When Green Meets Green

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Research questions

- Do ‘green’ firms borrow at different terms than otherwise similar firms?
- Do ‘green’ banks lend at different terms than otherwise similar banks?
- Do ‘green’ banks lend to ‘green’ firms at lower rates than ‘non-green’ firms? (‘green meet green’ effect)
- Did the 2015 Paris Agreement have any effect on ‘green meet green’ effect?

Data

- 2011-19 international sample of syndicated loans.
- ‘Green firms’: Dummy = 1 if the borrowing firm voluntarily report to Carbon Disclosure Project (CDP) survey one year before origination.
- ‘Green banks’ (~160): members of the UN Environment Programme Finance Initiative (UNEP FI). i) Dummy = 1 if the majority of the lead arrangers are green, or ii) % of green banks in lead arrangers.

Data

- Merge syndicated loans data from LPC DealScan (70,000 loan facilities for 2011-2019) and Compustat data on borrower (ROA, leverage, TA) and lender characteristics (ROA, T1 capital ratio, TA).

- Final data set: 12,000 loan facilities, o/w 10,000 were to NFCs. 2,200 facilities to 322 firms, 1,100 facilities by green syndicates, 166 green-meets-green.

- Outcome variable: spread charged on a loan facility over LIBOR + additional fees for each dollar drawn down.

- Loan spreads of ‘green’ firms are 12 bps lower than brown firms.

  But this effect is no longer significant once firm fixed effect is included: a firm becoming ‘green’ (i.e. reporting to CDP) doesn’t lower its funding costs.

<u>Suggestions</u>:

Include CDP scores (A to D-). Can better examine whether lenders are pricing in climate-related risks and/or if these are good measures of climate-related risks.

Try other sustainability measures, e.g. ESG ratings.

Table 2

	(1) Firm controls	(2) Lender controls	(3) All	(4) Firm FE
FGreen*	-13.208***	-39.011***	-11.926***	
	(2.852)	(2.276)	(2.783)	
FGreen				3.956
				(4.163)
Loan controls:				
Log Loan Amount	-13.880***	-16.220***	-13.547***	-5.659***
	(1.212)	(.814)	(1.200)	(1.128)
Maturity	.931***	.451***	.873***	.830***
	(.086)	(.068)	(.082)	(.086)
Concentration	3.731**	-1.812***	2.845*	4.394**
	(1.558)	(.241)	(1.497)	(1.871)
Nonbank indicator	85.116***	27.353**	10.287	2.642
	(10.560)	(10.987)	(17.787)	(17.111)
Firm controls:				
Log Total Assets	-14.770***		-15.407***	-11.245***
	(1.084)		(1.082)	(3.300)
Leverage	-9.660**		-10.178**	-12.402
	(4.920)		(4.842)	(25.286)
ROA	-4.497**		-4.705**	-49.554***
	(2.032)		(1.998)	(17.143)
Lender controls:				
(Avg) Total Assets		-7.193***	-8.267***	-5.445*
		(1.010)	(1.589)	(3.297)
(Avg) Tier 1 capital ratio		10.491***	12.471***	4.522***
		(1.184)	(.928)	(1.132)
(Avg) ROA		-22.011	-1168.308***	-432.481
		(14.039)	(276.502)	(350.556)
Time FE	Yes	Yes	Yes	Yes
Firm Country FE	Yes	Yes	Yes	No
Firm FE	No	No	No	Yes
Obs	10099	14498	9886	9481
Adj R-squared	.4556	.4263	.4696	.7017

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

- Green banks (lead arrangers) charge a large premium compared to brown banks.

  More expensive for green firms to borrow from green banks than brown banks, even after accounting for 'green-meets-green' effect.

Table 8

	(1) Firm controls	(2) Lender controls	(3) All	(4) Firm FE
FGreen*	-8.521***	-35.613***	-9.141***	
	(2.846)	(2.320)	(2.800)	
BGreen	65.735***	41.311***	38.068***	32.843***
	(4.725)	(4.366)	(5.411)	(7.807)
FGreen* × BGreen	-38.353***	-20.711***	-32.256***	
	(10.016)	(7.935)	(10.084)	
FGreen				7.398*
				(4.194)
FGreen × BGreen				-45.051***
				(11.933)
Loan Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	No	Yes	Yes
(Avg) Lender Controls	No	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Firm Country FE	Yes	Yes	Yes	No
Firm FE	No	No	No	Yes
Obs	10099	14498	9886	9481
Adj R-squared	.4724	.4323	.4736	.7032

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

- The effect of green bank on loan spreads no longer significant once lender FE is included.

  A bank 'becoming green' (i.e. joining UNEP FI) doesn't have any effect on loan spreads.

  <u>Suggestions</u>:

  Include more lender controls, e.g. bank type, credit ratings.

  Use alternative measures of lender greenness (e.g. ESG ratings).

Table 9

	(1) All controls	(2) Firm FE	(3) Lender FE	(4) Both
FGreen*	-11.811***			
	(2.797)			
BGreen*	35.059***	25.459***	-21.556	absorbed
	(4.701)	(5.236)	(20.977)	
FGreen* × BGreen*	-30.291***			
	(8.792)			
FGreen		5.728	-14.661***	7.031*
		(4.184)	(2.846)	(4.236)
FGreen × BGreen*		-35.315***	-36.303***	-30.991***
		(8.878)	(9.487)	(9.882)
Loan, Firm and Lender controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Firm Country FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Lender FE	No	No	Yes	Yes
Obs	10839	10453	10804	10416
Adj R-squared	.4848	.7216	.5114	.7278

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

- Pre-Paris, green firms were paying a premium to borrow from green banks.

  Post-Paris, this is no longer true. But brown banks are offering a smaller discount to green firms than pre-Paris.

  <u>Suggestions</u>:

  Explore if green and brown banks increased their supply of loans to green firms post-Paris, at the expense of brown firms.

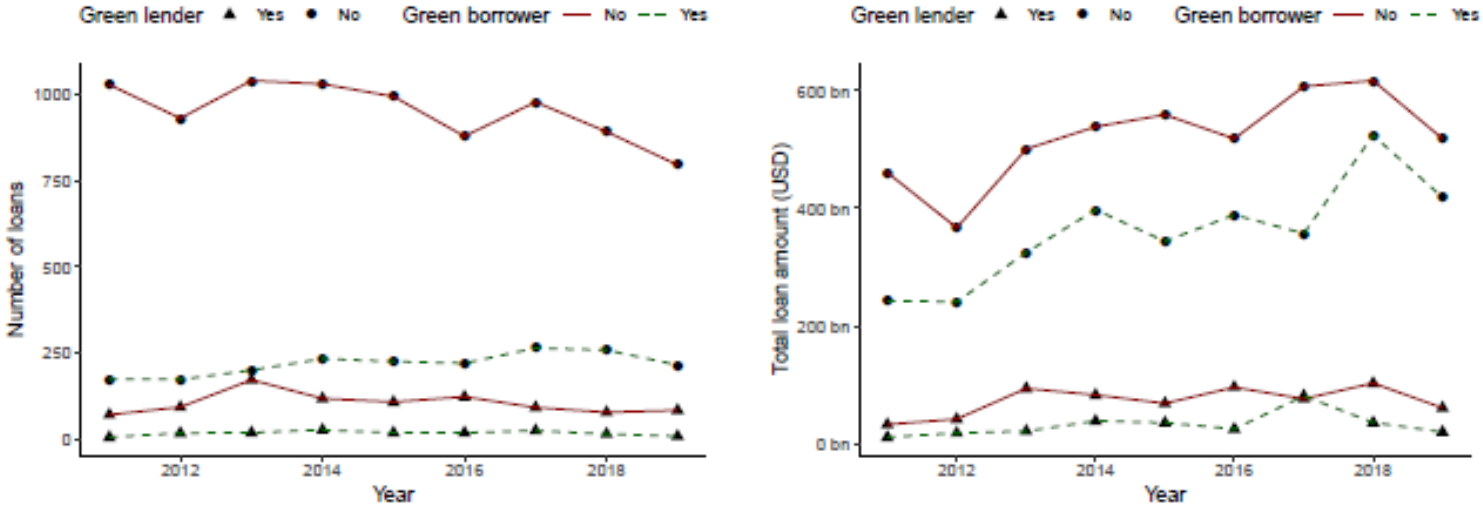
Table 10

	All controls		Firm FE	
	(1) Before	(2) After	(3) Before	(4) After
FGreen*	-12.261***	-7.086*		
	(3.945)	(3.823)		
BGreen	25.167***	52.735***	32.405***	34.665**
	(7.057)	(8.930)	(10.817)	(14.745)
FGreen* × BGreen	-2.168	-69.476***		
	(14.231)	(11.606)		
FGreen			9.822	7.784
			(8.305)	(7.457)
FGreen × BGreen			-43.356**	-64.896***
			(18.897)	(19.266)
Loan Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
(Avg) Lender Controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Firm Country FE	Yes	Yes	No	No
Firm FE	No	No	Yes	Yes
Obs	5595	4286	5123	3864
Adj R-squared	.4710	.4901	.7291	.7269

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 1: Loans to green firms by green banks over time.



The figure shows the evolution of green firms and green borrowers over time in our final sample, with the number of loan facilities on the left and the total amount on the right. We use our dummy proxy to identify green banks (i.e. the syndicate is classified as green when the majority of participants is green).

Conclusions

- Some encouraging evidence that climate disclosures might benefit firms by lowering their funding costs, but further probing would be useful.
- Rich dataset which can be used to extend the analysis could be extended to inform other important policy debates, e.g.:
- Are lenders pricing in climate-related financial risks better now than in the past?
- To what extend do credit ratings capture climate-related risks?