

# “Glossy Green” Banks

## The Disconnect Between Sustainability Disclosures and Lending Activities

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CEBRA

The opinions in this presentation are those of the authors and do not necessarily reflect the views of the European Central Bank or the Eurosystem.

## Motivation

- Banks increasingly emphasize their env. activities in their investors' reports and voluntary disclosures
  - Many benefits: better ESG ratings, more loyal customers, lower cost of capital

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- But are banks environmentally-themed disclosures credible or do they just contain unsubstantiated claims to symbolically comply with new institutional demands?
- What is the relationship between banks' environmental disclosures and their lending activities?

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# This Paper

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1. Use annual and sustainability reports to analyze **environmental disclosures of European banks**
2. Examine the relation between environmental disclosures and **bank lending to firms**
  - To brown and green industries
  - To borrowers with different level of emissions
  - To borrowers that describe their business as green, based on the EU taxonomy

## Main Findings



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## European banks' environmental disclosures

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- Banks that stress more the environment in their disclosures **lend more to high-emission borrowers**
- No evidence that their loans are funding the **transition loans** to green technologies
- Banks lend to the **weakest borrowers** in brown industries, especially if they have **low capital adequacy**

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## Lending

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- No evidence that their loans are funding the **transition loans** to green technologies
- Banks lend to the **weakest borrowers** in brown industries, especially if they have **low capital adequacy**

⇒ Banks overemphasize their climate goals while continuing their relationships with polluting borrowers

## Data and Methodology

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# Data

## Loan-level credit registry: AnaCredit

- Harmonized loan-level data on all Eurozone commercial loans outstanding
- Loan size, interest rate, maturity
- Sample of newly issued loans 2014–2020, by 553 banks

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## Green and Brown Loans

- **Industry-level:** Greenhouse gas emission data by country, industry (NACE-2) and year  
Standardized by industry value added. Source: Eurostat
- **Firm-level data (for large borrowers):** Firm-level Scope 1 and Scope 2 emission intensities  
Source: Urgentem

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## Additional data

- Orbis: Firm size, ROA, R&D, Investment, Sales, EBIT etc.
- Science Based Targets initiative (SBTi): Emission reduction targets by firms
- FINREP: Supervisory banking information



## Environmental disclosures

- We process 1,397 documents to construct our proxy for banks' environmental disclosures
  - 623 annual reports, 273 sustainability reports, 57 integrated reports, and 61 nonfinancial reports
  - Other more tailored disclosures (383 documents) that banks 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)
- We develop our own dictionary based on
  - Our reading of 50 bank reports
  - RepRisk' relevant environmental topics
  - The materiality map of the Sustainability Accounting Standards Board (SASB)
- Our dictionary includes words and bigrams related to
  - **energy use** (e.g., "oil", "renewables", "natural gas", "coal")
  - **emissions** (e.g., "CO2", "carbon", "emission")
  - **biodiversity** (e.g., "biodiversity", "forest", "coral")
  - **activities commonly consider to affect pollution** (e.g., "car", "building certificate", "pollute", "waste")
- **Environmental disclosures** is the ratio of environmental keywords to total number of words in the reports (excl. stopwords).

Breakdown by reports

Environmental disclosures over time

Word Cloud

# Validation

	Environmental disclosures						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Activism	3.680*** (0.498)						
Socioeconomic beliefs	0.016 (0.401)						
High environmental risk country	0.353** (0.130)						
GRI standards		0.185*** (0.052)	0.162*** (0.060)	0.114* (0.068)	0.136** (0.062)	0.186*** (0.053)	0.178*** (0.052)
Integrated reporting		0.242* (0.126)	0.048 (0.103)	0.148 (0.124)	0.043 (0.083)	0.261** (0.126)	0.213* (0.128)
Leverage		2.414 (1.532)	4.493*** (1.565)	4.049** (1.982)	3.212** (1.584)	2.477 (1.503)	2.357 (1.472)
ROA		2.101* (1.114)	1.187 (1.649)	1.584 (2.696)	-2.122 (1.448)	2.069* (1.076)	2.160* (1.130)
Total assets		0.051* (0.029)	0.023 (0.031)	0.004 (0.031)	-0.023 (0.030)	0.042 (0.028)	0.060** (0.030)
Tier 1 capital		1.139 (1.031)	2.529*** (0.746)	2.569*** (0.735)	1.081 (1.021)	1.202 (1.029)	1.184 (1.021)
MSCI environmental score			0.033* (0.018)				
Sustainalytics Env score				0.004* (0.003)			
Bloomberg Env score					0.012*** (0.003)		
ESG Corporate Knights						0.242*** (0.085)	
Green bond issuance							0.570*** (0.165)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	471	660	487	452	365	660	660
R <sup>2</sup>	0.23	0.44	0.46	0.44	0.43	0.45	0.45

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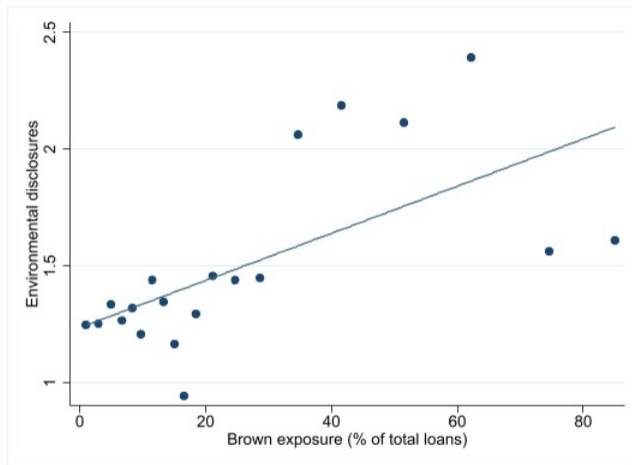
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## Environmental Disclosures and Banks' Exposure to Brown Industries



Banks with more extensive environ. disclosures have a larger proportion of loans to brown industries

Incl. Country and Time FE

## Methodology

$$\text{LoanAmount}_{f,b,i,c,t} = \alpha_b + \alpha_{i,c,t} + \beta_1 (\text{Brown}_{i,c,t} \times \text{High Env. Reporter}_{b,t}) + \beta_2 \text{High Env. Reporter}_{b,t} + \gamma X_{b,t} + \epsilon_{f,b,i,c,t}$$

- **Loan Amount** $_{f,b,i,c,t}$ : log amount of newly issued credit to firm  $f$  in industry  $i$ , country  $c$  by bank  $b$  in year  $t$
- **Brown** $_{i,c,t} = 1$  if the ratio of carbon emissions to gva of industry  $i$  in country  $c$  ranks in the top quintile
- **High Environmental Reporter** $_{b,t} = 1$  if bank's  $b$  environmental disclosures rank in the top quintile in year  $t$
- **Control for demand for credit**: industry-country-time FE or firm-time FE
- **Control for bank characteristics**: bank FE, bank controls (size, leverage, Tier 1 capital) or bank-time FE

If banks with more extensive environmental disclosures engage in greener lending practices:  $\beta_1 < 0$

## Environmental Disclosures and Lending

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## Banks' environmental disclosures and new loans to brown industries

	Loan Amount		
	(1)	(2)	(3)
High environmental reporter	-0.112** (0.0488)	-0.0843** (0.0367)	
Brown	-0.212*** (0.0257)		
High environmental reporter × Brown	0.128*** (0.0411)	0.0558 (0.0375)	0.0744*** (0.0223)
Bank controls	Yes	Yes	-
Bank FE	Yes	Yes	-
Firm FE	Yes	No	No
Time FE	Yes	-	-
Industry-Country-Time FE	No	Yes	Yes
Firm-Time FE	No	No	No
Bank-Time FE	No	No	Yes
N	2,822,338	3,740,323	3,740,250
R <sup>2</sup>	0.705	0.200	0.207

## Banks' environmental disclosures and new loans to brown industries

	Loan Amount				
	(1)	(2)	(3)	(4)	(5)
High environmental reporter	-0.112** (0.0488)	-0.0843** (0.0367)		-0.0451 (0.0400)	
Brown	-0.212*** (0.0257)				
High environmental reporter × Brown	0.128*** (0.0411)	0.0558 (0.0375)	0.0744*** (0.0223)	0.0388* (0.0220)	0.0363* (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	2,822,338	3,740,323	3,740,250	828,689	828,074
R <sup>2</sup>	0.705	0.200	0.207	0.792	0.797

High environmental reporters extend 3.6% more credit to firms in brown industries compared to other banks.

Time-varying estimates

## Banks' environmental disclosures and new loans to green industries

	Loan Amount				
	(1)	(2)	(3)	(4)	(5)
High environmental reporter	-0.0785*	-0.0647*		-0.0268	
	(0.0443)	(0.0331)		(0.0340)	
Green	-0.0614				
	(0.0459)				
High environmental reporter × Green	-0.0697	-0.0493	-0.0196	-0.0463	-0.0172
	(0.0571)	(0.0324)	(0.0247)	(0.0484)	(0.0436)
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 <sup>2</sup>	0.704	0.200	0.207	0.792	0.797

- No evidence that emphasizing the environment in public reporting is associated with greener lending
- Banks do not appear to compensate their brown loans by lending to firms in green industries

## Measuring borrower-level emissions

	Loan Amount				
	(1)	(2)	(3)	(4)	(5)
High environmental reporter	-0.0704 (0.0945)	-0.0347 (0.138)			
GHG emissions	-0.195* (0.103)	0.0422 (0.0299)	0.0355 (0.0316)		
High environmental reporter × GHG emissions	-0.217 (0.213)	0.290** (0.135)	0.305** (0.134)		
Bank controls	Yes	Yes	-		
Bank FE	Yes	Yes	-		
Firm FE	Yes	No	No		
Time FE	Yes	-	-		
Industry-Country-Time FE	No	Yes	Yes		
Firm-Time FE	No	No	No		
Bank-Time FE	No	No	Yes		
N	3,765	3,637	3,454		
R <sup>2</sup>	0.652	0.540	0.577		

Using granular emission data available for larger firms (Urgentem):

- 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 FEs**
- 1 s.d increase in the intensity of firm's GHG emissions is associated with a 30% higher lending by high env. reporters compared to other banks

## Measuring borrower-level emissions

	Loan Amount				
	(1)	(2)	(3)	(4)	(5)
High environmental reporter	-0.0704 (0.0945)	-0.0347 (0.138)		-0.0774 (0.123)	
GHG emissions	-0.195* (0.103)	0.0422 (0.0299)	0.0355 (0.0316)		
High environmental reporter × GHG emissions	-0.217 (0.213)	0.290** (0.135)	0.305** (0.134)	0.0495 (0.128)	0.0393 (0.125)
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 <sup>2</sup>	0.652	0.540	0.577	0.790	0.807

Using granular emission data available for larger firms (Urgentem):

- We do **not observe any statistically significant differences** in lending to firms with high emissions by banks with extensive environmental disclosures when controlling for credit demand using interactions of **firm and year FEs**
- **High environmental disclosures are far from being associated with greener, or less brown, lending policies**

## New relationships

$$\text{Entry}_{f,b,i,c,t} = \alpha_b + \alpha_{i,c,t} + \beta_1(\text{Brown}_{i,c,t} \times \text{High Env. Reporter}_{b,t}) + \beta_2 \text{High Env. Reporter}_{b,t} + \epsilon_{f,b,i,c,t}$$

## New relationships

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	Entry				
	(1)	(2)	(3)	(4)	(5)
High environmental reporter	0.122 (0.0903)	0.0928 (0.0822)		0.129 (0.0967)	
Brown	-0.000316 (0.0123)				
High environmental reporter × Brown	0.00712 (0.0186)	0.00857 (0.0123)	-0.0219** (0.00862)	0.00866 (0.0219)	-0.0337** (0.0151)
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	340,664	344,817	344,669	339,288	339,050
R <sup>2</sup>	0.0694	0.0266	0.0652	0.0890	0.142

Some evidence that high environmental reporters try to reduce new lending exposures to brown borrowers

Green industries

## Relationship termination

$$\text{Exit}_{f,b,i,c,t} = \alpha_b + \alpha_{i,c,t} + \beta_1(\text{Brown}_{i,c,t} \times \text{High Env. Reporter}_{b,t}) + \beta_2 \text{High Env. Reporter}_{b,t} + \epsilon_{f,b,i,c,t}$$



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	Exit				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	-0.00624 (0.00526)	-0.0273 (0.0230)		-0.0537** (0.0241)	
Brown	0.00124 (0.00217)				
High env. reporter × Brown	-0.00844** (0.00420)	-0.0235** (0.0116)	-0.00743*** (0.00278)	-0.0131* (0.00723)	-0.00747 (0.00942)
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	506,186	913,794	913,766	222,283	222,143
R <sup>2</sup>	0.469	0.0700	0.0752	0.504	0.509

- Banks with extensive env. disclosures are less likely to terminate relationships with firms in brown industries
- Overall: Environmental statements do not reflect their lending strategies across brown and green sectors

## Channels

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## Funding of transition to greener technologies

Brown lending of banks with extensive environmental disclosures may not indicate greenwashing if banks lend to brown firms to finance **transition to technologies with lower emissions**

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### Data challenges:

- Short time period to see the impact on GHG emissions

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## Our approach:

### 1. Switching to greener technologies requires **high investment and R&D**

- Test whether high env. reporters lend more to brown borrowers that invest more and make more R&D than other firms in their industries

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### 1. Switching to greener technologies requires **high investment and R&D**

- Test whether high env. reporters lend more to brown borrowers that invest more and make more R&D than other firms in their industries

### 2. Young new **entrants** are more likely to innovate and disrupt old technologies

- Test whether high env. reporters lend more to brown borrowers that are younger

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### 2. Young new **entrants** are more likely to innovate and disrupt old technologies

- Test whether high env. reporters lend more to brown borrowers that are younger

### 3. Firms can set **science-based targets** with a clearly-defined commitment path to reduce emissions

- Test whether high env. reporters lend more to brown borrowers who are SBTi signatories

# Funding of transition to greener technologies

Brown lending of banks with extensive environmental disclosures may not indicate greenwashing if banks lend to brown firms to finance **transition to technologies with lower emissions**

## Data challenges:

- Short time period to see the impact on GHG emissions

## Our approach:

### 1. Switching to greener technologies requires **high investment and R&D**

- Test whether high env. reporters lend more to brown borrowers that invest more and make more R&D than other firms in their industries

### 2. Young new **entrants** are more likely to innovate and disrupt old technologies

- Test whether high env. reporters lend more to brown borrowers that are younger

### 3. Firms can set **science-based targets** with a clearly-defined commitment path to reduce emissions

- Test whether high env. reporters lend more to brown borrowers who are SBTi signatories

### 4. Textual analysis of **business description** of firms using Capital IQ

- Test whether high env. reporters lend more to brown firms defined based on their business descriptions



## Funding of transition to greener technologies

$$\text{LoanAmount}_{f,b,i,c,t} = \alpha_{b,t} + \alpha_{f,t} + \beta_1(\text{Brown}_{i,c,t} \times \text{High Env. Reporter}_{b,t}) + \beta_2(\text{Brown}_{i,c,t} \times \text{Proxy}_{f,t}) \\ + \beta_3(\text{High Env. Reporter}_{b,t} \times \text{Brown}_{i,c,t} \times \text{Proxy}_{f,t}) + \epsilon_{f,b,i,c,t}$$

	Loan Amount							
	R&D		Investment		Young Firm		SBTi	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High env. reporter $\times$ Brown	0.0734*** (0.0211)	0.0442* (0.0245)	0.0533** (0.0219)	0.0354 (0.0310)	0.104*** (0.0395)	0.0450 (0.0616)	-0.0160 (0.0740)	0.126*** (0.0451)
High env. reporter $\times$ Proxy	0.167 (0.314)	0.240 (0.162)	0.0487 (0.0484)	0.00494 (0.0152)	0.187*** (0.0344)	0.0279 (0.0271)	0.756** (0.300)	0.165 (0.407)
High env. reporter $\times$ Brown $\times$ Proxy	-0.480 (0.624)	-0.590*** (0.210)	0.0625 (0.0464)	0.0368 (0.0547)	-0.0953 (0.0685)	-0.0928** (0.0391)	-0.794 (0.796)	0.600 (1.027)
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	2,218,763	683,941	2,084,272	667,548	2,375,561	697,341	453,020	151,116
R <sup>2</sup>	0.208	0.792	0.210	0.791	0.224	0.793	0.299	0.801

No evidence that high environmental reporters are more likely to support transition financing

## Loan contractual features: Interest Rates

$$\text{InterestRate}_{f,b,i,c,t} = \alpha_b + \alpha_{i,c,t} + \beta_1(\text{Brown}_{i,c,t} \times \text{High Env. Reporter}_{b,t}) + \beta_2 \text{High Env. Reporter}_{b,t} + \gamma X_{b,t} + \epsilon_{f,b,i,c,t}$$

	Interest rate				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	-0.00149 (0.000924)	-0.000395 (0.000844)		0.000377 (0.000527)	
Brown	0.00176*** (0.000679)				
High env. reporter × Brown	0.000962 (0.000926)	-0.0000283 (0.000404)	-0.000323 (0.000409)	-0.000133 (0.000474)	-0.000206 (0.000524)
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	671,120	1,201,352	1,201,282	359,679	359,427
R <sup>2</sup>	0.721	0.378	0.392	0.737	0.741

Brown borrowers do not pay higher interest rates for loans from banks with extensive environmental disclosures

## Loan contractual features: Maturity

$$\text{Maturity}_{f,b,i,c,t} = \alpha_b + \alpha_{i,c,t} + \beta_1(\text{Brown}_{i,c,t} \times \text{High Env. Reporter}_{b,t}) + \beta_2 \text{High Env. Reporter}_{b,t} + \gamma X_{b,t} + \epsilon_{f,b,i,c,t}$$

	Maturity				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	-0.170* (0.101)	-0.0795** (0.0376)		-0.0422 (0.0444)	
Brown	-0.165*** (0.0337)				
High env. reporter × Brown	0.125 (0.0764)	0.0388 (0.0384)	0.0366* (0.0204)	0.0478 (0.0316)	0.0162 (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	2,810,878 0.519	3,712,480 0.250	3,712,407 0.268	824,777 0.656	824,165 0.665

Maturity of loans extended by high env. reporters to brown borrowers does not differ from that of other banks

## The environmental impact of bank relationships and zombie lending

	Loan Amount	
	Exposure	
	(1)	(2)
High env. reporter × Brown	0.00617 (0.0162)	0.0421* (0.0234)
High env. reporter × Proxy	0.0707*** (0.0105)	0.168*** (0.0235)
High env. reporter × Brown × Proxy	0.199*** (0.0212)	0.0502 (0.0531)
Industry-Country-Time FE	Yes	-
Firm-Time FE	No	Yes
Bank-Time FE	Yes	Yes
N	1,626,362	408,934
R <sup>2</sup>	0.194	0.797

- High env. reporters lend more to brown borrowers if they have extended a larger share of their loans in the past
- Banks are reluctant to discontinue established credit relationships with brown borrowers

## The environmental impact of bank relationships and zombie lending

	Loan Amount							
	Exposure		Low ROA		Low Sales to employee		Low Int. Coverage Ratio	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High env. reporter × Brown	0.00617 (0.0162)	0.0421* (0.0234)	0.0545*** (0.0146)	0.0394** (0.0178)	0.0321* (0.0166)	0.0298* (0.0181)	0.0571*** (0.0166)	0.0176 (0.0187)
High env. reporter × Proxy	0.0707*** (0.0105)	0.168*** (0.0235)	0.0547*** (0.00949)	0.0276* (0.0156)	0.0342*** (0.0106)	0.0336** (0.0153)	0.0318*** (0.0101)	-0.00372 (0.0128)
High env. reporter × Brown × Proxy	0.199*** (0.0212)	0.0502 (0.0531)	0.0545** (0.0234)	0.0107 (0.0392)	0.124*** (0.0277)	0.0772* (0.0416)	0.0311 (0.0271)	0.0615* (0.0354)
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	2,003,216	666,516	1,642,281	635,608	1,797,927	658,817
R <sup>2</sup>	0.194	0.797	0.202	0.791	0.218	0.788	0.195	0.790

- Discrepancies between actual lending vs. environmental reporting is accentuated by banks' propensity to continue lending to **financially unhealthy brown borrowers**

## The environmental impact of bank relationships and zombie lending

	Loan Amount							
	Exposure		Low ROA		Low Sales to employee		Low Int. Coverage Ratio	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High env. reporter × Brown	0.00617 (0.0162)	0.0421* (0.0234)	0.0545*** (0.0146)	0.0394** (0.0178)	0.0321* (0.0166)	0.0298* (0.0181)	0.0571*** (0.0166)	0.0176 (0.0187)
High env. reporter × Proxy	0.0707*** (0.0105)	0.168*** (0.0235)	0.0547*** (0.00949)	0.0276* (0.0156)	0.0342*** (0.0106)	0.0336** (0.0153)	0.0318*** (0.0101)	-0.00372 (0.0128)
High env. reporter × Brown × Proxy	0.199*** (0.0212)	0.0502 (0.0531)	0.0545** (0.0234)	0.0107 (0.0392)	0.124*** (0.0277)	0.0772* (0.0416)	0.0311 (0.0271)	0.0615* (0.0354)
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	2,003,216	666,516	1,642,281	635,608	1,797,927	658,817
R <sup>2</sup>	0.194	0.797	0.202	0.791	0.218	0.788	0.195	0.790

- Discrepancies between actual lending vs. environmental reporting is accentuated by banks' propensity to continue lending to **financially unhealthy brown borrowers**
- Terminating the zombie lending would force banks (1) to realize credit losses and (2) to discuss and explain their exposures to brown industries  
 ⇒ Relationships with zombie firms hinder bank ability to reduce their environmental impact

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

	Loan amount				
	Low Tier 1 capital				
	(1)	(2)	(3)	(4)	(5)
High env. reporter × Brown	0.0134 (0.0163)				
High env. reporter × Brown × Factor	0.0582** (0.0254)				
Firm-Time FE	Yes				
Bank-Time FE	Yes				
N	828,074				
R <sup>2</sup>	0.797				

- Disconnect between env. disclosures and lending are most pronounced for **banks with low capitalizations**
- Undercapitalized banks that have particularly strong incentives to engage in zombie lending (Peek and Rosengren, 2005; Giannetti and Simonov, 2013)

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

	Loan amount				
	Low Tier 1 capital	Large bank			
	(1)	(2)	(3)	(4)	(5)
High env. reporter × Brown	0.0134 (0.0163)	-0.105* (0.0623)			
High env. reporter × Brown × Factor	0.0582** (0.0254)	0.142** (0.0619)			
Firm-Time FE	Yes	Yes			
Bank-Time FE	Yes	Yes			
N	828,074	828,070			
R <sup>2</sup>	0.797	0.797			

- Large banks may be more subject to institutional pressures to integrate climate goals in their strategy
- Large banks may overemphasize their stewardship role to their investors without changing their lending

⇒ The credibility of env. disclosures and the extent to which these are reflected in loan portfolios may be hard to verify for market participants



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

	Loan amount				
	Low Tier 1 capital	Large bank	Mandatory sustain. reporting	Post Paris agreement	Audited sustain. report
	(1)	(2)	(3)	(4)	(5)
High env. reporter × Brown	0.0134 (0.0163)	-0.105* (0.0623)	0.0989* (0.0597)	-0.0336 (0.0584)	0.0293 (0.0206)
High env. reporter × Brown × Factor	0.0582** (0.0254)	0.142** (0.0619)	-0.0616 (0.0613)	0.0737 (0.0600)	-0.00619 (0.0280)
Firm-Time FE	Yes	Yes	Yes	Yes	Yes
Bank-Time FE	Yes	Yes	Yes	Yes	Yes
N	828,074	828,070	828,074	828,074	828,074
R <sup>2</sup>	0.797	0.797	0.797	0.797	0.797

Env. disclosures are hard to compare and standardize and thus cannot be easily regulated or verified by auditors

## Conclusion

- Banks that stress more the environment in their disclosures lend more to high-emission borrowers
- No evidence that their loans may be favoring the transition to green technologies
- Close bank relationships and zombie lending limit the reliability of banks' environmental disclosures

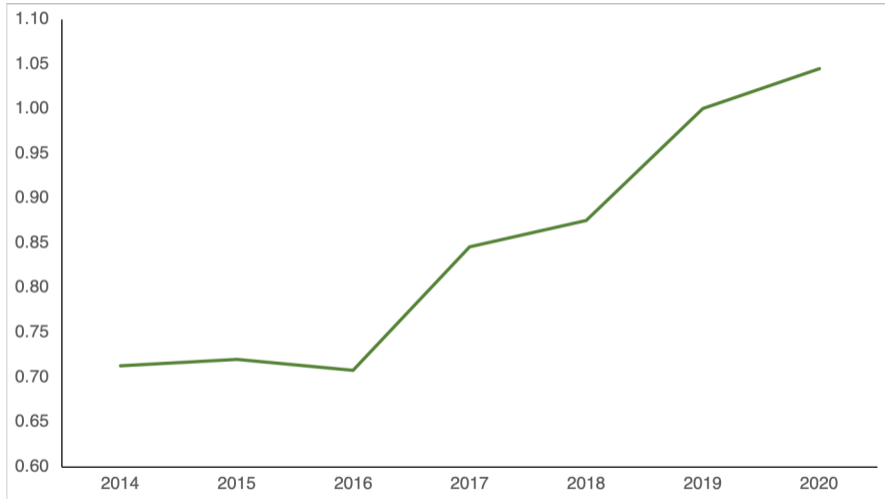


## Additional Material

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## Environmental Disclosures Over Time



# Word cloud of environmental disclosure content



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## Environmental disclosures: Details

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

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## New relationships (Green)

$$\text{Entry}_{f,b,i,c,t} = \alpha_b + \alpha_{i,c,t} + \beta_1(\text{Green}_{i,c,t} \times \text{High Env. Reporter}_{b,t}) + \beta_2 \text{High Env. Reporter}_{b,t} + \epsilon_{f,b,i,c,t}$$

	Entry				
	(1)	(2)	(3)	(4)	(5)
High environmental reporter	0.116 (0.0856)	0.0893 (0.0779)		0.122 (0.0921)	
Brown	-0.0436 (0.0351)				
High environmental reporter × Brown	0.0249 (0.0279)	0.0151 (0.0250)	0.00433 (0.0119)	0.0253 (0.0291)	0.00485 (0.0138)
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	340,664	344,817	344,669	339,288	339,050
R <sup>2</sup>	0.0695	0.0266	0.0652	0.0891	0.142

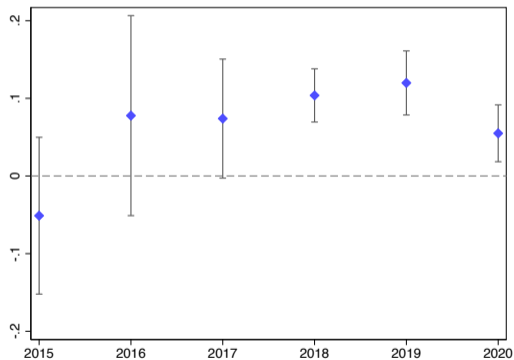
## Relationship termination (Green)

$$\text{Exit}_{t,b,i,c,t} = \alpha_b + \alpha_{i,c,t} + \beta_1(\text{Green}_{i,c,t} \times \text{High Env. Reporter}_{b,t}) + \beta_2 \text{High Env. Reporter}_{b,t} + \epsilon_{f,b,i,c,t}$$

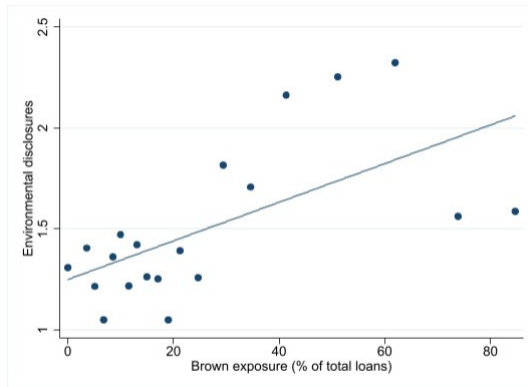
	Exit				
	(1)	(2)	(3)	(4)	(5)
High env. reporter	-0.00522 (0.00681)	-0.0284 (0.0236)		-0.0535** (0.0256)	
Brown	0.00308 (0.00506)				
High env. reporter × Brown	-0.00615 (0.00509)	-0.00630* (0.00372)	-0.00418** (0.00185)	-0.00750 (0.00712)	-0.00250 (0.00397)
Bank controls	Yes	Yes	-	Yes	-
Bank FE	Yes	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	506,186	913,794	913,766	222,283	222,143
R <sup>2</sup>	0.469	0.0700	0.0752	0.504	0.509

## Banks' environmental disclosures and new loans to brown industries

$$\text{LoanAmount}_{f,b,i,c,t} = \alpha_{b,t} + \alpha_{i,c,t} + \sum_k \beta_k (\text{Brown}_{i,c,t} \times \text{High Env. Reporter}_{b,t}) + \gamma X_{b,t} + \epsilon_{f,b,i,c,t}$$



## Environmental disclosures and banks' exposure to brown industries



Banks with more extensive environ. disclosures have a larger proportion of loans to brown industries

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