# Embedding Sustainability in Credit Risk Assessment

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## Session III - Climate Impact on Firm Credit Risk


Discussant

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# Objectives of the two papers

**General empirical question:** whether and how key measures of firm-level credit risk are influenced by firms' climate-related indicators

- credit ratings issued by rating agencies ⟸ transition risk (Carbone and others)
  - credit ratings: Standard and Poors (S&P) and Moody's
  - transition risk : GHG emissions (both current and forward-looking emission reduction targets)
- market-implied distance-to-default ⟸ transition risk (Carbone and others)
  - distance-to-default: non-financial corporations included in the S&P 500 and STOXX Europe 600 indices
  - transition risk: GHG emissions (both current and forward-looking emission reduction targets)
- term structure of default probabilities estimates ⟸ ESG scores (Ferriani and Pericoli)
  - default probabilities (1, 3, 5 and 10 year): Moody's Expected Default Frequency (EDF) for European listed non-financial corporations (Eurostoxx 600 stock market index from 2014 to 2022)
  - ESG scores: Annual ESG ratings from Refinitiv

# Main results (Carbone and others)

- ✓ In line with the existing literature, higher GHG emission levels and intensities tend to be associated with higher credit risk as assessed by both rating agencies and financial markets.
- ✓ Impact of transition risk on credit risk was larger for firms domiciled in Europe than in the US after the Paris agreement
- ✓ Strong results on the relevance of the act of self-disclosing GHG intensities: firms which disclose such information do report better credit ratings than their non-disclosing peers
- ✓ Strong evidence that firms who have adopted a forward-looking target to cut emissions have lower credit risk under both of credit risk metrics (Disclosing an emission reduction target is recognised both by rating agencies and market participants)
- ✓ The magnitude of the act of disclosure is comparable to that for committing to a forward-looking emission reduction target. And it is underlined that making a forward-looking commitment is only partially correlated with the act of disclosing emissions.
- ✓ Firms with an emission reduction target have tended to reduce their emission intensity by more than firms that did not disclose a target
- ✓ The magnitude of most of the effects is also economically meaningful

# Main results (Ferriani and Pericoli)

- ✓ Companies' ESG scores affect their corporate PDs, even after controlling for current and expected financial variables

- ✓ Magnitude of the effects: A one standard deviation increase in the ESG score is associated with a probability of default that is about 4 basis points lower at one year, but the magnitude of the effect increases by up to 15 basis points for the 10-year horizon
(baseline results are consistent with dynamic estimates)

Impact of ESG scores on corporate PDs - baseline estimates

| VARIABLES | (1)<br>PD 1 | (2)<br>PD 3 | (3)<br>PD 5 | (4)<br>PD 10 |
|---|---|---|---|---|
| ESG score | -0.039*** | -0.069*** | -0.093*** | -0.153*** |
| | (0.003) | (0.004) | (0.004) | (0.003) |

- ✓ The impact of ESG score is more noticeable as the time horizon for the probability of default increases (consistent with ESG scores being indicative of longer-term risk)

- ✓ Robustness: the main findings remain consistent despite various model perturbations, sample partitions, and alternative ESG rating definitions (Robeco, Bloomberg and Sustainalytics)

- ✓ ESG scores are negatively related to the risk premium, suggesting that investors demand higher compensation for holding shares of companies with higher sustainability risks. Moreover, the relationship between ESG scores and risk premiums is also highly variable over time.

# Comments and Questions (1 of 2)

1. Quality of climate-related causal factors: definition and measurement

- Transition risk: multidimensionality to consider
  - policy and regulatory uncertainty
  - direct financial effects
  - demand substitution
  - technology developments

  Can this multidimensionality be summarized by a single proxy (for istance, GHG emission)?

- Forward looking indicators: allow to consider transition path in order to improve transition risk measurement.

  How to strengthen the credibility of targets and their assurance?
  Is it enough the CSRD framework (considering action plan for material matters)?
  Any regulatory incentive mechanism?

- ESG scores: important caveats exist regarding the use of ESG scores
  - meaning
  - time horizon
  - incomparability
  - low correlation

  Which kind of climate causal factor is ESG score (only E) measuring?

# Comments and Questions (2 of 2)

2. Time horizon of the effects

   - Carbone and others:
     - agency ratings are “through the cycle” (long run), instead distance-to-default (DtD) is a short run credit risk indicator
     - the empirical effects of GHG emissions on agency’s ratings and DtD are not directly comparable

     Is GHG emission a short or long term transition risk indicator?

     To address this issue, time horizon of transition risk factors can be related to transition plan

   - Ferriani and Pericoli: ESG score effect is significant also for short run PD (1 year)
     - disentanling short and long run climate risk factors is key to support decision making (credit risk management, origination, pricing, etc)

     Is it possible to distinguish sub-scores affecting short-term and long-term PD?

3. Bias of the effects (material under-estimate of climate-related credit risk) and related mispricing of climate risk

   Which criteria to define unbiased estimate of climate-related credit risk?