UNIVERSITÀ DEGLI STUDI DI PALERMO

dSEAS dipartimento di scienze economiche aziendali e statistiche
department of economics business and statistics

Do banks practice what they preach? Brown lending and environmental disclosure in the euro area

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AIM OF THE PAPER

- We analyse the relationship between **bank transparency** and their **lending** decisions;
- By using confidential loan-level data, we assess whether those banks that provide higher (lower) levels of **environmental disclosure** provide more (less) lending to green firms;
- We investigate whether such relationship is influenced by bank managers' beliefs and awareness of environmental risks, (reflected in the **tone of the disclosures**).

THE IMPORTANCE OF DISCLOSURE

- Transparency is a fundamental prerequisite for the effectiveness of **market discipline** (Nier & Baumann, 2006);
- Banks are notoriously opaque because of their **risk-taking** and **maturity transformation** role (Flannery et al., 2013);
- Inadequate disclosure by banks is considered amongst the **causes of the GFC** (Sowerbutts et al., 2013);
- Disclosure reduces the **cost of capital** (Diamond & Verrecchia, 1991).

THE IMPORTANCE OF ENVIRONMENTAL DISCLOSURE

- The main focus has traditionally been on the **financial dimension** of bank disclosure (Polizzi, 2022);
- Various recent initiatives to improve **non-financial disclosure**:
  - Global Reporting Initiative;
  - Carbon Disclosure Project;
  - . . .
- Also with specific reference to the **banking industry**:
  - Task Force on Climate-related Financial Disclosure;
  - Montréal Carbon Pledge.

INCENTIVES FOR GREENWASHING BEHAVIOUR

- Despite regulatory efforts, banks may engage in «**greenwashing**» (i.e. increasing environmental disclosure without actually acting as environmentally responsible lenders);

- Various incentives:
  - To improve their ESG ratings;
  - To attract more investors concerned about environmental risks (Yang, 2022);
  - To manage the pressure of regulators, governments, customers and other stakeholders.

CHALLENGES IN SPOTTING BANK GREENWASHING BEHAVIOUR

Lack of granular data

No ready-to-use measure of bank environmental transparency

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WHICH THEORIES TO EXPLAIN THE RELATIONSHIP BETWEEN LENDING AND ENVIRONMENTAL DISCLOSURE?

Environmental disclosure can be used by banks as a **signal** of bank commitment to

- **combat** climate change;
- **manage** environmental risks effectively;
- **limit** their negative **financial consequences.**

Signaling theory (Spence, 1973)

Banks can use environmental disclosure to **manipulate stakeholders' perceptions** of their willingness to reduce their environmental impact, **regardless of their actual behaviour.**

Impression management theory (Goffman, 1959)

LITERATURE REVIEW - DISCLOSURE IN BANKING

❖The literature has mainly focused on **financial risks** (e.g. Pérignon & Smith, 2010; Barakat et al., 2014; Polizzi & Scannella, 2020);

❖Various studies focus on **disclosure tone** (Martikainen et al., 2023; Ertugrul, et al. 2017) → Davis et al. (2015) show that **managers' optimistic / pessimistic attitude** is reflected in disclosure tone;

❖Some recent studies analyse **CSR disclosure** (e.g. Chantziaras et al., 2020; Andrés et al., 2023).

LITERATURE REVIEW - DISCLOSURE TONE

- Davis et al. (2015) show that **managers' optimistic / pessimistic attitude** is reflected in disclosure tone;
- Bank size, leverage, profitability and the characteristics of the BoD are amongst the main determinants of **disclosure tone** (Martikainen et al., 2023);
- Ertugrul, et al. (2017): an ambiguous tone is associated to information hoarding by managers, which results in increased costs to get external financing;
- Price et al. (2012): the tone of conference calls is a strong predictor of trading volumes and abnormal returns.

LITERATURE REVIEW - BANKING, ENVIRONMENTAL RISKS AND CLIMATE CHANGE

- González & Núñez (2021); An et al. (2021) → banks can contribute to **sustainable development** by :
  - Financing green projects and **energy transition**;
  - Reducing **exposure** towards **carbon-intensive firms**;
  - Adjusting **loan pricing**;
  - . . .

- Strong connection between financial stability and climate change (Giuzio et al., 2019; Battiston et al., 2017, 2021).

RESEARCH HYPOTHESES - SIGNALLING THEORY

❖*Signalling theory* (Spence, 1973): banks that provide **low levels of lending to brown firms** are (indirectly) **less exposed to environmental risks** and less affected by their negative financial consequences;

❖These banks have an **incentive to *signal*** their low levels of environmental risk exposure by providing higher levels of **environmental disclosure** in their annual reports.

RESEARCH HYPOTHESES - SIGNALLING THEORY

Stakeholders may also be interested on the **environmental impact** of the banking industry, regardless of the financial consequences (Thompson & Cowton, 2004);

Banks that lend more to green firms may be willing to signal that they are implementing strategies to act as an **environmentally responsible lender** → higher levels of environmental disclosure.

H1A: There is a positive relationship between bank environmental disclosure and lending to green firms.

RESEARCH HYPOTHESES - IMPRESSION MANAGEMENT THEORY

- *Impression management theory* (Goffman, 1959) → banks could intentionally reveal positive aspects while hiding others to **manipulate stakeholders' perceptions**;
- Banks may use a '**cheap talk**' approach (Dobler, 2008) and engage in **greenwashing** by disclosing environmental information without actually committing to environmentally responsible lending.

H1B: There is a negative relationship between bank environmental disclosure and lending to green firms.

RESEARCH HYPOTHESES - DISCLOSURE TONE

❖**Disclosure strategies** are shaped by the **beliefs, awareness, and attitudes of bank managers** (Fischer & Verrecchia, 2004; Davis et al., 2015);
❖Those bank managers who are more aware and concerned about environmental problems inform investors about the negative financial and environmental consequences → **negative tone**.
❖If bank managers are not fully aware of environmental risks, they may be more optimistic and less concerned → **positive tone**;

High levels of disclosure → greenwashing behaviour

H2: Banks using a positive tone in their disclosures provide less lending to green firms, while banks using a negative tone provide more lending to green firms.

METHODOLOGY - CONTENT ANALYSIS

❖We use a **quantitative content analysis** methodology based on a **tailored disclosure dictionary** to analyse financial and non-financial reports (Lang & Stice-Lawrence, 2015);

❖We selected the most relevant **environment-related words** from various sources (e.g. FSB Task Force on Climate-related Financial Disclosures; OUP Supplementary Dictionary of Renewable Energy and Sustainability; . . .).

METHODOLOGY - CONTENT ANALYSIS

Air quality	Alluvial	Alternative energy	Alternative fuel
Biodegradable	Biodiversity	Carbon	Chemical agent
Chemical emergency	Chem weathe	ıate action	Climate change
Climate neutral	Chlorofluo n (CF	Coal	Compostable
Contamination	COP21	Critical habitat	Deforestation
Desertification	Ecology	Ecosphere	. . .

METHODOLOGY - CONTENT ANALYSIS

- Each report is modeled as a «**bag of words**» (Buehlmaier & Whited, 2018);
- Reports have been pre-processed removing non-alphanumeric characters, tables, charts and graphs;
- We stemmed all words to capture each relevant term, regardless of their suffixes (Peterson et al., 2015);

$$Disclosure\_Index_b = \sum \frac{occurrences\ of\ the\ words\ of\ the\ dictionary}{total\ number\ of\ words\ of\ the\ report}$$

- Similar approach to measure disclosure tone (Loughran & McDonald, 2011).

METHODOLOGY - CONTENT ANALYSIS

❖Robustness test → alternative disclosure index (Brown & Tucker, 2011)

$$BT\_Disclosure\_Index_b = \sum \frac{occurrences\ of\ the\ words\ of\ the\ dictionary}{total\ number\ of\ words\ of\ the\ report} * \log(\frac{M}{m})$$

❖M = total number of documents of the sample;
❖m = number of documents in which that specific word appears.

METHODOLOGY - DATA

Data	Sources
Loan-level data	Anacredit
GHG emissions	Urgentem
Bank-level balance sheet variables	ECB supervisory statistics
Firm-level variables	Orbis Amadeus
ESG scores	Refinitiv Eikon
Corporate governance variables	Refinitiv Eikon
Disclosure indexes	Manually collected financial and non-financial reports

METHODOLOGY - ECONOMETRIC MODEL

$$Lending(\log)_{b,f} = \alpha_{f(ILS)} + \beta Disclosure\_index_b + \delta GHGemissions_f + \gamma Disclosure\_index_b * GHGemissions_f + \theta X_{b,t-1} + \tau T_{b,t-1} + \mu Z_{f,t-1} + \epsilon_{bf}$$

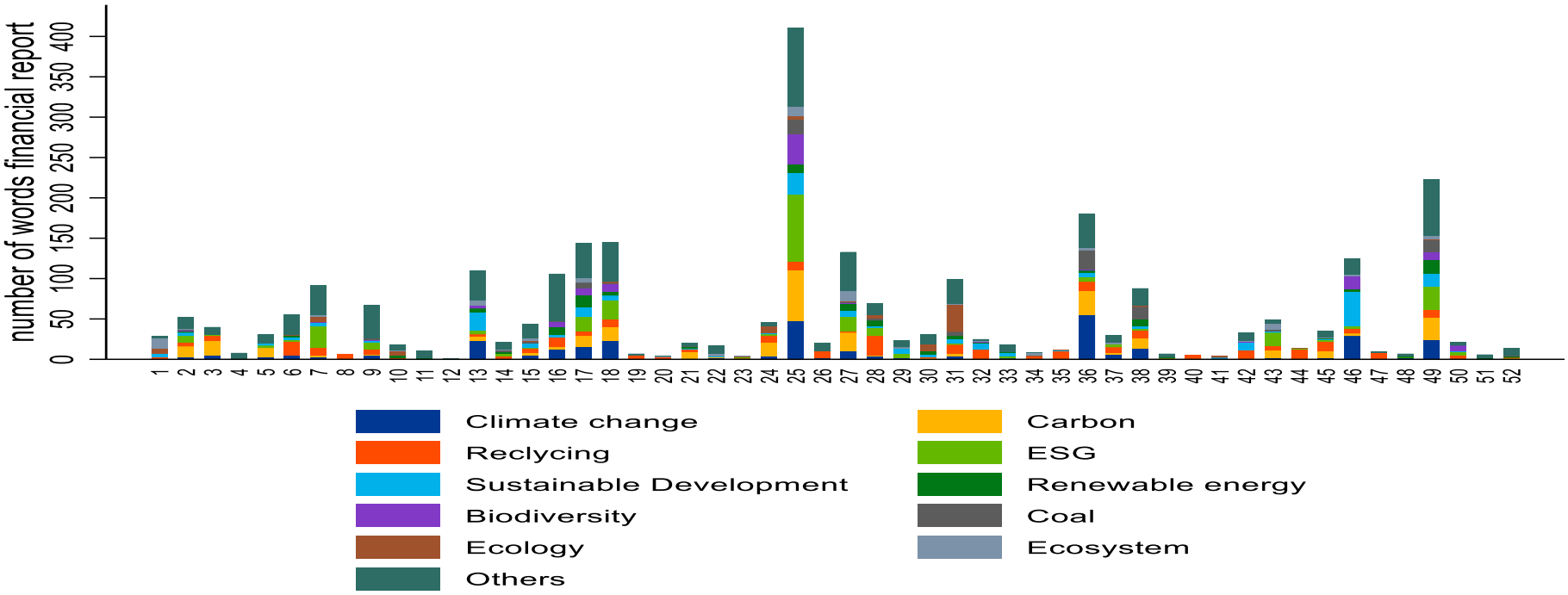
- Dependent variable → *Lending(log)* = log of the outstanding amount owed by a debtor f to bank b (t= 2019);
- Variable of interest → $Disclosure\_index_b * GHGemissions_f$;
- GHG variables → tonnes of GHG equivalent divided by the company's revenues (Scope 1, 2 and 3);
- Controls: X → bank-level; T → corporate governance; Z → firm-level.

METHODOLOGY – CONTROLS

Bank-specific variables	
logTotass	Logarithm of total assets.
dep_tl (%)	Deposit to total liability ratio.
NPL_r (%)	Nonperforming loan to gross loan ratio.
ROA (%)	Net income to total asset ratio.
Cash_ta (%)	Cash and cash equivalent to total asset ratio.
Fee_opInc (%)	Fee and commission to operating income ratio.
CET1_r (%)	Common equity tier 1 to risk-weighted asset ratio.
Firm-specific variables	
Firm_ta (log total assets)	Logarithm of total assets.
Firm_cash (%)	Cash and cash equivalent to total liability ratio.
Firm_debt (%)	Current and non-current liability to total asset ratio.
Firm_ROA (%)	Net income to total asset ratio.
Firm_WC (%)	Working capital to total asset ratio
Firm_gearing (%)	Interest paid to earning before interest and tax ratio
Bank corporate governance and ESG variables	
Board_size (log)	Logarithm of the number of directors in the boardroom.
CSRcomp (dummy)	Dummy taking the value 1 if a bank has CSR compensation in place, and 0 otherwise.
Board_tenure (years)	Average number of years that each board member has been on board.
Ind_board (%)	Percentage of independent board members
ESGscore	Environmental, Social and Governance (ESG) score.
ESGcontroversies	Yearly number of ESG-related controversies published in the media.
Stakeholders	Dummy variable equal to 1 if a bank engaged with its stakeholders, and 0 otherwise.

METHODOLOGY

NUMBER OF ENVIRONMENTAL WORDS IN BANK REPORTS (TOP-10)



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RESULTS - BASELINE MODEL

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Lending	Lending	Lending	Lending	Lending	Lending
Disclosure_Index	-0.05190	-0.02355	-0.05094	-0.02047	-0.05095	-0.02263
	(0.036)	(0.028)	(0.038)	(0.028)	(0.036)	(0.028)
GHGTot		0.00275***				
		(0.001)				
GHG12				0.04780*		
				(0.028)		
GHG3						0.00310**
						(0.001)
Disclosure_Index*GHGTot	-0.00077***	-0.00123***				
	(0.000)	(0.000)				
Disclosure Index*GHG12			-0.01713*	-0.03027**		
			(0.010)	(0.014)		
Disclosure_Index*GHG3					-0.00097***	-0.00148***
					(0.000)	(0.000)
Observations	607,445	910,895	607,445	910,895	607,445	910,895
R-squared	0.7332	0.6341	0.7332	0.6341	0.7332	0.6341
Firm FE	Yes	No	Yes	No	Yes	No
ILS FE	No	Yes	No	Yes	No	Yes
N banks	52	52	52	52	52	52
N firms	236478	539928	236478	539928	236478	539928

RESULTS - DISCLOSURE TONE

	(1)	(2)	(3)	(4)
VARIABLES	Lending	Lending	Lending	Lending
GHGTot			0.00252**	0.00257**
			(0.001)	(0.001)
Disclosure Index*GHGTot	-0.00100***	-0.00092***	-0.00166***	-0.00153***
	(0.000)	(0.000)	(0.000)	(0.000)
Negative Tone	0.01276		0.00982	
	(0.020)		(0.023)	
Positive Tone			0.01334	
			(0.013)	
Disclosure Index*Negative Tone	0.01280		0.01855	
	(0.016)		(0.016)	
Disclosure Index*Positive Tone		0.01334		0.00827
		(0.013)		(0.013)
Disclosure Index*GHGTot *Negative Tone	-0.00041**		-0.00050**	
	(0.000)		(0.000)	
Disclosure Index*GHGTot*Positive Tone		0.00046***		0.00047***
		(0.000)		(0.000)
Observations	607,445	607,445	910,895	910,895
R-squared	0.7333	0.7333	0.6342	0.6342
Firm FE	Yes	Yes	No	No
ILS FE	No	No	Yes	Yes
N banks	52	52	52	52
N firms	236478	236478	539928	539928
Bank controls	Yes	Yes	Yes	Yes
Firm controls	Absorbed	Absorbed	Yes	Yes
Corporate governance controls	Yes	Yes	Yes	Yes

RESULTS - ROBUSTNESS AND ADDITIONAL ANALYSES

- Disclosure index following the "inverse document frequency approach" (Brown & Tucker, 2011);
- Disclosure indexes computed by considering both financial and non-financial reports;
- Analysis of the tone of sustainability reports;
- Disclosure index replaced with a dummy that identifies those banks that publish a sustainability / non-financial report.

CONCLUSIONS

- We investigated the relationship between **bank environmental disclosure** and **green lending**;
- We merged **loan-level data** with firm **GHG emissions** and bank **disclosure indexes**;
- Our results show that, overall, we should **reject the greenwashing hypothesis → signalling theory** (Spence, 1973);
- We did observe evidence of **greenwashing** behaviour **depending on the tone** adopted in the financial reports.

CONCLUSIONS

- Bank managers unaware of environmental risks and excessively **optimistic → positive tone → greenwashing**;
- Bank managers aware of environmental risks and **less optimistic → negative tone → more transparency** and actual **environmentally responsible behaviour**;
- **Bank managers' attitude**, as reflected in the **tone** of their disclosures also play a crucial role in determining greenwashing behaviour;
- While disclosure requirements can be helpful, it is also essential to **raise awareness** of **environmental risks** and climate change to ensure that they are perceived as **urgent and pressing threats** by banks.

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THANK YOU FOR YOUR ATTENTION!

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