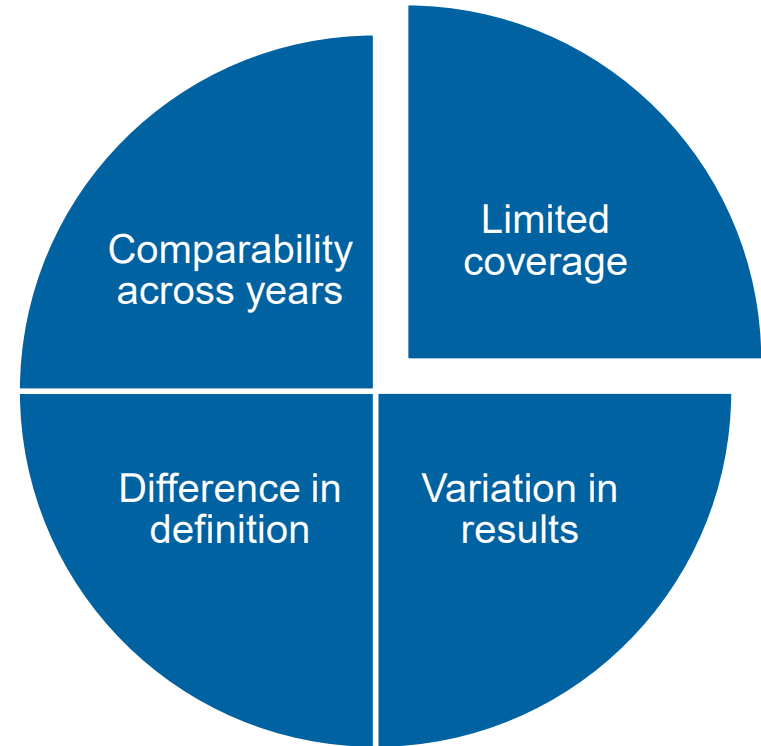
Preliminary results

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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