

## The Climate-Biodiversity-Pollution nexus: The pricing of environmental credit risks for European industrial polluters

### Abstract

Environmental risks, particularly those related to pollution, climate change, and biodiversity loss, are emerging as critical factors in credit risk assessment. However, there remains limited empirical evidence on how financial institutions incorporate these risks into their credit scoring and lending practices. While regulatory frameworks like the EU Sustainable Finance legislation increasingly require consideration of environmental exposures, it remains unclear whether and how banks are adjusting their credit allocation, risk pricing, and collateral requirements for industrial polluters.

This study examines the lending practices of approximately 700 euro area banks to 6,000 major industrial polluters using a comprehensive loan pricing analysis framework. We leverage the European Pollutant Release and Transfer Register (E-PRTR) database containing facility-level data on 91 pollutants and develop novel metrics that capture multiple dimensions of environmental credit risk: greenhouse gas emissions, freshwater ecotoxicity, and waste transfers. This approach allows us to analyze how banks incorporate these environmental credit risks into their lending decisions, providing empirical evidence on environmental risk integration in credit scoring processes.

Our findings reveal that banks already incorporate pollution-related risks into their credit assessments beyond climate considerations. Banks systematically reduce credit availability relative to collateral value for firms with higher pollution-related biodiversity impacts (freshwater ecotoxicity). Additionally, they impose interest rate premiums selectively, particularly on smaller polluting firms and in specific credit segments such as debt refinancing. However, we find no evidence that banks incorporate the proximity of emissions to Natura 2000 conservation areas into their risk assessments. These findings suggest differential pricing of environmental credit risks across polluter size, loan types, and risk categories.

This exploratory research contributes to credit risk management by demonstrating how environmental factors are being integrated into lending decisions beyond climate considerations. The findings equip supervisory authorities with empirical insights into banks' handling of pollution-related risks, while highlighting potential blind spots regarding proximity to conservation areas. This framework enables monitoring of credit conditions for industrial polluters while supporting their transition to cleaner technologies. Furthermore, it aligns with evolving regulatory requirements by providing a methodology for incorporating multi-dimensional environmental metrics into credit risk assessment processes.

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