"Glossy Green" Banks:
The Disconnect Between Environmental Disclosures and Lending Activities

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ABSTRACT:

Using confidential information on banks' portfolios, inaccessible to market participants, we show that banks that emphasize the sustainability of their lending policies in their disclosures extend a higher volume of credit to brown borrowers, without charging higher interest rates or shortening debt maturity. These results cannot be attributed to the financing of borrowers' transition towards greener technologies. Examining the mechanisms behind the strategic disclosure choices, we highlight that banks extend credit to existing brown borrowers, especially if they are financially underperforming.

Keywords: financial institutions, sustainability reporting, strategic disclosure, zombie lending, ChatGPT

JEL classification: G11, G15, G21

1. Introduction

Addressing the challenge of climate change necessitates substantial investments in technologies aimed at mitigating greenhouse gas (GHG) emissions (e.g., Bolton, Kacperczyk, Hong and Vives, 2021; Stroebel and Wurgler, 2021). Given that banks are primary financiers of investments globally (Levine, 2005), they can play a pivotal role in this endeavor. To enable financial intermediaries to channel capital toward environmentally sustainable initiatives, however, it is crucial that investors, consumers, and regulators can discern which intermediaries have environmentally conscious policies (Goldstein, Kopytov, Shen, Xiang, 2022; Edmans, 2023). Consequently, disclosure and transparency are critical (Starks, 2023).

Banks seem to have embraced their role in advancing the green transition by increasingly emphasizing the sustainability of their lending policies in their disclosures. Yet, policymakers and industry commentators have raised concerns about whether banks strategically disclose only favorable information over their environmental impact (e.g., European Central Bank (ECB) 2023; Standard and Poor's 2023). Paraphrasing the United Nations Organization's concerns about corporate miscommunication, banks could be misleading the public to believe that they are doing more to protect the environment than it is, promoting false solutions to the climate crisis that distract from and delay concrete and credible actions.[1] Since banks' portfolios are opaque, investors' scrutiny is minimal. Thus, banks have limited reputational costs from overemphasizing the sustainability of their lending policies, even when they decrease their exposures only to few high-emitting borrowers, while increasing their overall exposure to brown industries. Hence, heated discussions about regulating environmental disclosures are frequent on both sides of the Atlantic (ECB, 2022; Security and Exchange Commission [SEC], 2022).

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[1] https://www.un.org/en/ climatechange/science/climate-issues/greenwashing

We contribute to this debate by examining whether banks' environmental disclosures reflect their lending choices. We focus on euro area banks, which have faced particularly strong pressure to portray themselves as environmentally conscious because regulators and institutional investors have repeatedly stressed their role in financing the transition to a carbon-neutral economy (e.g., European Commission, 2019; The Institutional Investors Group on Climate Change, 2021). We show that banks whose reports emphasize the sustainability of their lending policies do not have greener loan portfolios. Banks thus appear to strategically disclose positive sustainability actions and withhold information about negative ones, casting doubts on the extent to which they can be active players of the green transition.

To reach the above conclusion, we follow a fast-growing literature that leverages on the rise of generative artificial intelligence (AI) and large language models (LLMs) for the analysis of financial texts (e.g., Lopez-Lira and Tang, 2023; Jha, Qian, Weber, and Yang, 2023; Hansen and Kazinnik, 2023). We use ChatGPT to extract information on whether a bank is discussing the sustainability of its lending policies in annual and sustainability reports. We show that banks that emphasize the sustainability of their lending policies the most have higher environmental score ratings but also higher past exposures to brown industries. Thus, banks appear to have incentives to emphasize the sustainability of their lending policies to obtain higher environmental ratings and justify their involvement in brown industries. However, these banks could make a genuine attempt to improve their environmental impact as we also observe that they are more likely to have adopted sustainability reporting standards, to commit to climate-related initiatives, such as the Science Based Target Initiative (SBTi), and to be involved in underwriting green bonds.

In the absence of strategic disclosures, we expect banks that portray their lending policies as more environmentally conscious to supply less new loans to brown borrowers, or at least to compensate their brown exposures through their green lending. Yet, considering the strong

incentives to develop a reputation for sustainability, banks may choose to overemphasize their loan portfolio decarbonization strategies and the decrease of their exposures to few high-emitting borrowers, while not changing their lending policies or even increasing the amount of credit they supply to brown industries.

We explore the relation between environmental disclosures and lending decisions (i.e., two contemporaneous optimal choices without a nexus of causality) using AnaCredit, the credit registry of the European System of Central Banks. We find that banks that portray their lending activities as more sustainable extend more new loans to borrowers in brown industries, while not lending more to green industries. Consequently, when we aggregate the effects at the bank level, we find that banks that emphasize the sustainability of their lending policies in their disclosures increase the share of loans they extend to brown industries, while decreasing the corresponding share to green industries. We also do not observe that banks that emphasize the sustainability of their lending policies attempt to discipline brown borrowers through higher loan rates or shorter loan maturity.

Importantly, our results hold when we control for credit demand by including either interactions of firm and time fixed effects (Khwaja and Mian, 2008) or interactions of industry, country, and time fixed effects (Acharya, Eisert, Eufinger, and Hirsch, 2018; Degryse, De Jonghe, Jakovljević, Mulier, and Schepens, 2019). We also control for banks' ability to expand their balance sheets either using a combination of bank fixed effects and bank time-varying financial performance characteristics, or interactions of bank and time fixed effects.

Moreover, our conclusions remain invariant when we use borrower-level proxies for environmental impact, such as borrower level GHG emissions. Since the latter are available only for large companies, we also obtain firms' business descriptions for a large sample of listed and unlisted companies and classify borrowers as brown or green based on the European Union Classification of Sustainable Activities. We continue to find that banks that emphasize

the sustainability of their lending policies extend more credit to brown borrowers, without lending more to green firms.

All these patterns are more pronounced for loans to small borrowers, which are naturally harder to observe for market participants. Our results thus indicate that going beyond the largest borrowers (e.g., Kacperczyk and Peydro, 2022; Sachdeva, Silva, Slutzky, and Xu, 2022; Green and Vallée, 2023; Degryse, Goncharenko, Theunisz, and Vadasz, 2023; Altavilla, Boucinha, Pagano, and Polo, 2023), such as those in the syndicated loan market or those with available carbon emission data, and focusing on banks' whole loan portfolios is crucial to evaluate the environmental impact of banks' lending decisions.

We consider several mechanisms for why banks that emphasize the sustainability of their lending policies lend to borrowers in brown industries. One possibility is that they aim to facilitate their transition to greener technologies. However, we do not find that brown borrowers that receive more credit from banks that emphasize the sustainability of their lending policies decrease their GHG emission intensities in the next three years. In addition, we find no evidence that firms in brown industries that receive credit from high-environmental-disclosure banks invest in R&D or fixed assets more than other firms in their industries, suggesting that these firms are unlikely to be investing in new (greener) technologies. Similarly, high-environmental-disclosure banks do not extend more credit to young firms in brown industries, which should be more likely to innovate and disrupt old technologies (e.g., Aghion, Dechezlepretre, Hemous, Martin, and Van Reenen, 2016), or to firms in brown industries that we identify as green based on their business descriptions. Finally, we find no evidence that firms with commitments to reduce carbon emissions through the SBTi obtain more funding from banks with more extensive environmental disclosures. Taken together, our results indicate that banks that emphasize the sustainability of their lending policies are unlikely to engage in transition lending.

It appears instead that banks' previous exposures limit their role in financing the climate transition (see Degryse, Roukny, and Tielens, 2022 for a similar argument). Banks that emphasize the sustainability of their lending policies tend to fund borrowers in brown industries, especially if they have high leverage and lower interest rate coverage. Thus, banks' strategic disclosures appear to be accentuated by their incentives to continue lending to financially unhealthy brown borrowers that are likely to have fewer financing alternatives and would experience distress if their bank relationships were severed.

Overall, our findings indicate that banks' environmental disclosures can provide a misleading picture of the greenness of their portfolios and support concerns that banks that trumpet their environmental stewardship and receive accolades for their statements struggle to decrease their brown exposures, as in the recent example of Royal Bank of Canada (Bloomberg, 2024). Banks appear to have weak incentives to change their lending policies because this could negatively affect their outstanding loans (Degryse et al., 2022) and thus debt financing slows the transition to a greener economy (De Haas and Popov, 2023). Only regulations that increase the transition risk of polluting borrowers appear to incentivize banks to offer more restrictive loans (Ivanov, Kruttli, and Watugala, 2023).[2]

Our paper makes several contributions to the literature. First, we contribute to a flourishing literature on the environmental practices and decarbonization process in the banking sector. While European banks have overwhelmingly adopted climate-related goals following the Paris agreement (Reghezza, Altunbas, Marques-Ibanez, d'Acri, and Spaggiari, 2022), the evidence on whether banks can develop a credible reputation for greener lending policies is mixed. For instance, Basu, Vitanza, Wang, and Zhu (2022) find no association between banks' social score rating and mortgage issuance in poor localities in the U.S., while Houston and Shan (2022)

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[2] However, Laeven and Popov (2023) show that banks that decrease supply of credit to domestic borrowers facing carbon taxes increase their lending to polluting borrowers in other countries without carbon taxes.

show that banks with high ESG ratings are more likely to engage in syndicated loans with borrowers of similar ESG risk. Similarly, Kacperczyk and Peydro (2022), Green and Vallée (2023), and Degryse et al. (2023) show that banks that become members of initiatives, such as the SBTi and the United Nations Environment Programme Finance Initiative, extend more syndicated loans to greener borrowers at lower prices. To the best of our knowledge, we are the first to explore banks' environmental disclosures and their association with their lending practices. In addition, existing literature mostly relies on large exposures or syndicated loans, which are more visible and potentially less subject to greenwashing. We consider changes in the banks' entire loan portfolios, including loans to smaller borrowers, which are opaque and therefore less likely to be subject to scrutiny and affect a bank's reputation.

Second, we contribute to a strand of research on sustainability disclosures (Christensen, Hail, and Leuz, 2021). Sustainability disclosures have been shown to reduce firms' cost of capital (Dhaliwal, Li, Tsang, and Yang, 2011; Gibbons 2023; Krueger, Sautner, Tang, and Zhong, 2023), improve environmental, social and governance (ESG) ratings (Christensen, Serafeim, and Sikochi, 2022), and attract investors (Ilhan, Krueger, Sautner, Starks, 2023) and talented workers (deHaan, Li, and Zhou, 2023). However, environmental performance is multidimensional and reporting on sustainability impact lacks standardization and materiality guidelines. Hence, managers have incentives to selectively disclose positive information on companies' environmental performance to decrease their funding costs (Shin 2003; Lyon and Maxwell, 2011).[3] Accordingly, for the Sustainability Accounting Standards Board (SASB), greenwashing emerges when a firm uses sustainability performance on one dimension to cover up poor outcomes on another (Hales, 2021).

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[3] In a recent survey, forty-two percent of firms' environmental claims are found to be deceptive and misleading (European Commission, 2021).

Concerns of greenwashing could be particularly pronounced for banks that often announce commitments to reduce exposures or exit from specific industries, such as coal or mining (Haushalter, Henry and Iliev, 2023; Sastry, Verner, and Marquez-Ibanez, 2024; Green and Vallée, 2023). While evidence on the credibility of these commitments is mixed, regulators have voiced concerns that banks strategically disclose the lower exposure to selected and arguably narrow parts of their loan portfolio, while they could be extending an increasing amount of new credit to brown borrowers (ECB, 2022; 2023). We identify greenwashing beyond banks' narrow claims, thus addressing regulators' concerns that lenders cherry-pick which exposures to discuss or commitments to announce, without providing investors a holistic view of their portfolios. Our results highlight that it is important to go beyond the narrow industry commitments that banks announce and support regulatory concerns that investors and customers may select banks based on the emphasis that they put on the sustainability of their lending policies in specific industries, despite the increasing brownness of their portfolios.

Lastly, our results also imply that the ESG rating shortcomings highlighted in previous literature (e.g., Dhaliwal, Radhakrishnan, Tsang, Yang, 2012; Berg, Kölbel, and Rigobon, 2021; Serafeim and Yoon, 2022; Christensen et al., 2022) can be at least partially attributed to the reliance of rating agencies on inadequate firm disclosures.

2. Data Sources and Main Variables

To evaluate whether bank environmental disclosures reflect their lending policies, we need to observe a bank's loan portfolio and the sustainability of its borrowers as well as the banks' attempts to build a reputation for environmental sustainability through their disclosures. Below we describe our data and proxies.

2.1. Bank lending policies

We consider a total of 101 systemically important banking groups, 553 banking subsidiaries in total, which are subject to the Single Supervisory Mechanism (SSM). For each subsidiary, we obtain loan-level data from AnaCredit (AC), a credit register launched by the European System of Central Banks in 2018 that offers confidential information on commercial loans outstanding. Specifically, AC covers borrower characteristics (e.g., industry, location), loan terms (e.g., amount, maturity, interest rate, issuance date), and performance (e.g., delinquency) and the bank's credit exposure to the borrower. All banks report any loan to non-financial corporations that exceeds EUR 25,000.

The data granularity in AC allows us to capture any changes in lending policies through the *flow* of banks' credit over time. Specifically, in our empirical analysis, we consider loans that are newly issued over the 2014–2020 period. We extend our sample's time-series using the issuance date of loans observed as of 2018 to include loans issued post 2014. Since the median loan maturity is approximately four years (see Table 1, Panel C, where maturity is reported in days), this allows us to capture most of the banks' lending activity during this period.[4] Our definition of new loans to a borrower includes all facilities a bank (subsidiary) has granted to the borrower during a year with the exception of credit lines, because the use of approved credit lines reflect the borrower's demand rather than the supply of credit. Appendix A provides detailed variable definitions. Last, we obtain data on banks' financial performance from the supervisory financial reporting (FINREP) dataset.

2.2 Green and brown borrowers

We rely on three alternative proxies for green and brown borrowers that trade off firm coverage and data granularity. First, to have the largest possible coverage, we use GHG

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[4] We also replicate the analyses by focusing on loans issued over the 2018-2020 period, i.e., after the initiation of banks' monthly reporting to AC. Our results are robust (see Internet Appendix Table IA.I).

emissions at the industry (NACE 2)-country-year level, retrieved from Eurostat over the 2014–2020 period. We standardize emissions using the industry's value added in a country and year to account for differences in industry size across countries. We classify as brown (green) industries that rank in the upper (bottom) quintile for GHG emissions relative to the industry's value added in a given year. Based on this methodology, Manufacture of coke and refined petroleum products; Electricity, gas, steam, and air conditioning supply; Land transport and transport via pipelines; Air travel are examples of brown industries. Green industries include Wholesale trade, except of motor vehicles and motorcycles; Legal and accounting activities; Architectural and engineering activities, technical testing, and analysis; Advertising and market research, etc. Not only does this classification allow us to include all AC borrowers in our analysis, but it also reflects that the largest carbon damages occur in energy-intensive industries (Greenstone, Leuz, and Breuer, 2023).

Second, to mitigate concerns that heterogeneity in pollution intensity across firms within a sector affects our results, we also obtain firm-level GHG emissions from Urgentem. The Urgentem Carbon Dataset covers the full spectrum of Scope 1, 2 and 3 emissions for more than 6,000 companies worldwide. Scope 1 and 2 emissions are produced by a firm directly through its activities and by purchasing electricity and energy, respectively. They can be measured more objectively than Scope 3 emissions that are an estimate of the emissions of a firm's suppliers. For this reason, as is common in the literature, we proxy for a borrower's brownness using the ratio of the sum of its Scope 1 and 2 emissions to its total revenues.

Finally, we retrieve companies' business descriptions for a total of 150,105 public and private companies in AC from S&P Capital IQ. We perform textual analysis of business descriptions using the EU taxonomy for sustainable activities to create a dictionary for brown and green firms (see Appendix B). We define a business as brown (green) if the number of brown (green) keywords in the firm's business description is greater than that of green (brown)

ones. This takes into account that words that commonly capture adverse environmental impact (e.g., "pollution" or "oil spill") when used in business descriptions together with green keywords are likely to refer to firms' activities aiming to mitigate environmental damage. We classify most firms as neither brown nor green: 5.5% (4.1%) are brown (green) for a total of 8,248 (6,112) brown (green) firms. The resulting borrower classification covers both listed and unlisted companies, thus providing more coverage than the one based on emissions.

2.3 Banks' investor reports and environmental disclosures

Banks discuss their environmental policies in their non-financial disclosures, which can be part of annual reports or in separate sustainability reports. Non-financial disclosures are mandatory for all large and listed companies in the EU because of the Non Financial Reporting Directive (NFRD, 2014/95) as of 2017. The NFRD appears to have affected disclosures well before it became mandatory (Fiechter, Hitz, and Lehmann, 2022), also because some EU countries had pre-existing regulations on non-financial reporting.

In their non-financial disclosures, banks discuss environmental and social policies and outcomes, including whether they have decided to adhere to initiatives, such as the SBTi or whether they have integrated the Sustainable Development Goals (SDGs) into their reporting processes. Banks also discuss their attempts to decrease their exposures to specific industries such as oil and gas. For instance, ING group writes in its 2020 annual report: "*ING reduced its direct exposure to coal-fired power plants by 43 percent (in line with our commitment to reduce it to close to zero by the end of 2025) and increased financing for renewable energy generation by €1.19 billion. (…) We'll align this portfolio both by decreasing exposure and engaging with clients to help them shift to low-carbon technology*."

Even though sustainability disclosures are mandatory, they are non-standardized and have no clearly-defined thresholds of materiality and relevance (e.g., Christensen et al., 2021).

Efforts to standardize sustainability disclosures, such as the Global Reporting Initiative (GRI), are not only voluntary but what companies actually report is unenforced. Thus, since their contents are unregulated, environmental disclosures do not have to abide to any guidelines and standards, and banks could even choose to discuss social issues that do not include the environment. In addition, sustainability reporting is mostly unaudited, although an increasing number of firms select to have an external verification (e.g., Aobdia and Yoon, 2022). Given these limitations, concerns on whether banks misrepresent their environmental stewardship to gain legitimacy with outside stakeholders are widespread.

Importantly, investors and analysts employ annual and sustainability reports to evaluate firms' ESG strategy and performance (e.g., Environmental Finance, 2024; Dhaliwal et al., 2012). Thus, annual and sustainability reports are a natural source for us to gauge whether management aims to create a reputation for environmental sustainability for a bank.

We thus construct our proxy for environmental disclosures from the annual and sustainability reports of the banking groups in our sample.[5] Specifically, we retrieve investor reports for the 2014-2020 period from banks' websites at the time of the data collection process (February-May 2021). We obtain any missing banks' reports from the Corporate Register.

Panel A of Table 1 describes the final sample we use. The sample includes 623 annual reports, 273 sustainability reports, 57 integrated reports, and 61 nonfinancial reports. We further collect other less lengthy and more tailored disclosures (383 documents) that banks commonly use to communicate their sustainability efforts and performance (e.g., sustainability facts and figures, climate change report, report on greenhouse gas emissions, impact report, responsible investments report). These filings may be disclosed together with or instead of a

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[5] We collect reports at the parent level when subsidiary reporting is unavailable and use a bank's consolidated disclosures on environmental strategies because reports are mostly prepared at the banking group level.

sustainability report. Collectively, we process 1,397 documents. Examples of banks' discussions of environmental-related issues are provided in Appendix C.

Following a growing number of papers that uses generative AI, and ChatGPT in particular, to categorize text (e.g., Lopez-Lira and Tang, 2023; Jha et al., 2023), we rely on OpenAI's GPT 3.5. to evaluate the extent to which banks' investor reports emphasize the sustainability of their lending policies. Open AI's GPT is a large language model that has been trained on millions of books and articles and has demonstrated a remarkable capability of deciphering and categorizing the context of complex and nuanced language in various domains of knowledge.

Since ChatGPT has a total limit of 4,096 tokens or around 3,000 words for input and output combined, we split banks' reports in paragraphs and use the following prompt to evaluate whether a bank is discussing the sustainability of its lending policies:

"Pretend you are an investor. The following text is an excerpt from a bank's annual report:

<...>

Based on this text only, please answer the following question. Are the bank's lending policies environmentally sustainable? There are three choices: "YES", "NO", or "UNKNOWN" if the text contains no relevant information."

We read the explanations that ChatGPT provides with its answer to evaluate the effectiveness of the algorithm and our prompt. We find encouraging that we retrieve the answer "UNKNOWN" for text that "lacks specific details regarding the bank's lending policies and their overall environmental sustainability" and "YES" when "the excerpt emphasizes the integration of non-financial aspects" and "a proactive approach by the bank towards addressing environmental risks and aligning its practices with principles of sustainable finance".

Having classified all paragraphs of a bank's reports during a year, we define *Environmental disclosures* as the ratio of the number of words in the paragraphs for which we obtain a "YES" to the total number of words in the bank's reports during that year. The mean value of

Environmental disclosures is about 4.5% (Panel B of Table 1) and is small by construction because banks' annual reports cover many topics and predominantly financial performance.

Figure 1 shows that the volume of banks' claims about the sustainability of their lending policies increased by over 100% over our sample period, in line with firms increasing focus on climate topics (Ioannou and Serafeim, 2012; Rouen et al., 2022).

3. Which Banks Discuss the Sustainability of their Lending Policies?

This section explores which banks emphasize the sustainability of their lending policies in their reports and allows us to evaluate whether our proxy is related to a bank' reputation for environmental sustainability and emphasis on climate goals.

We start exploring to what extent our proxy captures a bank's environmental agenda by testing whether the environmental disclosures reflect the bank's commitments and other climate related initiatives. In Table 2, we observe that banks that prepare their sustainability disclosures according to the Global Reporting Initiative Standards (GRI standards) emphasize to a greater extent the sustainability of their lending policies as is consistent with the fact that they have adopted reporting standards aiming to capture their environmental and social impact. Similarly, banks that have adopted integrated reporting and consequently combine financial and non-financial disclosures appear to discuss more extensively the sustainability of their lending policies. This is the case while we control for bank size, as proxied by total assets, profitability, and leverage. Importantly, larger banks appear to stress more the sustainability of their lending policies, suggesting that they may be subject to more pressure from institutional owners. While other measures of financial performance do not appear to matter, banks with more extensive environmental disclosures also tend to be better capitalized, suggesting that strong financial performance allows banks to focus on sustainability objectives.

In column 2, we consider whether a bank has adhered to the SBTi, thus pledging to decrease emissions. Consistent with the evidence on GRI standards, we observe that banks that publicly pledge to decrease emissions have more extensive environmental disclosures.

Not only do environmental disclosures reflect a bank's initiatives, but they also appear to influence a bank's reputation, suggesting that banks have strong incentives to emphasize the sustainability of their lending policies. Specifically, in columns 3 and 4, different banks' environmental ratings, such as MSCI (*MSCI Env score*) and Sustainalytics (*Sustainalytics Env score*), are positively associated with our proxy for the extent to which a bank emphasizes the sustainability of its lending policies. In column 5, we show that our proxy is also associated with the environmental disclosure score by Bloomberg, which captures the availability of climate-related information by firms (*Bloomberg Env score*). This evidence is consistent with prior studies that have documented the association between the volume of firms' sustainability disclosures and ESG ratings (e.g., Basu et al., 2022; Christensen et al., 2022) and helps explain why banks emphasize the sustainability of their lending policies. Banks appear to do so to improve their sustainability ratings, which in turn produce benefits in terms of cost of capital and customer and investor loyalty (Dhaliwal et al., 2011; Albuquerque et al., 2019; Mazet-Sonilhac and Mésonnier, 2023).

Further supporting this conclusion, in column 6, our proxy for the extent of environmental disclosures is positively associated with the likelihood of a bank being included in the list of the 100 most sustainable firms globally assessed by Corporate Knights. Thus, emphasis on the sustainability of its lending policies helps to enhance a bank's reputation.

Last, we investigate to what extent environmental disclosures are related to the banks' business model. Since green bond issuance plays an important role in environmental finance, we explore the association between our proxy for environmental disclosures and banks' involvement in green bond issuance as underwriters. We document that banks with more

extensive environmental disclosures underwrite more green bonds, as measured by the ratio of annual green bond volume a bank underwrites from Bloomberg to the bank's total assets (column 7). Thus, banks that portray their lending practices as sustainable are particularly involved in green lending when highly visible activities in public debt markets are involved. This finding resonates with evidence from the syndicated loan market (e.g., Kacperczyk and Peydro, 2022; Green and Vallée, 2023; Degryse et al., 2023).

Overall, cross-sectional and time series evidence in Table 2 suggests that banks have incentives to emphasize the sustainability of their lending policies to improve their credit ratings and obtain recognitions. In Figure 2, we exploit cross-sectional differences between banks to gain a first insight on the characteristics of the portfolios of banks with extensive environmental disclosures. Banks that emphasize the sustainability of their lending policies appear to have a larger proportion of outstanding loans to brown industries. This finding suggests that banks specialized in brown industries are pressured to disclose their environmental strategies and plans to decarbonize. In what follows, we explore whether these banks indeed change the composition of their loan portfolios by focusing on new loan issuance.

4. Environmental Disclosures and Bank Lending Policies

4.1 Methodology

We study whether banks that emphasize the sustainability of their lending policies indeed issue greener loans. On the one hand, banks may use investor reports to communicate their environmental strategies and build a reputation with stakeholders. In this case, we would expect a negative (positive) association between environmental disclosures and new loans to brown (green) industries. On the other hand, banks may selectively report sustainability initiatives, future plans, or a decrease in exposures to selected brown borrowers, while withholding information on their continued relationships with the bulk of their brown clients. Since loans

decisions are mostly opaque and therefore hard to question for outside stakeholders, such behavior could enhance a bank's public image, as the positive association between environmental disclosures and environmental ratings demonstrates, even though there is no significant relationship, or even a positive association, between environmental reporting and banks' supply of credit to brown industries.

We use AC data on new loan issuance to focus on changes in the composition of banks' loan portfolios. We estimate the following empirical model where the dependent variable is the logarithm of new loans' amount, issued by bank b during year t to firm f in industry i and in country c, $Loan\ amount_{f,b,i,c,t}$:

$$Loan\ amount_{f,b,i,c,t} = \alpha + \beta_1(Brown_{i,c,t} \times High\ Environmental\ Reporter_{b,t})$$

$$+\beta_2 High\ Environmental\ Reporter_{b,t} + \gamma \mathbf{X}_{b,t} + \delta_{i,c,t} + \mu_b + \epsilon_{f,b,i,c,t} \quad (1)$$

The variable of interest is the interaction term $Brown_{i,c,t} \times High\ Environmental\ Reporter_{b,t.}$. $High\ Environmental\ Reporter_{b,t}$ is an indicator variable of whether bank b's environmental disclosures rank in the upper quintile of the variable's distribution during year t, and $Brown_{i,c,t}$ is an indicator variable of whether the ratio of carbon emissions to gross value added of industry i in country c ranks is in the upper quintile of the variable's distribution across all industries of a country during year t. We expect that $\beta_1 < 0$ if banks with more extensive environmental disclosures indeed engage in greener lending practices.[6]

The vector μ_b denotes bank (subsidiary) fixed effects and the matrix $\mathbf{X}_{b,t}$ includes time-varying bank controls. While in some specifications, we control for bank's size, leverage, profitability, and tier 1 capital ratio, in other specifications, we include interactions of bank subsidiary and time fixed effects thus controlling non-parametrically for time-varying bank

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[6] While the specifications in which we discretize our proxies for environmental disclosures are easier to interpret, in Table IA.II, we substitute the *High environmental reporter* dummy with the continuous version of the *Environmental disclosure* variable and show that our conclusions are invariant.

characteristics and shocks affecting the overall bank's supply of credit. Specifically, we consider fixed effects at the bank subsidiary level, even though sustainability policies and disclosures are typically decided at the parent level, because different subsidiaries of a bank often experience different funding and demand shocks.

We further saturate the equation with different sets of fixed effects to control for shocks to the demand for credit. Specifically, following Acharya et al. (2018) and Degryse et al. (2019), our specifications include interactions of country, industry, and year fixed effects ($\delta_{i,c,t}$), which allow us to identify the supply of credit if demand shocks affect firms based on industry and location. In alternative specifications, we include interactions of firm and time fixed effects and identify the supply of credit from firms with multiple relationships (Khwaja and Mian, 2008). The high-dimensional fixed effects also ensure that our results are not driven by differences in country specialization or national supervisory and enforcement measures, which may potentially affect bank disclosures and reporting practices. Thus, the coefficient β_1 captures the extent to which banks' credit decisions are associated with borrowers' emissions after controlling for the borrowers' demand for credit.

4.2 Main findings

Table 3 reports the main findings. Panel A shows that banks classified as high environmental reporters grant more credit to borrowers in brown industries. In terms of economic magnitudes, the estimate in column 5 suggests that high environmental reporters extend 3.3% more credit to firms in brown industries compared to other banks. In Panel B, we consider loans to borrowers in green industries. We find no evidence that emphasizing the environment in public reporting is associated with more new loans to green firms. Thus, banks do not appear to compensate their brown loans by lending to firms in green industries.

Importantly, the results in Table 3 cannot be driven by the fact that brown industries have experienced positive demand shocks in some countries or that some banks are able to expand their credit supply to a larger extent because the interactions of industry, country and year fixed effects or firm and year fixed effects absorb shocks to credit demand, while the interaction of bank and year fixed effects absorb bank level shocks.

We also consider that environmental disclosures could discuss future changes in lending policies to green and brown industries. In this respect, environmental disclosures could be reflected only in future, not current, lending policies. We thus use lags of the *High environmental reporter* dummy to test whether banks that previously stressed the environment subsequently adopt greener lending policies. Table IA.III in the Internet Appendix reports the results for the three-year lag of the *High environmental reporter* dummy.[7] The estimates mirror those in Panel A of Table 3.[8]

4.3 Alternative proxies for brown borrowers

An important concern with our interpretation of the empirical evidence is that we measure borrowers' emissions at the industry (NACE 2)-country-year level. Although this empirical approach allows us to include small private companies in the analyses, we do not capture differences between borrowers within the same industry and country. We mitigate this concern by employing a borrower's annual Scope 1 and 2 GHG emissions, standardized by total revenues.

Panel A of Table 4 summarizes the results. Sample size dramatically decreases because GHG emission data are available only for large firms. Notwithstanding this, we continue to

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[7] For this test, we use banks' reports starting from 2012 in order not to lose observations.
[8] To evaluate whether bank disclosures are backward-looking, Panel B of Table IA.III presents the robustness analysis using the one-year lag and the one-year lead variable of the *High environmental reporter* dummy. Consistent with the previous findings, the estimates reveal that banks with more extensive environmental disclosures extend more credit to borrowers in brown industries.

find that banks with extensive environmental disclosures extend more credit to borrowers with higher emissions, when controlling for credit demand using interactions of country, industry, and year fixed effects (columns 2 and 3). Specifically, an increase by one standard deviation in the intensity of a borrower's GHG emissions is associated with an approximately 20% higher lending by high environmental reporters compared to other banks. We do not observe any statistically significant differences in lending to borrowers with high emissions between banks with extensive environmental disclosures and other banks in the other specifications, although the statistically insignificant estimates on β_1 in columns 4 and 5 are likely attributed to low cross-sectional variation when focusing on borrowers with multiple lending relationships. Overall, these estimates suggest that banks with more extensive environmental disclosures, if anything, grant more credit to polluting borrowers.

We reach the same conclusions in Panel B where we use our classification of brown borrowers based on business descriptions, which allows us to go beyond the largest firms in our sample. In columns 2 and 3, where we absorb credit demand using interaction of industry, country and time fixed effects, we observe that borrowers in brown industries obtain more new loans from banks that emphasize the sustainability of their lending policies. Thus, high environmental disclosures are far from being associated with greener, or less brown, lending policies or any attempts to reduce exposures to brown industries.

4.4 The extensive margin of bank lending

We have so far focused on all the newly issued bank loans to both new and existing clients. However, banks that aim to achieve greener loan portfolios may avoid starting relationships with brown borrowers and even terminate relationships with borrowers in brown industries. We examine the extensive margin of banks' lending activities using Model (1) and the following dependent variables: (i) an indicator variable for whether a bank-firm relationship

did not exist in year *t-1* and is established in year *t* (*Entry*); (ii) an indicator variable for whether a loan is not renewed and the bank-firm relationship from period *t-1* ceases to exist in period *t* (*Exit*). All other model specifications and control variables are similar to Table 3.

Table 5 reports the results. Panel A examines the initiation of new lending relationships, while Panel B considers relationship terminations. Overall, high environmental reporters appear as likely as other banks to start or terminate relationships with brown borrowers. If anything, the negative and statistically significant coefficient in column 5 of Panel A suggests that high environmental reporters are less likely to terminate lending relationship with borrowers in brown industries compared to other banks. Thus, banks that emphasize the sustainability of their lending policies do not appear to discipline borrowers by divesting.

In Appendix Table IA.V, we observe that high environmental reporters are more likely to start relationships with borrowers in green industries suggesting that at least in this dimension they may be greening their portfolios.

4.5 Changes in bank level credit exposures to brown industries

In the previous sections, we have shown that while banks that emphasize the sustainability of their lending policies do not reduce the size of the loans to firms in polluting industries, they partially adjust their portfolios on the extensive margin by establishing new relationships with firms in green industries.

To evaluate how banks' exposures to brown borrowers change, we aggregate observations at the bank-industry-country-year level and estimate an ordinary least squares (OLS) model where the dependent variable is a bank's b share of new credit to industry i in country c during year t out of all bank b's new loans during that year, $Credit\ share_{b,i,c,t}$. We estimate the following equation:

$$Credit\ share_{b,i,c,t} = \alpha + \beta_1(Brown_{i,c,t} \times High\ Environmental\ Reporter_{b,t})$$

$$+ \beta_2 High\ Environmental\ Reporter_{b,t} + \gamma \mathbf{X_{b,t}} + \delta_{i,t} + \nu_{c,t} + \mu_b + \epsilon_{b,i,c,t}$$

$$(2)$$

Table 6 reports the results. We find that the higher propensity to establish relationships with green borrowers has limited effects on the overall greenness of high-environmental-reporters' loan portfolios. In the aggregate, these banks appear to extend more credit to brown industries and less credit to green industries. This is the case even when we control for bank-specific shocks, by including interactions of bank and year fixed effects, indicating that the composition of the bank loan portfolio varies in a way that is not congruent with the bank's environmental disclosures. The estimates are also robust when we control for the demand shocks experienced by banks' clients, including interactions of industry and year fixed effects and country and year fixed effects.

Overall, these results support regulatory concerns that banks' environmental disclosures can be misleading and are at best narrowly focused on selected portions of their loan portfolios that comply with climate goals.

4.6 Environmental disclosures and loan contractual features

While banks with more extensive environmental disclosures extend larger amount of credit to brown borrowers, they could use contractual features to discipline them. For instance, banks could provide loans at higher interest rates to brown borrowers. This would not only increase the borrowers' cost of capital and hamper their ability to invest, but it would also be a sign of high environmental reporters' reluctance to lend to borrowers in brown industries.

In Panel A of Table 7, we test whether high environmental reporters extend loans with higher interest rates to borrowers in brown industries. We find no evidence that this is the case. Borrowers in brown industries do not pay higher interest rates for loans from banks with extensive environmental disclosures. If anything, in column 3, where we absorb credit demand

by including interactions of industry, country and time fixed effects and control for bank shocks using bank and time fixed effects, borrowers in brown industries appear to pay lower interest rates on loans from banks that emphasize the sustainability of their lending policies. Interestingly, though, in column 1, where the coefficient on the brown industry dummy is not absorbed by the fixed effects, we find that borrowers in brown industries pay higher interest rates, suggesting that borrowers in industries with high emissions indeed face transitions risks, which banks on average price when they issue new loans.

We also test whether banks with more extensive environmental disclosures extend loans with shorter maturity to borrowers in brown industries. Short maturity allows lenders to exercise control, as banks can threaten firms not to renew the loans if environmental or other targets are not met. In Panel B of Table 7, we test whether high environmental reporters extend loans with shorter maturity to borrowers in brown industries, using Model (1) and a dependent variable defined as the natural logarithm of number of days till maturity (*Loan Maturity*). We find that on average, the maturity of loans to brown borrowers is shorter, consistent with the idea that these borrowers are riskier and banks exercise control by extending short maturity loans (column 1). But if anything, the loans extended by high environmental reporters to borrowers in brown industries have longer maturity. Thus, high environmental reporters do not appear to use loan maturity to monitor brown borrowers and spur change more than other banks that emphasize less the sustainability of their lending policies.

Overall, the contractual features of the loans reveal no greater reluctance of banks that emphasize the sustainability of their lending policies to fund borrowers in brown industries and are consistent with our previous findings. We next investigate why banks make environmental disclosures that do not appear to reflect their lending policies.

5. Why Do Banks with Extensive Environmental Disclosures Lend to Brown Borrowers?

5.1 Funding the transition to greener technologies in brown industries

The lending policies of banks with more extensive environmental disclosures would not indicate greenwashing if banks funded brown borrowers' transition to technologies with lower emissions. We start evaluating this conjecture by testing whether brown borrowers that obtain loans from banks with more extensive environmental disclosures end up decreasing their emissions ex post. In Appendix Table IA.V, we test whether firms that obtain more loans from high environmental reporters subsequently lower their emissions. Given that we observe emissions for few firms and that our time series is short, this test has low power. However, it does not support the conjecture that firms that receive credit from banks that emphasize the sustainability of their lending policies subsequently decrease their carbon emissions.

To provide further evidence, we rely on the insight that switching to greener technologies requires significant investment in fixed assets and R&D. Thus, if high environmental reporters funded the transition to greener technologies, their brown borrowers should have higher R&D and capital expenditures than other firms in their industry. To test this insight, we obtain data from Orbis and construct the following borrower-year level variables: (i) R&D to total assets and (ii) change in fixed assets to total assets. We define indicator variables for whether a borrower ranks in the top quartile of the respective variables' distribution across the firms in the same industry (NACE 2) and year. We augment Model (1) with the respective indicator variables (*Proxy*) and all the lower-order interaction terms:

$$Loan\ amount_{f,b,i,c,t} = \alpha + \beta_1(Brown_{i,c,t} \times High\ Environmental\ Reporter_{b,t})$$

$$+ \beta_2 High\ Environmental\ Reporter_{b,t}$$

$$+ \beta_3(Brown_{i,c,t} \times High\ Environmental\ Reporter_{b,t} \times Proxy_{f,t})$$

$$+ \beta_4(High\ Environmental\ Reporter_{b,t} \times Proxy_{f,t})$$

$$+ \beta_5(Brown_{i,c,t} \times Proxy_{f,t}) + \beta_6 Proxy_{f,t} + \gamma \mathbf{X}_{b,t} + \delta_{i,c,t} + \mu_b + \epsilon_{f,b,i,c,t} \qquad (3)$$

The key variable of interest is the triple interaction between high environmental reporter, borrower brownness, and the proxy for transition financing (i.e., coefficient β_3).

In Table 8, we find no evidence that high environmental reporters are more likely to support transition financing, when we consider firms with high capital expenditures (columns 3 and 4). If anything, high environmental reporters are less likely to lend to firms in brown industries that have larger R&D expenditures, as indicated by the negative and statistically significant coefficient of the triple interaction variable in column 2.

A limitation of using financial data is that we cannot distinguish between green and brown investment and we may have low power to identify the borrowers that invest in transition technologies. We thus introduce several additional proxies. First, we rely on existing studies that highlight that firms in brown industries that are more likely to innovate and disrupt old technologies are typically young new entrants (e.g., Aghion et al., 2016). We thus test whether *High Environmental Reporter* banks lend more to young firms in brown industries. We define firms that are five-year old or less as young. In columns 5 and 6, we find that high environmental reporters do not extend more credit to young firms in brown industries, indicating that they are unlikely to fund the transition to greener technologies.

Next, we exploit SBTi data. Some companies commit to targets to reduce their GHG emissions by adhering to the SBTi. We obtain the list of signatory companies from the SBTi website. We match the list with AC borrowers and consider a firm to have committed to decrease its carbon emissions if the firm has adhered to the SBTi in the past or does so within the next year.[9] Since firms that adhere to the SBTi are typically large, to focus on firms that exhibit similar dependence on bank credit, we restrict the control sample to similarly sized-

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[9] Our results are robust if we consider a firm's SBTi commitments at any point in time to define a time-invariant indicator variable.

companies in the same NACE-2 industry. As in our previous test, our coefficient of interest is on the triple interaction between high environmental reporter, borrower brownness, and the dummy identifying borrowers that are SBTi signatories. The results in columns 7 and 8 are consistent with our earlier findings: If anything, banks with more extensive environmental disclosures extend less credit to firms with clearly defined emission targets.

Last, we take advantage of borrowers' business descriptions. Banks that emphasize the sustainability of their lending policies could lend to green borrowers in brown industries, as for instance firms that specialize in renewables within the energy sector. We thus identify green borrowers from their business descriptions using the European Union Classification of Sustainable Activities. In columns 9 and 10, we find no evidence that high environmental reporters extend more credit to green firms in brown industries.

In sum, we find no support for the hypothesis that banks that emphasize the sustainability of their lending policies fund the transition of brown industries to greener technologies.

5.2 Relationship strength and loan opacity

Since banks that emphasize the sustainability of their lending policies appear to have larger exposures to brown industries, the discrepancies between banks' environmental disclosures and lending policies may emerge because banks are reluctant to discontinue established credit relationships with brown borrowers. Columns 1 and 2 of Table 9 provide support to this conjecture. We test whether high environmental reporters extend more credit to borrowers in brown industries if they have extended a larger proportion of the borrower's outstanding loans in the past. This variable that we label *Exposure* not only captures how close the relationship of a bank with a given borrower is, but also that such a bank's refusal to extend a loan could have negative consequences for the bank itself, as the borrower could experience distress. Consistent with the idea that the bank internalizes the negative effect of not extending liquidity

to these borrowers, we find that the coefficient on the triple interaction term between *Brown, High Environmental Reporter*, and *Exposure* is positive and significant both in columns 1 and 2.

Columns 3 and 4 consider borrower size. Column 3 indicates that when we also use variation due to borrowers with single relationships (which we neglect in column 4), high environmental reporters extend more loans to small borrowers in brown industries. Because loans to small borrowers are the most opaque part of a bank's assets, incomplete disclosures that omit their discussions are less likely to come to the attention of the bank's investors and other stakeholders and to have negative reputational effects. This finding helps to explain why studies that rely on the syndicated loan market tend to find that bank commitments to decrease emissions, by adhering to initiatives such as the SBTi, are associated with greener loans (e.g., Peydro and Kacperczyk, 2022). SBTi commitments are reflected in environmental disclosures, and it is therefore unlikely that banks that adhere to these initiatives behave differently from high environmental reporters. Differences in results are likely to arise from the fact that syndicated loans are easily observable by investors and regulators and may consequently have large reputational costs.

In addition, small firms may have particularly hard time accessing alternative sources of funding, especially if they rely on a single bank, increasing the probability that the bank's decision to interrupt the relationship or extend less credit would result in distress. Fears of borrowers' distress that would force banks to recognize their losses and to disclose and discuss their exposures to brown industries may in turn increase the banks' propensities to extend loans to these borrowers.

5.3 Lending to low-quality firms and the brownness of banks' portfolios

We explore whether the desire to avoid borrower distress can help explain the disconnect between environmental disclosures and bank lending. If borrowers in brown industries are unprofitable and lack alternative financing options, banks may prefer to renew their loans to keep the borrowers alive and to avoid realizing losses on their balance sheets (Peek and Rosengren, 2005; Giannetti and Simonov, 2013; Acharya et al., 2022). This practice is often referred to as zombie lending (e.g., Acharya et al., 2022). We test whether high environmental reporters' zombie lending may drive the continued financing of brown industries.

We employ several proxies to define low-quality borrowers: (i) an indicator variable for whether a borrower's leverage ranks in the top quartile of the variable's distribution within the same industry (NACE 2); (ii) an indicator variable for whether a borrower's interest coverage ratio (EBIT to interest expense) ranks in the bottom quartile of the variable's distribution within the same industry (NACE 2). We estimate Model (3) with the respective indicator variables (*Proxy*). The variable of interest is the triple interaction between high environmental reporter, borrower brownness, and the proxy for low-quality borrower.

Table 9 reports the results of these tests. We find that banks that emphasize the sustainability of their lending policies are more likely to extend new loans to borrowers in brown industries with high leverage (columns 5 and 6) and low interest coverage ratio (columns 7 and 8), even though the estimates are statistically significant at conventional levels only in the most restrictive specifications in which we include interactions of firms and time fixed effects. This evidence is consistent with the interpretation that high environmental reporters renew loans to brown borrowers that could otherwise experience distress. Not only are these brown borrowers closer to financial distress the least likely to have access to alternative sources of funding, but they are also the least likely to have the operational and financial capacity to transition to greener technologies.

If zombie lending indeed helps to explain greenwashing, banks with low capitalizations should exhibit an even larger disconnect between environmental disclosures and lending policies (e.g., Peek and Rosengren, 2005; Giannetti and Simonov, 2013). In column 1 of Table 10, we find that high environmental reporters with low capitalizations extend larger loans to borrowers in brown industries, even though the coefficient on the triple interaction term loses statistical significance once we include interactions of bank and time fixed effects.

Overall, these findings suggest that relationships with low-quality brown borrowers help explain why high environmental reporters overstate their environmental objectives at the detriment of the long-term carbon footprint of their loan portfolios.

5.4 Cross-sectional differences in institutional and bank-specific characteristics

We also examine whether large banks having higher visibility may be more subject to institutional pressures to integrate climate goals in their strategy. It appears that large banks with more extensive environmental disclosures extend more credit to borrowers in brown industries (columns 3 and 4 of Table 10). Since large banks tend to be more visible and scrutinized, this evidence suggests that the credibility of environmental disclosures and the extent to which these are reflected in the banks' loan portfolios is particularly hard to verify for market participants.

The rest of Table 10 supports this conjecture. Although the volume of environmental disclosures increases post-Paris Agreement (Figure 1), the content of such disclosures continues to be unrelated to lending practices (columns 5 and 6). If anything, banks' tendency to emphasize the sustainability of their lending practices while lending to brown industries becomes more pronounced after the Paris agreement. In fact, in Figure 3, where we show the dynamics of the propensity of high environmental reporters to lend to borrowers in brown industries, the estimate on our interaction term of interest starts to be statistically significant in

2018, that is, the year after the Paris agreement, when pressure for environmental stewardship increased.

Finally, we show that the use of an external auditor does not materially enhance the credibility of the sustainability disclosures (columns 7 and 8), in line with recent studies suggesting that auditors have limited expertise in evaluating sustainability disclosures (Aobdia and Yoon, 2022).

Collectively, these results suggest that banks boost their environmental profiles through selective environmental disclosures, stressing the financing of a few green projects, or the reduction in credit to few selected brown borrowers, while large chunks of their loan portfolios continue to consist of credit to brown industries.

6. Conclusions

In response to rising institutional pressures, banks have substantially increased the volume of sustainability reporting and inform stakeholders over their environmental goals and initiatives to improve the sustainability of their lending policies. However, concerns regarding the extent to which environmental disclosures include unsubstantiated claims and serve as mere publicity tools are widespread.

Studying how banks' claims about the sustainability of their lending policies are associated with their lending decisions, we contribute to this debate. We show that features of banks' business models, such as relationship lending, hinder the effective transition to a green lending strategy and are potentially accentuated by zombie lending and banks' specialization in brown industries. In addition, the opacity of banks' portfolios exacerbates the problem, as banks' claims are hard to verify and dispute.

Our results support concerns about the lack of transparent and consistent sustainability disclosures (ECB 2022) and indicate that regulating the contents of the disclosures is necessary

to increase their informativeness. The recent EU Corporate Sustainability Reporting Directive (2022/2464), with its objective of standardizing the content of sustainability disclosures, harbors the promise of enhancing their substantive content while mitigating the prevalence of greenwashing practices.

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Figure 1. Banks' Emphasis on the Sustainability of Lending Policies over Time

The figure plots the mean *Environmental disclosures* in our sample over time. *Environmental disclosures* is defined as the number of words in paragraphs that emphasize the sustainability of a bank's lending policies in its investor reports in a year relative to the total number of words in the investor reports during that year. In percent.
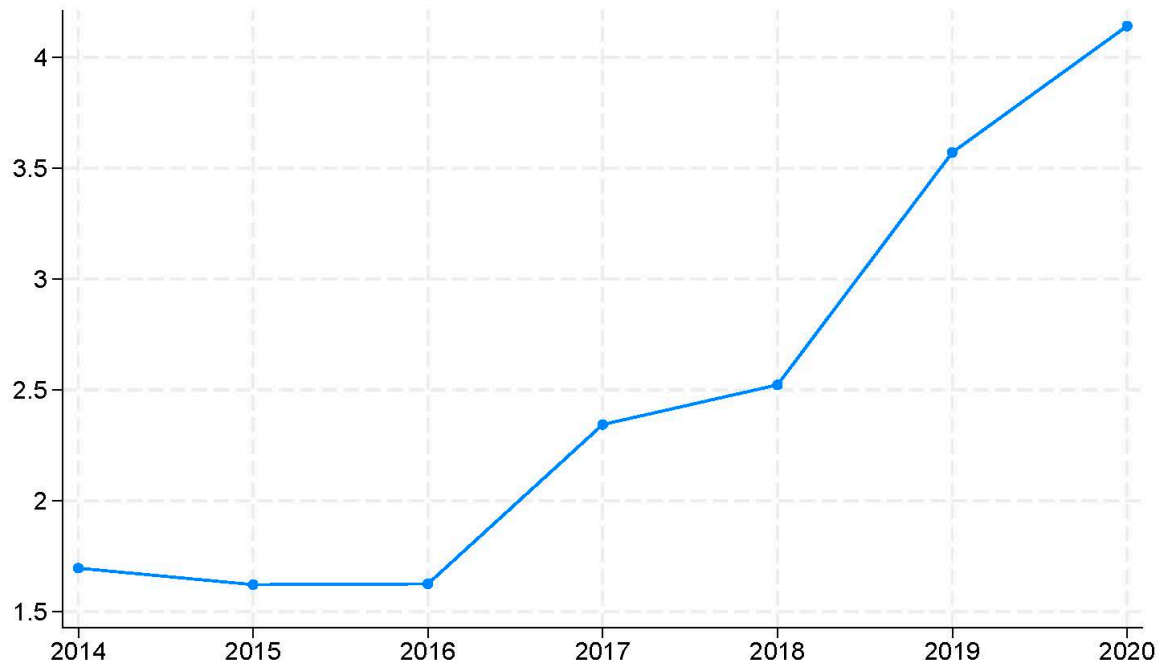
Figure 2. Banks' Emphasis on the Sustainability of Lending Policies and Exposure to Brown Industries

The figure shows the bin scatter plot depicting the relationship between banks' *Environmental Disclosures* and their ex-ante exposure to brown borrowers. It displays a bin scatter plot for the lagged share of the bank's lending to brown borrowers as a proportion of total credit outstanding (Brown exposure) and the continuous variable bank's *Environmental Disclosures*. Both scatter plots present averages for the data sorted into 20 bins based the exposure to brown firms.
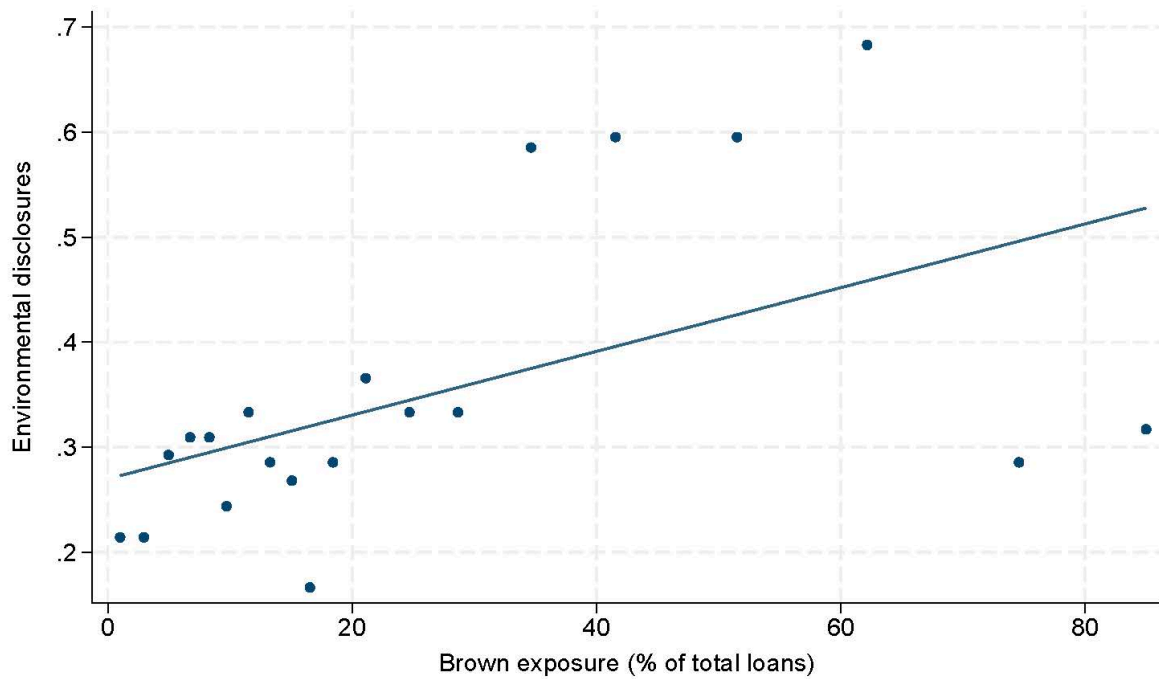
Figure 3. Banks' Emphasis on the Sustainability of Lending Policies and New Loans to Brown Industries

The figure presents the coefficients of time-varying estimates of the association between banks' environmental disclosures and the volume of new loans to borrowers in brown industries for each year, as described by Model 1. The dependent variable is the natural logarithm of the amount of new loans extended by a bank to a given borrower during a year (*Loan amount*). *Brown* is an indicator variable of whether a firm belongs to a NACE-2 industry for which the ratio of GHG emissions to gross value-added ranks in the top quintile of the ratio's distribution across all industries in the firm's country during a year. *High environmental reporter* is an indicator variable of whether a bank's environmental disclosures rank in the top quintile of the variable's distribution during a year. We plot the coefficient on the interaction term between these two variables estimated year by year. Vertical lines denote a 95% confidence interval. Standard errors are corrected for heteroskedasticity and clustered at the bank level.
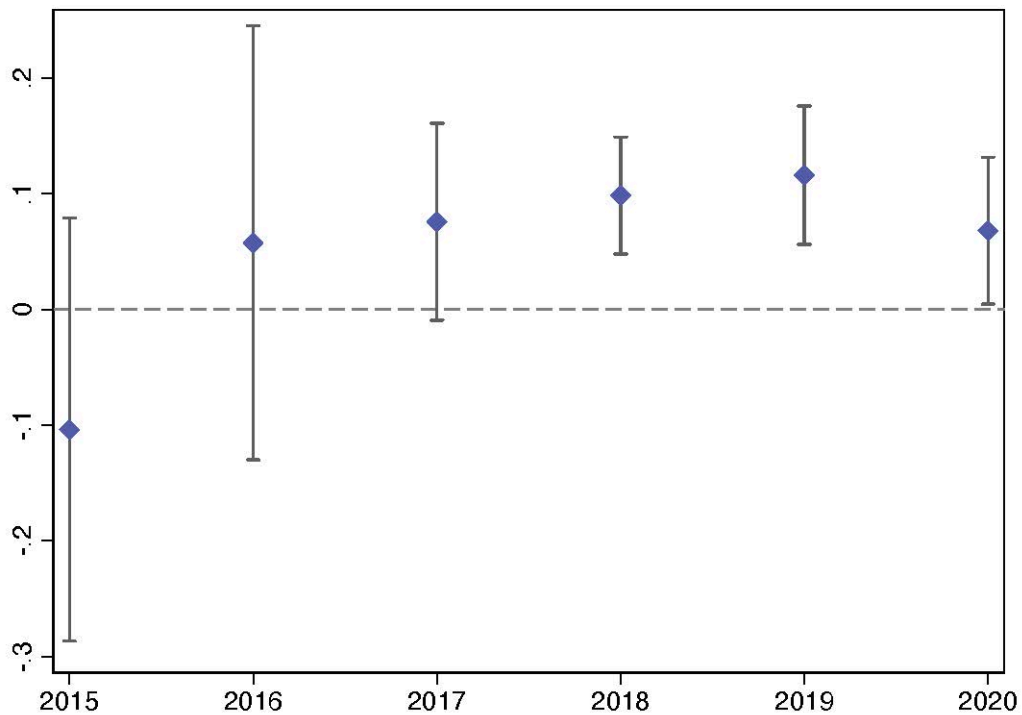
Table 1. Descriptive Statistics

The table reports descriptive statistics. Panel A reports the number of documents used to construct banks' *Environmental Disclosures*. Panel B reports the summary statistics for the variables pertaining to the bank level analysis in Table 2. Panel C reports the descriptive statistics for the analysis of banks' lending policies. Continuous variables are winsorized at 1% and 99%. Variables are defined in Appendix A.

Panel A. Banks' reports by year

Report type	Number of reports	Mean total wordcount	Mean environmental wordcount
Annual report	623	81,584	700
Integrated report	57	28,257	414
Nonfinancial report	61	17,411	466
Other	383	3,895	199
Sustainability report	273	17,199	509
Total	**1,397**	**42,760**	**503**

Panel B. Summary statistics of banks' characteristics

	Obs.	Mean	S.D.	Q1	Median	Q3
Environmental disclosures (%)	2,889	4.478	3.621	1.823	3.303	6.905
GRI standards	2,889	0.403	0.490	0.000	0.000	1.000
Integrated reporting	2,889	0.414	0.4912	0.000	0.000	1.000
Bloomberg Env score	1,121	42.086	10.520	39.286	44.643	47.321
ESG Corporate Knights	2,889	0.063	0.243	0.000	0.000	0.000
Green bond issuance	2,889	0.007	0.062	0.000	0.000	0.001
MSCI Env score	1,630	5.273	2.300	3.400	5.900	7.100
Sustainalytics Env score	2,476	60.921	15.196	54.726	59.167	71.435
Leverage	2,889	0.926	0.025	0.911	0.923	0.948
ROA	2,889	0.031	0.014	0.022	0.028	0.037
Total assets	2,889	25.855	1.358	25.059	25.568	27.202
Tier 1 capital	2,889	0.166	0.058	0.137	0.155	0.196
SBTI dummy	2,889	0.118	0.323	0	0	0

Panel C. Summary statistics of loan-level data

	Obs.	Mean	S.D.	Q1	Median	Q3
Loan Amount	3,740,323	11.00	1.52	10.13	10.82	11.90
Loan Maturity	3,712,480	1588	1213	574	1642	2100
Interest Rate	1,201,352	0.02	0.016	0.010	.016	0.028
High env. reporter	3,740,323	0.15	0.36	0	0	0
Brown	3,740,323	0.16	0.87	0	0	0
Leverage	3,740,323	0.91	0.03	0.89	0.91	0.93
ROA	3,740,323	0.03	0.01	0.02	0.03	0.04
Total assets	3,740,323	25.13	1.61	23.88	24.97	26.7
Tier 1 capital	3,740,323	0.18	0.04	0.15	0.17	0.20
GHG emissions (Urgentem)	3,765	109.68	181.83	19.96	32.57	78.9
Brown business	1,180,889	0.05	0.22	0	0	0
Green business	1,180,889	0.02	0.14	0	0	0

Table 2. Banks' Characteristics and Emphasis on Lending Policies' Sustainability

The table explores the relation between banks' *Environmental Disclosures* and their financial and environmental performance. The dependent variable is *Environmental disclosures*. All variables are defined in Appendix A. Continuous variables are winsorized at 1% and 99%. OLS regressions are used to estimate the models. Standard errors are corrected for heteroskedasticity and clustered at the bank level. ∗∗∗, ∗∗ and ∗ denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

	Environmental disclosures						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GRI standards	0.0084***	0.0098***	0.00548	0.00388	0.00332	0.0083***	0.00647**
	(0.00304)	(0.00292)	(0.00382)	(0.0037)	(0.00409)	(0.00284)	(0.00301)
Integrated reporting	0.0142*	0.0111	0.00628	0.0140	0.00311	0.0146**	0.0112
	(0.00742)	(0.00775)	(0.00729)	(0.0087)	(0.00757)	(0.00715)	(0.00761)
Leverage	-0.0252	-0.0268	0.0378	-0.0352	0.132*	-0.00585	-0.00370
	(0.0633)	(0.0617)	(0.0698)	(0.0808)	(0.0788)	(0.0628)	(0.0640)
ROA	0.0312	0.0342	0.0794	0.0562	0.0198	0.0416	0.0611
	(0.0532)	(0.0513)	(0.104)	(0.152)	(0.104)	(0.0504)	(0.0527)
Total assets	0.005***	0.0045***	0.00343*	0.00296	0.00131	0.0044***	0.0063***
	(0.00163)	(0.00154)	(0.00202)	(0.0019)	(0.00201)	(0.00123)	(0.00157)
Tier 1 capital	0.0674**	0.0657***	0.119***	0.0680	0.119***	0.0656**	0.0649**
	(0.0271)	(0.0247)	(0.0406)	(0.0431)	(0.0401)	(0.0268)	(0.0256)
SBTi signatory		0.0160**					
		(0.00728)					
MSCI Env score			0.002***				
			(0.00068)				
Sustainalytics Env score				0.0003***			
				(0.0001)			
Bloomberg Env score					0.0005***		
					(0.00014)		
ESG Corporate Knights						0.0243**	
						(0.0109)	
Green bond issuance							0.0415***
							(0.00827)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	622	622	462	457	359	622	622
R²	0.285	0.309	0.260	0.245	0.268	0.328	0.327

Table 3. Banks' Emphasis on the Sustainability of Lending Policies and New Loans to Green and Brown Industries

The table reports the results of the tests on the association between banks' environmental disclosures and the volume of new loans to borrowers in different industries during a year, as described by Model (1). In all specifications, the dependent variable is the natural logarithm of the amount of new loans extended by a bank to a given borrower during a year (*Loan amount*). In Panel A (B), *Brown* (*Green*) is an indicator variable of whether a firm belongs to a NACE-2 industry for which the ratio of GHG emissions to gross value added ranks in the top (bottom) quintile of the ratio's distribution across all industries in the firm's country during a year. *High environmental reporter* is an indicator variable of whether a bank's *Environmental Disclosures* rank in the top quintile of the variable's distribution during a year. Bank controls include *Total assets*, *Leverage*, *ROA*, and *Tier 1 Capital*. All variables are defined in Appendix A. Fixed effects and bank controls are included as indicated, but not tabulated. Dash (-) symbol refers to the fact that the controls/fixed effects are not applicable as they are nested in different (higher-order) fixed effects. OLS regressions are used to estimate the models. Standard errors are reported in parentheses, corrected for heteroskedasticity and clustered at the bank level. ∗∗∗, ∗∗ and ∗ denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

Panel A. Brown Industries

	Loan Amount				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	-0.0712	-0.0935*		-0.0507	
	(0.0577)	(0.0555)		(0.0434)	
Brown	-0.221***				
	(0.0266)				
High env. reporter x Brown	0.160***	0.110***	0.0783***	0.0494**	0.0331*
	(0.0349)	(0.0233)	(0.0209)	(0.0207)	(0.0196)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	2,822,338	3,740,323	3,740,250	828,689	828,074
R^2	0.705	0.200	0.207	0.792	0.797

Panel B. Green industries

	Loan Amount				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	-0.0420	-0.0695		-0.0390	
	(0.0675)	(0.0557)		(0.0450)	
Green	-0.0580				
	(0.0456)				
High env. reporter x Green	-0.0242	-0.0280	-0.00883	-0.0126	0.00169
	(0.0346)	(0.0201)	(0.0179)	(0.0251)	(0.0240)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	2,822,338	3,740,323	3,740,250	828,689	828,074
R^2	0.704	0.200	0.207	0.792	0.797

Table 4. Alternative proxies for brown borrowers

The table explores the association between banks' environmental disclosures and the volume of new loans to borrowers using alternative proxies for brown borrowers. In Panel A, brownness is defined using borrower-level emissions based on Urgentem data during a year. *GHG emissions* denotes the borrower's pollution intensity estimated as the ratio of the sum of Scope 1 and 2 GHG emissions to total revenues. In Panel, *Brown business* denotes an indicator variable constructed by performing textual analysis of business descriptions of public and private companies from S&P Capital IQ. In all specifications, the dependent variable is the natural logarithm of the amount of new loans extended by a bank to a given borrower during a year (*Loan amount*). *High environmental reporter* is an indicator variable of whether a bank's *Environmental Disclosures* rank in the top quintile of the variable's distribution during a year. Bank controls include *Total assets*, *Leverage*, *ROA*, and *Tier 1 Capital*. All variables are defined in Appendix A. Fixed effects and bank controls are included as indicated, but not tabulated. Dash (-) symbol refers to the fact that the controls/fixed effects are not applicable as they are nested in different (higher-order) fixed effects. OLS regressions are used to estimate the models. Standard errors are reported in parentheses, corrected for heteroskedasticity and clustered at the bank level. $***$, $**$ and $*$ denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

Panel A. Borrower-level GHG emissions

	Loan Amount				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	-0.193	-0.336**		-0.216	
	(0.148)	(0.157)		(0.133)	
GHG	-0.00129**	0.000742**	0.000929**		
	(0.000598)	(0.000368)	(0.000387)		
High env. reporter x GHG	0.0000882	0.00118**	0.00106*	0.000459	0.000403
	(0.000557)	(0.000559)	(0.000609)	(0.000542)	(0.000579)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	3,765	3,637	3,454	2,989	2,786
R^2	0.652	0.542	0.579	0.790	0.807

Panel B. Brown business description

	Loan Amount				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	-0.0194	-0.0427		-0.0288	
	(0.0309)	(0.0639)		(0.0445)	
Brown business		0.245***	0.244***		
		(0.0323)	(0.0321)		
High env. reporter x Brown business	-0.00488	0.189**	0.191**	0.0269	0.0211
	(0.0232)	(0.0924)	(0.0904)	(0.0406)	(0.0406)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	926,883	1,180,106	1,179,910	311,548	3109,51
R^2	0.729	0.254	0.263	0.806	0.811

Table 5. The Extensive Margin of Bank Lending and Emphasis on the Sustainability of Lending Policies

The table explores the extensive margin of banks' credit decisions. In Panel A, the dependent variable *Entry* is a binary variable equal to one if a bank-firm relationship that did not exist in year *t-1* is established in year *t*, and zero for any relationship that existed in year *t-1*. In Panel B, the dependent variable *Exit* is defined as one if the loan is not renewed and the bank-firm relationship from period *t-1* ceases to exist in period t, and zero otherwise. In both Panels, *Brown* is an indicator variable of whether a firm belongs to a NACE-2 industry for which the ratio of GHG emissions to gross value added ranks in the top quintile of the ratio's distribution across all industries in the firm's country during a year. *High environmental reporter* is an indicator variable of whether a bank's *Environmental Disclosures* rank in the top quintile of the variable's distribution during a year. Bank controls include *Total assets*, *Leverage*, *ROA*, and *Tier 1 Capital*. All variables are defined in Appendix A. Fixed effects and bank controls are included as indicated, but not tabulated. Dash (-) symbol refers to the fact that the controls/fixed effects are not applicable as they are nested in different (higher-order) fixed effects. OLS regressions are used to estimate the models. Standard errors are reported in parentheses, corrected for heteroskedasticity and clustered at the bank level. ∗∗∗, ∗∗ and ∗ denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

Panel A. New Relationships

	Entry				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	0.0452**	0.0381		0.0401**	
	(0.0219)	(0.0244)		(0.0173)	
Brown	-0.000804				
	(0.0106)				
High env. reporter x Brown	-0.0125	-0.00408	-0.00629	-0.00291	-0.0105*
	(0.0205)	(0.00763)	(0.00585)	(0.00840)	(0.00579)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	2,080,303	2,804,073	2,804,052	1,408,479	1,408,397
R2	0.391	0.0921	0.103	0.425	0.434

Panel B. Relationship Termination

	Exit				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	-0.0143	0.00788		-0.00774	
	(0.0284)	(0.0213)		(0.0114)	
Brown	-0.00110				
	(0.00793)				
High env. reporter x Brown	-0.00107	0.00469	0.00678	0.00125	0.00141
	(0.00664)	(0.00964)	(0.00919)	(0.00622)	(0.00617)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	1,191,339	1,719,707	1,719,695	919,101	919,040
R^2	0.363	0.0453	0.0535	0.451	0.456

Table 6. Bank-level Financing to Brown and Green Industries

The table explores the association between banks' environmental disclosures and their credit exposures to brown industries, as described by Model (2). The analyses are at the bank-industry-country-year level. The dependent variable is the ratio of a bank's annual new loan volume to a NACE-2 industry i in country c in year t, divided by the total value of new loans issued by the bank over a year (*Credit share*). *Brown* (*Green*) is an indicator variable of whether a firm belongs to a NACE-2 industry for which the ratio of GHG emissions to gross value added ranks in the top (bottom) quintile of the ratio's distribution across all industries in the firm's country during a year. *High environmental reporter* is an indicator variable of whether a bank's *Environmental Disclosures* rank in the top quintile of the variable's distribution during a year. Bank controls include *Total assets*, *Leverage*, *ROA*, and *Tier 1 Capital*. All variables are defined in Appendix A. Fixed effects and bank controls are included as indicated, but not tabulated. Dash (-) symbol refers to the fact that the controls/fixed effects are not applicable as they are nested in different (higher-order) fixed effects. OLS regressions are used to estimate the models. Standard errors are reported in parentheses, corrected for heteroskedasticity and clustered at the bank level. ***, ** and * denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

	Credit share					
	(1)	(2)	(3)	(4)	(5)	(6)
High env. Reporter	-0.0022*	-0.0007		0.0008	0.0019	
	(0.00125)	(0.00160)		(0.00118)	(0.00158)	
Brown	-0.0028***	-0.0003	-0.0009			
	(0.000876)	(0.00140)	(0.00133)			
High env. reporter x Brown	0.0115***	0.0090***	0.0070**			
	(0.00328)	(0.00336)	(0.00336)			
Green				-0.0001	0.0002	0.00004
				(0.00079)	(0.00082)	(0.00078)
High env. reporter x Green				-0.00396**	-0.0040**	-0.0033**
				(0.00171)	(0.00172)	(0.00164)
Bank controls	Yes	Yes	-	Yes	Yes	-
Bank FE	Yes	Yes	-	Yes	Yes	-
Industry FE	Yes	-	-	Yes	-	-
Time FE	Yes	-	-	Yes	-	-
Country FE	Yes	-	-	Yes	-	-
Country-Time FE	No	Yes	Yes	No	Yes	Yes
Industry-Time FE	No	Yes	Yes	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	No	Yes
N	93,963	93,959	93,874	93,963	93,959	93,874
R^2	0.346	0.353	0.349	0.346	0.353	0.349

Table 7. Loan Contractual Features

The table explores the association between banks' environmental disclosures and loan contractual features. In Panel A, the dependent variable is the agreed annualized interest rate offered by a bank to a given borrower during a year (*Interest Rate*). In Panel B, the dependent variable is the natural logarithm of the original maturity of new loans extended by a bank to a given borrower during a year (*Loan maturity*). As a firm may have multiple loans granted by the same bank in a year, *Interest Rate* and *Loan maturity* are computed as the weighted average of the loans' interest rate and maturity, respectively, at the bank-firm-time level using loan sizes as weights. *Brown* is an indicator variable of whether a firm belongs to a NACE-2 industry for which the ratio of GHG emissions to gross value added ranks in the top quintile of the ratio's distribution across all industries in the firm's country during a year. *High environmental reporter* is an indicator variable of whether a bank's *Environmental Disclosures* rank in the top quintile of the variable's distribution during a year. Bank controls include *Total assets*, *Leverage*, *ROA*, and *Tier 1 Capital*. All variables are defined in Appendix A. Fixed effects and bank controls are included as indicated, but not tabulated. Dash (-) symbol refers to the fact that the controls/fixed effects are not applicable as they are nested in different (higher-order) fixed effects. OLS regressions are used to estimate the models. Standard errors are reported in parentheses, corrected for heteroskedasticity and clustered at the bank level. ∗∗∗, ∗∗ and ∗ denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

Panel A. Interest Rate

	Interest rate				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	0.000959	-0.00107		-0.00104**	
	(0.000945)	(0.000746)		(0.000437)	
Brown	0.00166**				
	(0.000669)				
High env. reporter x Brown	0.000972	-0.000318	-0.000704**	-0.000441	-0.000450
	(0.000726)	(0.000378)	(0.000334)	(0.000446)	(0.000441)
Bank controls	Yes	Yes	-	Yes	-
Loan controls	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	671,120	1,201,352	1,201,282	359,679	359,427
R^z	0.721	0.378	0.392	0.737	0.741

Panel B. Loan Maturity

	Loan maturity				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	0.0398	0.0389		0.0500	
	(0.0741)	(0.0320)		(0.0327)	
Brown	-0.170***				
	(0.0344)				
High env. reporter x Brown	0.112*	0.0223	-0.0168	0.000923	-0.0201
	(0.0627)	(0.0238)	(0.0176)	(0.0260)	(0.0208)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	2,810,878	3,712,480	3,712,407	824,777	824,165
R^2	0.519	0.250	0.268	0.656	0.665

Table 8. Banks' Emphasis on the Sustainability of Lending Policies and the Funding of Transition to Greener Technologies

The table explores whether the association between banks' environmental disclosures and the volume of new loans to brown borrowers is explained by banks' financing the transition to greener technologies as described by Model (3). In columns 1 and 2, we use an indicator variable of whether a borrower's ratio of R&D to total assets ranks in the top quartile of the variable's distribution across the firms in the same NACE 2 industry over a year. In columns 3 and 4, we use an indicator variable of whether a firm's ratio of change in fixed assets to total assets ranks in the top quartile of firms in the same industry (NACE-2) over a year. In columns 5 and 6, we use an indicator variable of whether a firm's age is less than five years. In columns 7 and 8, we compare lending to firms with emissions reductions targets or commitments with the SBTi and with firms of the same size and same industry (NACE-2) without SBTi commitments. In columns 9 and 10, *Green business* denotes an indicator variable constructed by performing textual analysis of business descriptions of public and private companies from S&P Capital IQ. *Brown* is an indicator variable of whether a firm belongs to a NACE-2 industry for which the ratio of GHG emissions to gross value added ranks in the top quintile of the ratio's distribution across all industries in the firm's country during a year, and *High environmental reporter* is an indicator variable of whether a bank's *Environmental Disclosures* rank in the top quintile of the variable's distribution during a year. All variables are defined in Appendix A. Dash (-) symbol refers to the fact that the controls/fixed effects are not applicable as they are nested in different (higher-order) fixed effects. OLS regressions are used to estimate the models. Standard errors are reported in parentheses, corrected for heteroskedasticity and clustered at the bank level. ∗∗∗, ∗∗ and ∗ denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

	Loan Amount									
Proxy:	R&D		Investment		Young Firm		SBTi		Green Business	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
High env. reporter x Brown	0.0713***	0.0384*	0.0715***	0.0346	0.0645***	0.0430*	-0.0478	0.0337	0.0614*	0.0274
	(0.0173)	(0.0220)	(0.0189)	(0.0247)	(0.0190)	(0.0236)	(0.0685)	(0.0324)	(0.0369)	(0.0254)
High env. reporter x Proxy	0.161	0.211	0.0274	-0.0145	0.0867	0.0458	1.001***	0.481**	0.154	0.0608
	(0.265)	(0.141)	(0.0603)	(0.0169)	(0.0793)	(0.0284)	(0.348)	(0.228)	(0.178)	(0.0520)
High env. reporter x Brown x Proxy	-0.509	-0.487**	-0.00095	0.0257	0.0387	-0.0452	-1.492**	-0.395	0.0694	0.0623
	(0.522)	(0.229)	(0.0506)	(0.0272)	(0.0617)	(0.0443)	(0.671)	(0.636)	(0.187)	(0.0622)
Industry-Country-Time FE	Yes	-	Yes	-	Yes	-	Yes	-	Yes	-
Firm-Time FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Bank-Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2,218,763	683,941	2,084,272	667,548	2,291,896	687,031	395,068	122,212	1,151,259	308,230
R^2	0.208	0.792	0.210	0.791	0.215	0.792	0.314	0.816	0.255	0.810

Table 9. The Environmental Impact of Bank Relationships and Zombie Lending

The table examines why banks that emphasize the sustainability of their lending policies lend to brown borrowers using several proxies for borrower quality and ability to access other sources of funding, as described by Model (3). Columns 1 and 2 present the *Exposure* proxy that denotes the share of credit a firm *f* receives from bank *b* as a share of the firm's total bank credit outstanding at *t-1*. Columns 3 and 4 use an indicator variable of whether a firm's total assets rank in the top quartile of firms in the same year. Columns 5 and 6 use a dummy variable, *High Leverage*, that takes the value of 1 if the firm's leverage ranks in the bottom quartile of firms in the same industry (NACE-2) and the same year, and 0 otherwise. Columns 7 and 8 report the estimates using a dummy variable that takes the value of 1 if the interest coverage ratio ranks in the bottom quartile of firms in the same industry (NACE-2) and the same year, and 0 otherwise. In all specifications, the dependent variable is the natural logarithm of the amount of new loans extended by a bank to a given borrower during a year (*Loan amount*). The dummy variable *Brown* takes the value of 1 if the firm belongs to the NACE-2 industry for which the ratio of GHG emissions to gross value added ranks in the top quintile of all industries in the respective reporting country during year *t*, and 0 otherwise. *High environmental reporter* is a dummy variable that takes value equal to 1 if bank's *Environmental Disclosures* rank in the top quintile of the variable's distribution in year *t*, and 0 otherwise. Fixed effects are included as indicated in the table, but not tabulated. Dash (-) symbol refers to the fact that the controls/fixed effects are not applicable as they are nested in different (higher-order) fixed effects. OLS regressions are used to estimate the models. Standard errors are reported in parentheses, corrected for heteroskedasticity and clustered at the bank level. ∗∗∗, ∗∗ and ∗ denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

	Loan Amount							
Proxy:	Exposure		Large Firms		High Leverage		Low Interest Coverage Ratio	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High env. reporter x Brown	0.0105	0.0246	0.0767**	0.0346*	0.0838***	0.000759	0.0838***	0.000759
	(0.0462)	(0.0233)	(0.0313)	(0.0184)	(0.0263)	(0.0284)	(0.0263)	(0.0284)
High env. reporter x Proxy	0.0160	0.0875	-0.0987	-0.0204	0.0140	0.0756***	0.0845	0.0175
	(0.0791)	(0.0971)	(0.0854)	(0.0563)	(0.0610)	(0.0288)	(0.120)	(0.0169)
High env. reporter x Brown x Proxy	0.181***	0.108**	-0.118*	0.00458	0.0297	0.117***	0.0298	0.176***
	(0.0657)	(0.0487)	(0.0713)	(0.0284)	(0.0681)	(0.0372)	(0.103)	(0.0551)
Industry-Country-Time FE	Yes	-	Yes	-	Yes	-	Yes	-
Firm-Time FE	No	Yes	No	Yes	No	Yes	No	Yes
Bank-Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1,626,362	408,934	2,218,763	683,941	1,859,253	625,353	1,797,872	658,799
R^2	0.194	0.797	0.410	0.792	0.222	0.792	0.195	0.790

Table 10. Cross-sectional Differences in Institutional and Bank-specific Characteristics

We test whether the association between banks' environmental disclosures and lending to borrowers in green industries is influenced by institutional and bank characteristics. In columns 1 and 2, *Low Tier 1 capital* is an indicator variable of whether a bank's tier 1 capital adequacy ratio ranks in the bottom quartile of the distribution. In columns 3 and 4, *Large bank* is an indicator variable of whether a bank's total assets rank in the top quartile of the distribution. In columns 5 and 6, *Post Paris agreement* is an indicator variable of whether a loan was issued post 2016. In columns 7 and 8, *Audited sustainability report* is an indicator variable of whether a borrower's sustainability report is audited by an external reviewer or auditor. In all specifications, the dependent variable is the natural logarithm of the amount of new loans extended by a bank to a given borrower during a year (*Loan amount*). *Brown* is an indicator variable of whether a firm belongs to a NACE-2 industry for which the ratio of GHG emissions to gross value added ranks in the top quintile of the ratio's distribution across all industries in the firm's country during a year. *High environmental reporter* is an indicator variable of whether a bank's *Environmental Disclosures* rank in the top quintile of the variable's distribution during a year. Bank controls include *Total assets*, *Leverage*, *ROA*, and *Tier 1 Capital*. All variables are defined in Appendix A. Fixed effects and bank controls are included as indicated, but not tabulated. Dash (-) symbol refers to the fact that the controls/fixed effects are not applicable as they are nested in different (higher-order) fixed effects. OLS regressions are used to estimate the models. Standard errors are reported in parentheses, corrected for heteroskedasticity and clustered at the bank level. ∗∗∗, ∗∗ and ∗ denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

	Loan amount							
Factor:	Low Tier 1 capital		Large bank		Post Paris agreement		Audited sustain. report	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High env. reporter x Brown	0.0412**	0.0214	-0.0487	-0.168**	-0.0447	0.132	0.0816***	0.0257
	(0.0189)	(0.0290)	(0.0565)	(0.0837)	(0.0660)	(0.0953)	(0.0312)	(0.0236)
High env. reporter x Brown x Factor	0.0807**	0.0215	0.136**	0.205**	0.129*	-0.101	-0.0146	-0.00180
	(0.0399)	(0.0340)	(0.0543)	(0.0840)	(0.0731)	(0.0947)	(0.0425)	(0.0546)
Industry-Country-Time FE	Yes	-	Yes	-	Yes	-	Yes	-
Bank-Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-Time FE	No	Yes	No	Yes	No	Yes	No	Yes
N	3,740,250	828,074	3,740,250	828,070	3,740,250	828,070	3,740,250	828,070
R^2	0.207	0.797	0.207	0.797	0.207	0.797	0.207	0.797

Appendix A. Variable Definitions

Variables	Variable definitions
Bank disclosure characteristics	
Environmental disclosures	The ratio of number words in paragraphs that emphasize the sustainability of a bank's lending policies in its investor reports during a year relative to the total number of words in the bank's investor reports during that year.
SBTi	Binary variable equal to one if a bank has joined the signatories of the Science Based Targets initiative, zero otherwise.
GRI standards	Binary variable equal to one if a bank prepares the sustainability reporting under the Global Reporting Initiative Standards, zero otherwise.
Integrated reporting	Binary variable equal to one if a bank issues an Integrated Report, zero otherwise.
Bank sustainability performance	
Bloomberg Env score	Bank's Environmental disclosure score provided by Bloomberg.
ESG Corporate Knights	Binary variable equal to one if a bank is included in ESG Corporate Knights' short-list of top ESG performers, zero otherwise.
Green bond issuance	The ratio of the annual green bond volume a bank underwrites to bank's total assets. Green bond issuance volume is obtained by Bloomberg.
MSCI Env score	Bank's environmental pillar score provided by MSCI.
Sustainalytics Env score	Bank's mean environmental score provided by Sustainalytics. Environmental score is the mean of (e1.1 +e1.2 +e1.3 +e1.4 +e1.5 +e1.6 +e1.7 +e1.7.0 +e1.8 +e1.9 +e1.10 +e1.11 +e1.12 +e2.1 +e2.2 +e2.3 +e3.1.10 +e3.1.11 +e3.1.15). We focus on these sustainability indices, for which sample banks have less than 50 percent missing variable values.
Bank financial performance	
Leverage	Total debt to total assets.
ROA	Operating income to gross loans.
Total assets	The natural logarithm of total assets (in Euro).
Tier 1 capital	Tier 1 capital to total assets.
AnaCredit loan variables	
Loan Amount	The natural logarithm of the amount of new loans granted by a bank to a given borrower during a year. We consider the following type of facilities: loans other than overdrafts, convenience credit, extended credit, credit card credit, revolving credit other than credit card credit, reverse repurchase agreements, trade receivables and financial leases.

Loan Interest Rate	Annualized interest rate on a new loan offered by a bank to a given borrower during a year. As a firm may have multiple loans granted by the same bank in a year, *Loan Interest Rate* is computed as the weighted average of the loan interest rates at the bank-firm-time level using loan sizes as weights.
Loan Maturity	The natural logarithm of the original maturity of new loans extended by a bank to a given borrower during a year. As a firm may have multiple loans granted by the same bank in a year, *Loan Maturity* is computed as the weighted average of the loan maturity at the bank-firm-time level using loan sizes as weights.
Exposure	A share of credit a firm *f* receives from bank *b* as a share of the firm's total bank credit outstanding.

Brown / Green industries and firms

Brown	Binary variable that takes the value of one if a firm belongs to a NACE-2 industry for which the ratio of GHG emissions to gross value added ranks in the top quintile of the ratio's distribution across all industries in the firm's country during a year, zero otherwise.
Green	Binary variable that takes the value of one if a firm belongs to a NACE-2 industry for which the ratio of GHG emissions to gross value added ranks in the bottom quintile of the ratio's distribution across all industries in the firm's country during a year, zero otherwise.
GHG emissions	The borrower's pollution intensity measured as the ratio of the sum of Scope 1 and 2 GHG emissions to total revenues. Source: Urgentem.
Brown (Green) business	Binary variable constructed by performing textual analysis of business descriptions of public and private companies from S&P Capital IQ. We define a business as brown (green) if a brown (green) word occurs in the firm's business description without a green (brown) word. Brown and green words are listed in Appendix B.

Firm characteristics (Orbis)

R&D	Firm's ratio of R&D to total assets.
Investment	Firm's ratio of change in fixed assets to total assets.
Interest coverage ratio	Firm's EBIT to interest expense.
Leverage	Firms' total debt to total assets.

Appendix B. Dictionaries

Business description keywords

Panel A. Brown industries keywords

airlines	drilling	mining
airplane	fracking	nitric acid
air transport	fuel	oil
aluminum	gas	paraffin
ammonia	grabbing	petrochemical
asbesto	hydrocarbon	petrol
aviation	hydrochlorin	plastics
cement	iron	polymer
chemical products	kerosene	refine
chemicals	lng	silicium
chlorin	logging	soda ash
coal	lpg	steel
copaper	lubricant	sulfide
diesel	metal fabrication	sulphide
diesel	methanol	sulphuric
drill	mines	

Panel B. Green industries keywords

AIR QUALITY	bioliquid	solar	forest management
air filter(-ration)	biopower	static var	forest land
air quality	bioremediation	superconduct	forest protection
biodiesel	capacitor	thermal	forest regeneration
biolng	charging point	thermodynamic	maritime safety
biolpg	charging station	thermoelectric	natural forest
biomethane	clean energy	thermostat	oil cleanup
carbon dioxide	cogenerate(-ion)	trigenerate(ion)	oil removal
contaminate(-ion)	condensing boiler	ultrasonic humidifier	oil spil
decommision	distributed generate	uranium	organic
degas	electricity storage	voltage regulation	protected area
electric bus	energy audit	**CIRCULARITY**	rainforest
electric car	energy certified(-cation)	biowaste	reforestration
electric mobility	energy conservation	circular	regenerative farm
electric transport	energy consumption	circularity	seeding
electric vehicle	energy diagnosis	demineral	tropical forest
electromobil	energy efficient(-cy)	desalination	wildlife
emission	energy monitor	drinking water	**GENERAL**
e-mobil	energy optimum(-ization)	material recovery	climate

fuel consumption	energy recovery	potabilization	drone imaging
fuel inspection	energy saving	rainwater	energy perfomance
fuel repair	energy storage	recycling	enviromental impact
gas capture	energy transition	waste consulting	environment protection
heat pump	energy yield	waste recovery	environmental data
hybrid car	flywheel	waste removal	environmental inspection
hybrid vehicle	fuel cell	waste reuse	environmental management
hybrid vessel	heat recovery	waste solution	environmental monitor
hydrogen	hydraulic	wastewater system	environmental policy
low carbon	hydro	water collection	environmental protection
methane leakage	insulate(-ion)	water consulting	environmental regulation
nitrogen	led	water filter(-ration)	environmental research
nox	lighting control	water purification	environmental risk
rail transport	low power	water quality	environmental safety
railway	marine energy	water remediation	environmental solution
ENERGY MANAGEMENT	nuclear	water reuse	environmental technology
alternative energy	ocean energy	water safety	green
alternative fuel	photovoltaic	water scarcity	natural science
battery(-ies)	proofing	water treatment	pollutant
bioclimatic	renewable	**BIODIVERSITY**	pollution
bioenergy	retrofit	ecology	sustainability
biofuel	sealing	ecosystem	sustainable
biogas	smart energy	endangered	

Appendix C. Example of Banks' Disclosures on Environmental Issues

In this section, we list some examples from banks' annual filings to illustrate how our dictionary captures disclosures on environmental activities.

ING Group (Annual Report 2020)
ING's power generation portfolio continues to outperform the market and both the International Energy Agency's sustainable development scenario (SDS) and the OECD scenario. In the 12 months measured in the Terra report, **ING reduced its direct exposure to coal-fired power plants by 43 percent (in line with our commitment to reduce it to close to zero by the end of 2025) and increased financing for renewable energy generation by €1.19 billion.** Other sectors face more challenges, such as the residential mortgage sector. There we encounter a shortage of accurate data to measure progress and a general lack of homeowner action. (…) (One of the targets) is our aim **to reduce financing to upstream oil and gas by 19 percent by 2040 from 2019 levels**. We'll align this portfolio both by decreasing exposure and **engaging with clients to help them shift to low-carbon technology**. The measurement is based on three indicators: **emission** intensity, an absolute reduction in financing and a relative transition of the financing mix from high-**carbon** to low-**carbon** and **renewable** energy. This target is also aligned with the SDS scenario, which is not static. If more or quicker action is needed and this scenario is adjusted, our target will adjust accordingly.

Credit Agricole (2020 Annual Report, pg. 61-62)

Propose a range of green offers for the climate transition of Corporate and individual customers

LCL's climate transition offers:
"Sustainable City – **Green** Mobility" consumer loans are designed to finance the purchase of new or used **vehicles** (including pre-financing of the environmentally friendly **car** grant) that produce few or no **polluting emissions**. Loan amounts vary between €3,000 and €75,000, which makes it possible to purchase to a wide range of **vehicles**.
"Impact financing": for its SME and mid-cap customers, LCL structures and arranges "Impact Financing" ("**Green** Loans" and "Sustainability- Linked Loans"), which are loans or credits whose margin is indexed to ESG performance criteria specific to the company being financed. This offer allows our customers to align their CSR strategy with their financing and, if they achieve their targets, to benefit from a subsidised rate (…) The LCL SmartBusiness programme is designed to support business customers (SMEs, mid-caps, key accounts) with major changes, in particular by promoting the **energy** transition with Greenflex, providing advice on **energy** transition, environmental and societal issues, joining forces with Voltalia through electricity contracts (CPPA), which bring added value to the heart of our customers' business, and with Global **Climate** Initiatives to measure and reduce the environmental footprint. (…)

Farmers also play an essential role in preserving **biodiversity**. Birds and insects in **agricultural** environments, especially pollinators, are key indicators of agro-ecosystem health and are essential for **agricultural** production and food security. As the leading banker to farmers and **foresters**, the Crédit Agricole Group supports farmers in these initiatives and works to preserve and develop **forest** areas in France and abroad, since 80% of the earth's **biodiversity** is found in forests.

Commerzbank (2019)- GRI Report (pg. 53-54):

The integration of non-financial aspects into the Bank's **risk management processes** is hugely important for sustainable finance. These include risks resulting from **climate change**. They form part of the overall risk management and in future will be anchored even more firmly in the risk strategy under "Commerzbank 5.0". Credit risk management already incorporates climate issues in country and sector analyses and in risk assessment. Physical risks include rising sea levels and flooding for the real estate sector, along with crop failures in agriculture or low water levels in rivers, with implications for the transport and chemical industries. Transition risks such as changes in energy policy are also taken into account in the analysis.

Lending decisions for companies and institutional customers are therefore based not only on an individual risk assessment but also – where relevant – on the extent to which they involve climate risks and on the level of resistance to them. If a customer is exposed to a
higher probability of physical climate risk, a scenario analysis is carried out and the resilience to climate-related phenomena tested.

In implementing the "Commerzbank 5.0" strategy, we are currently developing a methodology for embedding sustainability considerations in the future management of Commerzbank AG's loan portfolio. **The initial focus is on the CO2 emissions associated with our business activities**. The CO2 intensity of the bank's loan portfolio is to be reduced through individual target values and measures. These include the **promotion of emission-reducing technologies and the active management of financing in CO2-intensive industries**.

By contrast, environmental and social risks arising from our core business are assessed in Commerzbank AG's Reputational Risk Management department. The Bank has adopted a clear position on controversial issues such as weapons, environmentally harmful energy sources and speculative trading in basic foodstuffs. Our process for managing these risks is described in detail in the framework for handling environmental and social risks in the core business, which is published online. The framework also includes all industry-specific requirements, for example relating to mining, energy, oil and gas. Exclusion criteria were defined for particularly critical products, transactions or business relationships. These include projects related to fracking or tar sands, but also the Group-wide decision not to finance new coal (…)

Internet Appendix.

Supplementary Findings

Table IA.I. Banks' Emphasis on the Sustainability of Lending Policies and New Loans to Green and Brown Industries-Robustness using Post 2018 Period

The table reports the results of a robustness test of the baseline analyses in Table 3 considering only loans originated post 2018. In all specifications, the dependent variable is the natural logarithm of the amount of new loans extended by a bank to a given borrower during a year (*Loan amount*). In Panel A (B), *Brown* (*Green*) is an indicator variable of whether a firm belongs to a NACE-2 industry for which the ratio of GHG emissions to gross value added ranks in the top (bottom) quintile of the ratio's distribution across all industries in the firm's country during a year. *High environmental reporter* is an indicator variable of whether a bank's *Environmental Disclosures* rank in the top quintile of the variable's distribution during a year. Bank controls include *Total assets*, *Leverage*, *ROA*, and *Tier 1 Capital*. All variables are defined in Appendix A. Fixed effects and bank controls are included as indicated, but not tabulated. Dash (-) symbol refers to the fact that the controls/fixed effects are not applicable as they are nested in different (higher-order) fixed effects. OLS regressions are used to estimate the models. Standard errors are reported in parentheses, corrected for heteroskedasticity and clustered at the bank level. ∗∗∗, ∗∗ and ∗ denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

Panel A. Brown Industries

	Loan Amount				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	-0.0304	-0.0867		-0.0448	
	(0.134)	(0.0786)		(0.0471)	
Brown	-0.0497∗∗∗				
	(0.0182)				
High env. reporter x Brown	0.00809	0.101∗∗∗	0.0847∗∗∗	0.0275	0.0311
	(0.0234)	(0.0213)	(0.0243)	(0.0197)	(0.0217)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	1,614,428	2,483,590	2,483,549	669,713	669,496
R^2	0.761	0.183	0.187	0.781	0.785

Panel B. Green industries

	Loan Amount				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	-0.0268	-0.0649		-0.0380	
	(0.140)	(0.0816)		(0.0485)	
Green	-0.0181				
	(0.0474)				
High env. reporter x Green	-0.00402	-0.0205	0.00239	-0.00774	0.00491
	(0.0317)	(0.0241)	(0.0171)	(0.0321)	(0.0279)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	1,614,428	2,483,590	2,483,549	669,713	669,496
R^2	0.761	0.183	0.187	0.781	0.785

Table IA.II. Banks' Emphasis on the Sustainability of Lending Policies and New Loans to Green and Brown Industries-Robustness using Environmental Disclosures as a Continuous Variable

The table reports the results of a robustness test of the baseline analyses in Table 3 using a continuous version of the *Environmental disclosures* variable. In all specifications, the dependent variable is the natural logarithm of the amount of new loans extended by a bank to a given borrower during a year (*Loan amount*). In Panel A (B), *Brown* (*Green*) is an indicator variable of whether a firm belongs to a NACE-2 industry for which the ratio of GHG emissions to gross value added ranks in the top (bottom) quintile of the ratio's distribution across all industries in the firm's country during a year. *Environmental disclosures* variable is defined as the percentage of the ratio of the number of words in paragraphs that we classify as emphasizing the sustainability of a banks lending policies during a year to the total number of words in the bank's investor reports during that year. Bank controls include *Total assets*, *Leverage*, *ROA*, and *Tier 1 Capital*. All variables are defined in Appendix A. Fixed effects and bank controls are included as indicated, but not tabulated. Dash (-) symbol refers to the fact that the controls/fixed effects are not applicable as they are nested in different (higher-order) fixed effects. OLS regressions are used to estimate the models. Standard errors are reported in parentheses, corrected for heteroskedasticity and clustered at the bank level. ∗∗∗, ∗∗ and ∗ denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

Panel A. Brown Industries

	Loan Amount				
	(1)	(2)	(3)	(4)	(5)
Environmental disclosures	1.215	0.286		0.179	
	(0.813)	(0.551)		(0.834)	
Brown	-0.162***				
	(0.0373)				
Environmental disclosures x Brown	-0.941	0.948***	0.687**	0.185	0.0698
	(0.793)	(0.309)	(0.318)	(0.276)	(0.228)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	2,822,338	3,740,323	3,740,250	828,689	828,074
R^2	0.705	0.200	0.207	0.792	0.797

Panel B. Green industries

	Loan Amount				
	(1)	(2)	(3)	(4)	(5)
Environmental disclosures	1.173	0.476		0.349	
	(0.809)	(0.516)		(0.789)	
Green	-0.0835[*]				
	(0.0481)				
Environmental disclosures x Green	0.498	-0.369	-0.187	-0.546	-0.308
	(0.362)	(0.278)	(0.242)	(0.344)	(0.374)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	2,822,338	3,740,323	3,740,250	828,689	828,074
R^2	0.705	0.200	0.207	0.792	0.797

Table IA.III. Robustness: Using Lagged and Future Disclosures

The table reports the results of a robustness test of the baseline analyses in Panel A of Table 3 using alternative proxies for high environmental reporters. In Panel A, we define the *High environmental reporter* dummy using the three-year lag of the environmental disclosures. In Panel B, we report the estimates using one year lead and lag of the environmental disclosures. In all specifications, the dependent variable is the natural logarithm of the amount of new loans extended by a bank to a given borrower during a year (*Loan amount*). *Brown* is an indicator variable of whether a firm belongs to a NACE-2 industry for which the ratio of GHG emissions to gross value added ranks in the top quintile of the ratio's distribution across all industries in the firm's country during a year. Bank controls include *Total assets*, *Leverage*, *ROA*, and *Tier 1 Capital*. All variables are defined in Appendix A. Fixed effects and bank controls are included as indicated, but not tabulated. Dash (-) symbol refers to the fact that the controls/fixed effects are not applicable as they are nested in different (higher-order) fixed effects. OLS regressions are used to estimate the models. Standard errors are reported in parentheses, corrected for heteroskedasticity and clustered at the bank level. ∗∗∗, ∗∗ and ∗ denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

Panel A: Robustness using Lagged Environmental Disclosures

	Loan Amount				
	(1)	(2)	(3)	(4)	(5)
High env. reporter (t-3)	-0.163	-0.150∗∗∗		-0.201∗∗∗	
	(0.148)	(0.0329)		(0.0394)	
Brown	-0.0534∗∗∗				
	(0.0197)				
High env. reporter (t-3) x Brown	0.0360	0.0905∗∗∗	0.0691∗∗∗	0.0250	0.0250
	(0.0227)	(0.0231)	(0.0221)	(0.0214)	(0.0230)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	1,552,512	2,386,642	2,386,627	636,756	636,539
R^2	0.761	0.179	0.183	0.780	0.783

Panel B: Robustness with Leads and Lags of Environmental Disclosures

	Loan Amount					
	(1)	(2)	(3)	(4)	(5)	(6)
High env. reporter (t-1) x Brown	0.0796*** (0.0212)	0.0309* (0.0186)				
High env. reporter (t) x Brown			0.0783*** (0.0209)	0.0331* (0.0196)		
High env. reporter (t+1) x Brown					0.0790*** (0.0196)	0.0342 (0.0278)
Industry-Country-Time FE	Yes	-	Yes	-	Yes	-
Firm-Time FE	No	Yes	No	Yes	No	Yes
Bank-Time FE	Yes	Yes	Yes	Yes	Yes	Yes
N	3,390,994	786,615	3,740,250	828,074	2,623,380	534,600
R^2	0.196	0.794	0.207	0.797	0.211	0.802

Table IA.IV. The Extensive Margin of Bank Lending and Emphasis on the Sustainability of Lending Policies: Green Industries

The table reports the results of the tests on the extensive margin of banks' credit decisions considering green industries. In Panel A, the dependent variable *Entry* is a binary variable equal to one if a bank-firm relationship that did not exist in year *t-1* is established in year *t*, and zero for any relationship that existed in year *t-1*. In Panel B, the dependent variable *Exit* is defined as one if the loan is not renewed and the bank-firm relationship from period *t-1* ceases to exist in period t, and zero otherwise. In both Panels, *Green* is an indicator variable of whether a firm belongs to a NACE-2 industry for which the ratio of GHG emissions to gross value added ranks in the bottom quintile of the ratio's distribution across all industries in the firm's country during a year. *High environmental reporter* is an indicator variable of whether a bank's *Environmental Disclosures* rank in the top quintile of the variable's distribution during a year. Bank controls include *Total assets*, *Leverage*, *ROA*, and *Tier 1 Capital*. All variables are defined in Appendix A. Fixed effects and bank controls are included as indicated, but not tabulated. Dash (-) symbol refers to the fact that the controls/fixed effects are not applicable as they are nested in different (higher-order) fixed effects. OLS regressions are used to estimate the models. Standard errors are reported in parentheses, corrected for heteroskedasticity and clustered at the bank level. ***, ** and * denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

Panel A. New Relationships

	Entry				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	0.0348	0.0328		0.0338**	
	(0.0212)	(0.0231)		(0.0159)	
Green	0.0166				
	(0.0207)				
High env. reporter x Green	0.0199*	0.0125	0.00895*	0.0159	0.0119**
	(0.0101)	(0.00865)	(0.00497)	(0.00975)	(0.00461)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	2,080,303	2,804,073	2,804,052	1,408,479	1,408,397
R2	0.391	0.0921	0.103	0.425	0.434

Panel B. Relationship Termination

	Exit				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	-0.0121	0.0103		-0.00582	
	(0.0295)	(0.0219)		(0.0118)	
Green	-0.0310**				
	(0.0136)				
High env. reporter x Green	-0.00886	-0.00624	-0.00305	-0.00628*	-0.00459
	(0.00618)	(0.00392)	(0.00305)	(0.00370)	(0.00318)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	1,191,339	1,719,707	1,719,695	919,101	919,040
R^2	0.363	0.0453	0.0535	0.451	0.456

Table IA.V. Firm's Exposure to Banks that Emphasize the Sustainability of their Lending Policies and Subsequent GHG Emissions

The table tests whether firms that receive loans from high environmental reporters subsequently reduce their GHG emissions obtained from Urgentem data. The dependent variable is the borrower's pollution intensity estimated as the ratio of the sum of Scope 1 and 2 GHG emissions to total revenues. Columns (1) and (2) estimate the effect on GHG in year *t+1*. Columns (3)-(4) and (5)-(6) report the effects for subsequent year *t+2* and *t+3,* respectively. *High env. reporter exposure* denotes the share of credit a firm receives from high-environmental-disclosure banks as a share to total bank credit in year *t*. Fixed effects are included as indicated, but not tabulated. OLS regressions are used to estimate the models. Standard errors are reported in parentheses, corrected for heteroskedasticity and clustered at the firm level. ***, ** and * denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

	GHG emissions (t+1)		GHG emissions (t+2)		GHG emissions (t+3)	
	(1)	(2)	(3)	(4)	(5)	(6)
High env. reporter exposure	10.88	7.242	13.52	7.624	9.345	0.165
	(15.44)	(7.653)	(17.81)	(9.407)	(23.26)	(8.039)
Industry-Country-Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	Yes	No	Yes	No	Yes
N	1105	837	827	558	557	271
R^2	0.335	0.934	0.325	0.930	0.348	0.962

Table IA.VI. Banks' Emphasis on the Sustainability of Lending Policies and Firms with Green Business Descriptions

We test whether high environmental reporters lend more to green firms defined based on their business descriptions. *Green business* denotes an indicator variable constructed by performing textual analysis of business descriptions of public and private companies from S&P Capital IQ. *High environmental reporter* is an indicator variable of whether a bank's *Environmental Disclosures* rank in the top quintile of the variable's distribution during a year. In all specifications, the dependent variable is the natural logarithm of the amount of new loans extended by a bank to a given borrower during a year (*Loan amount*). All variables are defined in Appendix A. Dash (-) symbol refers to the fact that the controls/fixed effects are not applicable as they are nested in different (higher-order) fixed effects. OLS regressions are used to estimate the models. Standard errors are reported in parentheses, corrected for heteroskedasticity and clustered at the bank level. ∗∗∗, ∗∗ and ∗ denote significance at the 1%, 5% and 10% (two-sided) levels, respectively.

	Loan Amount				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	-0.0216	-0.0386		-0.0297	
	(0.0308)	(0.0639)		(0.0447)	
Green Business		0.816^{***}	0.810^{***}		
		(0.0444)	(0.0447)		
High env. reporter x Green Business	0.0648	0.158	0.168	0.0618	0.0715
	(0.0338)	(0.148)	(0.147)	(0.0471)	(0.0478)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	Yes	-	Yes	-
Firm FE	Yes	No	No	-	-
Time FE	Yes	-	-	-	-
Industry-Country-Time FE	No	Yes	Yes	-	-
Firm-Time FE	No	No	No	Yes	Yes
Bank-Time FE	No	No	Yes	No	Yes
N	926,883	1,180,106	1,179,910	311,548	310,951
R^2	0.729	0.257	0.266	0.806	0.811