e-axes FORUM

Nature-related financial dependencies and impacts

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Curated by:

Chiara Colesanti Senni
Council on Economic Policies

Adrian von Jagow
E-axes Forum

The literature on nature-related financial risks is quickly growing. Several studies have taken the ENCORE database as a reference to assess the dependencies (and impacts) of a financial portfolio or a financial system on 21 ecosystems. The database assigns a qualitative weight for dependencies and impacts to economic processes, which are then associated with production sectors.

Van Toor et al. (2020), in "Indebted to nature - Exploring biodiversity risks for the Dutch financial sector," were the first to use ENCORE to estimate the exposure to and impact on nature of the Dutch financial system. They distinguish between physical, transition, and reputational climate-related risks. ENCORE is used as an indicator of the physical risk exposure. The authors find that 36% of the analyzed portfolio is highly or very highly dependent on one or more ecosystem services.

Kedward et al. (2021), in "Quantitative easing and nature loss," adopt the approach from the above paper to estimate the exposure and impacts of the ECB's corporate bond portfolio. **Svartzman et al.** (2021), in "A 'Silent Spring' for the Financial System? Exploring Biodiversity-Related Financial Risks in France," incorporate the sectoral decomposition of companies' revenue in their analysis to improve the granularity of their estimates.

Calice et al. (2021), who look at corporate loans in "Nature-Related Financial Risks in Brazil," are first to translate ENCORE's dependencies into a measure of financial risk. Using estimates of the impact of nature loss on GDP from other literature, they project that under certain scenarios, banks could see the rate of non-performing corporate loans increase by 9 percentage points.

ENCORE has some limitations: dependencies and impacts are assumed to be homogenous across regions, and neither the supply chain nor the state of the ecosystem *are considered. To address those challenges, some authors are now looking at specific ecosystem services to better understand how ecosystem quality impacts the financial position of companies.*

Cambridge Institute for Sustainability Leadership (CISL) (2022), in "How soil degradation amplifies the financial vulnerability of listed companies in the agricultural value chain," use a stress test set-up to measure how exposure to soil degradation impacts Brazilian companies' market value. The results show that firms exposed to (small-scale) farming suffer, while large corporates could profit from a supply shock. The market value of farming companies operating largely on degrading land declines by 13 percent following extreme weather, while those on healthy soils sees a valuation uplift of 6 percent.

Connected to the complexity of analyzing ecosystem services is the question of the relationship between climate and nature risks. Future work will have to consider where to connect and where to separate these two types of risk. As an example, their effects on monetary policy transmission and financial stability might be very similar.

Beirne et al. (2021), in "The Effects of Natural Disasters on Price Stability in the Euro Area," use a panel and country-specific VAR model to show how natural disasters can drive up inflation. By disentangling the overall impact along subcategories, they show that positive inflation effects are particularly pronounced for food prices. This relationship might extend to nature-related risk drivers and make it increasingly harder for central banks to achieve their inflation targets.

The E-axes Forum is an independent nonprofit, nonpartisan research organization on macroeconomic policies and sustainability. The Forum is dedicated to aggregating knowledge from around the globe with the aim to catalyze the engagement of economists and decision makers who are working on policies towards achieving a sustainable economy.

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228 Park Ave S., PMB 35845, New York, NY 10003