EUROPEAN CENTRAL BANK
EUROSYSTEM

# Information about Climate Transition Risk and Bank Lending

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## EBA Research Workshop

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**Paris,**
**November 19 2025**

# Motivation

- Green transition can affect firm solvency
- Empirical evidence: banks price transition risk
  - Publicly traded firms with of voluntary carbon emissions disclosure face lower cost of debt (Kleinmeier & Viehs, 2016)
  - Firms affected by transition risk pay higher interest rates, have shorter loan maturities, lower access to permanent forms of bank financing (Ivanov, 2021)
  - Higher interest rates paid by high carbon emitter firms after Paris agreement; premium is very small 3-7 bps (Ehlers et al., 2022)
- Banks maintain high lending to high emission sectors – costly information acquisition to assess transition risk?

# This paper

Role of bank specialization in the pricing of transition risk

- ❑ Empirical analysis on the heterogeneity of firm loans spreads by bank specialization and exposure to transition risk ~ 60 000 syndicated loans (Dealscan); 2,031 firms
- ❑ Role of bank specialization analyzed in a model of costly screening

Main results empirical analysis

- ❑ Specialized banks charge higher lending rates to firms with higher regulatory exposure, weaker effect after financial stress
- ❑ Specialized banks charge higher lending rates to high-emission firms after a carbon policy shock
- ❑ Effect insignificant after an oil supply shock

# This paper

Main results theoretical model

- ❑ Lender's underreaction to high quality public information (e.g. oil price shock) narrows interest rate differential between exposed and not exposed firms
- ❑ This effect more pronounced in periods when the borrower quality is low

# Overall asessment

- Interesting paper analyzing an important question: pricing of transition risk by banks supports green transition without increasing risks to financial stabilty
- Extensive empirical analysis nicely linked to the theoretical model

Main comments

1. Possible identification issues for transition risk exposure
2. Transmission mechanism oil supply shocks
3. Perception of transition risk by banks
4. Transition risk highly uncertain: noisy signals about bank transition risk plausible

# Comment 1: Identification of transition risk

TABLE 5. Regression of AISD (bps) on Emission Intensity

| | All-in-spread-drawn (bps) | | |
|---|---|---|---|
| | All | EU | US |
| Log (Scope 1 and 2 emission intensity)$_{t-1}$ | 2.13 | -14.04 | -2.16 |
| | (2.29) | (7.56) | (2.92) |
| Specialization$_{t-1}$ | -36.19 | 73.55 | -36.93 |
| | (42.23) | (93.13) | (40.40) |
| Log (Emission Intensity)$_{t-1}$ × Specialization$_{t-1}$ | 4.05 | -24.23 | 11.31 |
| | (8.60) | (20.32) | (8.62) |
| Firm-level controls | ✓ | ✓ | ✓ |
| Loan-level controls | ✓ | ✓ | ✓ |
| $R^2$ | 0.82552 | 0.94970 | 0.79503 |
| Observations | 51,666 | 8,251 | 36,031 |
| Borrower F.E. | ✓ | ✓ | ✓ |
| Lender-Year F.E. | ✓ | ✓ | ✓ |
| Industry-Year F.E. | ✓ | ✓ | ✓ |
| Deal-Purpose F.E. | ✓ | ✓ | ✓ |

Bank may only price scope 1 emissions

(Ehlers et al., 2022).

# Comment 1: Identification of transition risk

TABLE 8. Regression of AISD (bps) on Emission Intensity and Oil Supply News Shocks (All)

| | All-In-Spread-Drawn (bps) | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Log (Scope 1 and 2 emission intensity)$_{t-1}$ | 2.22 | 2.05 | 1.95 | 2.39 |
| | (2.33) | (2.31) | (2.34) | (2.29) |
| Specialization$_{t-1}$ | -51.36 | -36.80 | -40.41 | -40.73 |
| | (41.94) | (42.49) | (43.32) | (42.08) |
| Oil Supply News Shock$_{t-1}$ | 25.92 | | | |
| | (13.78) | | | |
| Specialization$_{t-1}$ × Oil Supply News Shock$_{t-1}$ | 292.40* | | | |
| | (127.03) | | | |
| Log (Scope 1 and 2 emission intensity)$_{t-1}$ × Oil Supply News Shock$_{t-1}$ | -4.91 | | | |
| | (2.69) | | | |
| Log (Scope 1 and 2 emission intensity)$_{t-1}$ × Specialization$_{t-1}$ | 8.85 | 4.04 | 6.37 | 5.24 |
| | (8.80) | (8.62) | (8.59) | (8.41) |
| Log (Scope 1 and 2 emission intensity)$_{t-1}$ × Specialization$_{t-1}$ × Oil Supply News Shock$_{t-1}$ | -70.72** | | | |
| | (26.53) | | | |
| Oil Supply News Shock$_{t-2}$ | | -17.04 | | |
| | | (12.77) | | |
| Specialization$_{t-1}$ × Oil Supply News Shock$_{t-2}$ | | 163.70 | | |
| | | (127.01) | | |
| Log (Scope 1 and 2 emission intensity)$_{t-1}$ × Oil Supply News Shock$_{t-2}$ | | 4.54 | | |
| | | (2.45) | | |
| Log (Scope 1 and 2 emission intensity)$_{t-1}$ × Specialization$_{t-1}$ × Oil Supply News Shock$_{t-2}$ | | -39.09 | | |
| | | (28.60) | | |

- ❑ Correlation between carbon policy shocks and oil supply news shocks is low: better use carbon policy shocks?

# Comment 1: Identification of transition risk

TABLE 17. Regression of AISD (bps) on Emission Intensity and Carbon Price Shocks (EU)

| | All-In-Spread-Drawn (bps) | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Log (Scope 1 and 2 emission intensity)$_{t-1}$ | -2.27 | 2.23 | -0.40 | -3.33 |
| | (8.11) | (6.26) | (7.44) | (8.60) |
| Specialization$_{t-1}$ | 75.52 | 78.39 | 3.49 | -8.02 |
| | (102.27) | (90.00) | (73.07) | (66.57) |
| Carbon Price Shock$_{t-1}$ | 81.32 | | | |
| | (79.19) | | | |
| Specialization$_{t-1}$ × Carbon Price Shock$_{t-1}$ | -93.55 | | | |
| | (227.38) | | | |
| Log (Scope 1 and 2 emission intensity)$_{t-1}$ × Carbon Price Shock$_{t-1}$ | -37.11 | | | |
| | (20.57) | | | |
| Log (Scope 1 and 2 emission intensity)$_{t-1}$ × Specialization$_{t-1}$ | -27.93 | -27.76 | -15.42 | -12.75 |
| | (22.66) | (19.80) | (14.50) | (14.55) |
| Log (Scope 1 and 2 emission intensity)$_{t-1}$ × Specialization$_{t-1}$ × Carbon Price Shock$_{t-1}$ | 42.31 | | | |
| | (49.32) | | | |
| Carbon Price Shock$_{t-2}$ | | -172.99** | | |
| | | (65.54) | | |
| Specialization$_{t-1}$ × Carbon Price Shock$_{t-2}$ | | 108.16 | | |
| | | (230.93) | | |
| Log (Scope 1 and 2 emission intensity)$_{t-1}$ × Carbon Price Shock$_{t-2}$ | | 33.31* | | |
| | | (16.54) | | |
| Log (Scope 1 and 2 emission intensity)$_{t-1}$ × Specialization$_{t-1}$ × Carbon Price Shock$_{t-2}$ | | -47.08 | | |
| | | (42.59) | | |

- Carbon policy shock seems to matter for high-intensity firms, irrespective of specialization

# Comment 2: Transmission mechanism oil supply shocks

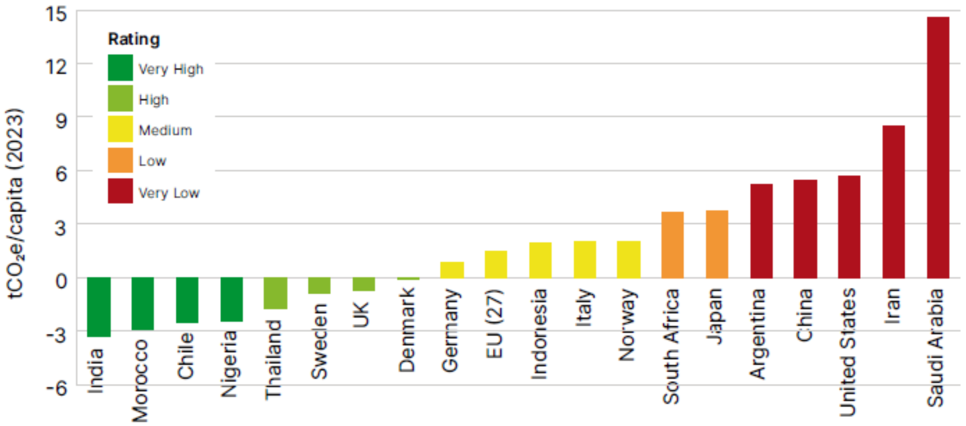
- Oil supply shocks only affect macroeconomic variables with a lag (Kanzig, 2021: peak negative effect after 30 months)
- Macroeconomic variables affect firm solvency with a lag
- Sluggishness in the repricing of loans to be expected (& no reaction for existing loans)

# Comment 3: Transition risk may be low

Climate Change Performance Index 2025

- ❑ Most countries have emissions exceeding the Paris temperature goal
- ❑ Nineteen EU countries receive a low or very low rating for climate policy
- ❑ No country receives a high rating for national climate policy

**Implementation Gap:** Current Level of GHG Emissions per Capita* Compared to Paris-Aligned Pathways

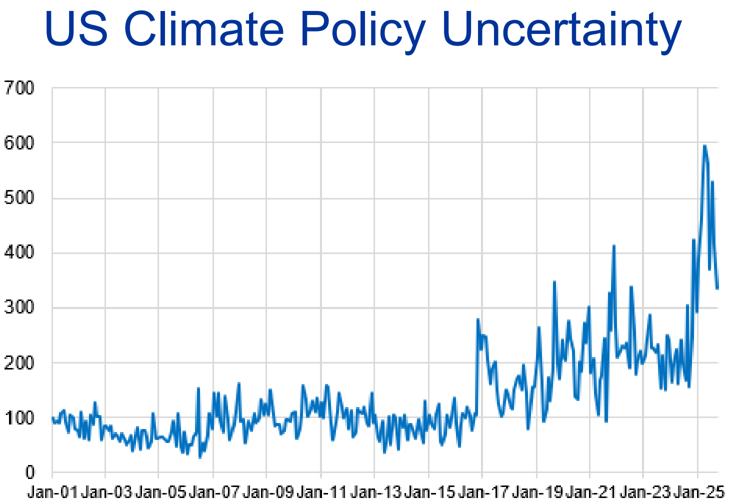



Source: Germanwatch 2025, Climate Change Performance Index, https://ccpi.org/download/climate-change-performance-index-2025/

# Comment 4: Impact of noisy signals about bank transition risk on model results

- ❑ Model assumes informative signal about bank transition risk
- ❑ Noisy signal on transition risk seems very plausible since uncertainty on climate policies is very high
- ❑ Private information may have higher precision during periods of distress due to herding effects (Banerjee, 2025)

-> Lender's underreaction may be rational if public signal is noisy




Source: Gavriilidis (2021)
https://www.policyuncertainty.com/climate_uncertainty.html

# Minor comments

- Rather small sample (2,031 firms) - for comparison, Orbis ~ 6 million firms Anacredit ~ 20 million loans per period – perhaps consider DiD approach with credit register data?
- Motivation for developing theoretical model and interpretation of results could be sharpened

Thank you for your attention!

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