Corporate ESG Profiles and Banking Relationships

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Outline

ESG implications of bank lending:

1. Borrower ESG ratings — a factor determining the establishment of new lending relationship?
   ⇒ a matching test: whether lenders are more likely to grant loans to borrowers with similar ESG profiles
2. How corporate ESG policies propagate through lending relationships?
   ⇒ examine the direct impact of banks on the evolution of the borrowers' ESG performance
   (Causality: exploiting quasi-exogenous variation in the lender's ESG standard to alleviate endogeneity concerns: MA among lenders)
3. Heterogeneity in this relationship:
   ⇒ Bank-side: asymmetric bank influence (i.e. effective only if bank ESG ¿ borrower ESG)
   ⇒ Borrower-side: bank dependency and liability risk (more profound if more bank-dependent or with poor ex-ante ESG ratings)

Data

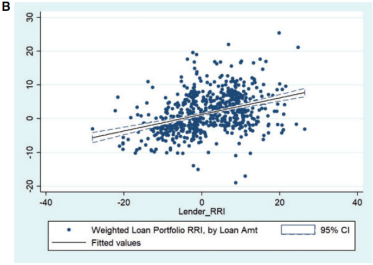
- RepRisk: negative new coverage & ESG ratings of both borrowers and lender
  - including private borrowers,
  - outcome-driven (Event-based)
  - more objective (more difficult for firms to endogeneously manipulate media attention / negative news detection)
  - RRI: postiively skewed, evolution is path dependent (change is correlated with the level)
- LPC DealScan: 2007-2017
  - loans granted to U.S. incorporated firms
  - unit: package level, i.e. relationship between a borrower and a lead lender that finances the package
    When multiple lead lender: calculate the equally weighted average of ESG ratings of lead-lenders in the syndicate
- SDC M&A: acquisition such that ownership exceeds 50% only after M&A event
- Compustat: borrower financials; S&P credit ratings, CRSP to determine if the firm is public or private

ESG ratings and the matching of borrowers and lenders

- focus on lenders and borrowers without prior lending relationships (determinant of the establishment of new relationship)
- remove firm-level ts mean from both lender and borrower's ESG ratings
- for each year: equal-weight & value-weight the ESG ratings of borrowers who initiated loans from the same lender
- scatter plot these aggregate borrower ratings against lender ratings for each lender-year
  $\Rightarrow$ significant and positive cross-sectional correlation

Equally weight borrowers' RRI

(a)



Weight borrowers' RRIs by loan amount

(b)

Possible channels

Banks tend to match with borrowers with similar ESG levels.

Two possible (but not mutually exclusive) channels:

1. Financial motivation: "poor ESG performance may ultimately translate into greater credit risk" = affect the likelihood of debt repayment $\Longrightarrow$ bankers incorporate these factors into the structure and pricing of loan agreements?

   Related results: low ESG banks offter slightly lower loan spreads but no significant link between the borrower ESG rating and loan pricing

2. Reputational motivation: concerns extend beyond a simple consideration of credit and liability risk; nonprice factors play a role in the matching

Evolution of borrowers' ESG performance

Examine the direct impact of banks on the evolution of the borrowers' ESG performance using package-level data (effectively compare the ESG evolution among borrowers with similar ex ante ESG ratings to alleviate concerns of path dependency):

$$\begin{aligned} ESG\_Chg_{i,t-1,t+1} = {} & \alpha + \beta ESG\_Diff_{i,j,t-1} + \lambda Lender\_Chg_{j,t-1,t+1} \\ & + \theta ESG\_Borrower_{i,t-1} + \gamma X_{i,t-1} + I_{ffindustry} \\ & + \delta_t + \xi_{i,j,t}, \end{aligned} \tag{1}$$

where i indexes borrower, j indexes lender, t indexes the package initiation year. For each package, the change in the borrower's ESG profile ($ESG\_Chg_{i,t-1,t+1}$) is defined as the change in the borrower's RRI over a 2-year window, from one year before (t-1) to one year after the package initiation date (t+1). The ex ante difference between the lender and borrower's ESG ratings ($ESG\_Diff_{i,j,t-1}$) is defined as the difference between the lender and borrower's RepRisk ESG rating measured one year before the package initiation date.

For comparability: adjust both the lender and the borrower's RRI by the sector-month mean.

Table 2
Evolution in corporate ESG profile and bank lending

	(1) ESG_chg All	(2) ESG_chg All	(3) ESG_chg All	(4) ESG_chg All	(5) ESG_chg Public
ESG_diff	0.0718***	0.0718***	0.0616***	0.0357***	0.0295**
	(10.03)	(8.69)	(6.64)	(4.05)	(2.57)
Lender_chg	0.0617***	0.0617***	0.0465***	0.0208*	0.0299**
	(5.85)	(5.03)	(3.68)	(1.70)	(1.99)
ESG_borrower	−0.396***	−0.396***	−0.409***	−0.517***	−0.603***
	(−37.23)	(−17.51)	(−15.99)	(−22.09)	(−22.73)
Num of facilities				−0.784***	0.0139
				(−4.23)	(0.07)
log package amt				1.905***	0.503**
				(13.18)	(2.37)
USA				−2.844**	−0.118
				(−1.99)	(−0.07)
Public				1.246***	
				(4.10)	
log assets					2.371***
					(12.87)
Book leverage					−2.342***
					(−2.90)
Return on assets					−1.655
					(−1.30)
Tobin's q					0.765***
					(3.72)
Ind FE	No	No	Yes	Yes	Yes
Year FE	No	No	Yes	Yes	Yes
Cluster	No	Yes	Yes	Yes	Yes
N	8,128	8,128	8,104	8,104	5,120
Adj. R^2	.220	.220	.227	.264	.320

mechanic/spurious correlation instead of identifying the economic relationship?

Two additional tests:

- placebo test: generate 10,000 randomized borrower-lender pairs, assuming an equal chance of initiating the loan $\Rightarrow$ not significant with this sample
- construct the group of "potential borrowers" under a more restrictive assumption (having the same features on: private or public, industry, location$\Rightarrow$ not significant

Asymmetric bank influence: (a) ESG rating (b) sector-month-adjusted RRI

Table 3
Asymmetric bank impact

A	(1) Better bank = 1	(2) Better bank = 1	(3) Better bank = 0	(4) Better bank = 0
	ESG_Chg	ESG_Chg	ESG_Chg	ESG_chg
ESG_diff	0.066**	0.072**	0.013	0.013
	(2.39)	(2.46)	(1.11)	(0.83)
Lender_chg	0.045	0.040	−0.017	−0.002
	(1.32)	(1.02)	(−0.94)	(−0.08)
ESG_borrower	−0.488***	−0.624***	−0.584***	−0.629***
	(−10.38)	(−12.53)	(−20.48)	(−17.86)
Num of facilities	−0.677*	0.312	−0.889***	−0.136
	(−1.83)	(0.81)	(−3.48)	(−0.52)
log package amt	4.152***	1.508***	1.562***	0.456*
	(12.69)	(2.94)	(8.35)	(1.65)
USA	−10.367***	−3.714	−0.255	1.378
	(−3.60)	(−1.27)	(−0.16)	(0.76)
Public	1.809**		1.103***	
	(2.05)		(2.80)	
log assets		3.485***		2.101***
		(8.33)		(8.74)
Book leverage		−2.037		−2.431**
		(−1.00)		(−2.43)
Return on assets		3.373		−3.345*
		(0.76)		(−1.93)
Tobin's q		1.089**		0.706***
		(2.39)		(2.67)
Ind FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster	Yes	Yes	Yes	Yes
N	1,539	1,154	4,132	2,447
Adj. R^2	.328	.415	.240	.273

(c)

Table 3
(Continued)

B	(1) Better bank (adj) = 1	(2) Better bank (adj) = 1	(3) Better bank (adj) = 0	(4) Better bank (adj) = 0
	ESG_chg	ESG_chg	ESG_chg	ESG_chg
ESG_diff	0.212***	0.256***	0.025**	0.020
	(3.76)	(4.52)	(2.49)	(1.51)
Lender_chg	0.058**	0.061*	0.021	0.030*
	(2.16)	(1.72)	(1.44)	(1.69)
ESG_borrower	−0.447***	−0.553***	−0.526***	−0.593***
	(−10.31)	(−10.86)	(−20.88)	(−20.96)
Num of facilities	−0.544	−0.067	−0.793***	0.054
	(−0.97)	(−0.08)	(−4.13)	(0.29)
log package amt	2.552***	1.107**	1.676***	0.318
	(8.72)	(2.52)	(10.64)	(1.38)
USA	−7.324	−1.234	−2.041	0.044
	(−1.59)	(−0.33)	(−1.49)	(0.03)
Public	1.615**		1.046***	
	(2.33)		(3.24)	
log assets		2.527***		2.290***
		(7.00)		(11.55)
Book leverage		−1.132		−2.535***
		(−0.57)		(−2.83)
Return on assets		0.181		−2.548*
		(0.06)		(−1.80)
Tobin's q		1.046**		0.831***
		(2.29)		(3.74)
Ind FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster	Yes	Yes	Yes	Yes
N	1,384	899	6,482	4,079
Adj. R^2	.368	.439	.211	.262

(d)

"lenders significantly influence the evolution of their borrowers' ESG profile"

Cross-sectional variation in bank dependency and liability risk

Hypo: Bank-dependent borrowers have stronger incentives to preserve the existing lending relationship, and are thus more likely to discipline themselves when lenders hold a high ESG lending standard.

$$\begin{aligned} ESG\_Chg_{i,t-1,t+1} = & \alpha + \beta ESG\_Diff_{i,j,t-1} \times I_{dependency,t-1} \\ & + \varsigma ESG\_Diff_{i,j,t-1} + \tau I_{dependency,t-1} \\ & + \lambda Lender\_Chg_{j,t-1,t+1} + \theta ESG\_Borrower_{i,t-1} \\ & + \gamma X_{i,t-1} + I_{ffindustry} + \delta_t + \xi_{i,j,t}, \end{aligned} \tag{2}$$

Proxy for bank dependency: Rated vs unrated (Unrated = less access to public financing), investment grade vs non-investment grade, Secured package (secured by collateral = less liability risks when shocked)

Propagation of bank influence along E, S, and G

construct a proxy of the borrower's evolution along the specific issues:

$$Chg\_RRI_{j,t-1,t+1} = (RRI_{t+1} - RRI_{t-1}) \times$$
$$(\#\ of\ News\ Associated\ with\ Issue\ j\ from\ t-1\ to\ t+1)/ \quad (3)$$
$$(Total\ \#\ of\ News\ Associated\ with\ All\ Issues\ from\ t-1\ to\ t+1),$$

where $Chg\_RRI_{j,t-1,t+1}$ is the change in borrowers' RRIs attributable to issue j from years $t-1$ to $t+1$. RRI_{t+1} and RRI_{t-1} are borrowers' RRIs measured at years $t+1$ and $t-1$, respectively.

Banks are more likely to discipline borrowers along (1) climate change, (2) human rights abuse, and (3) social discrimination.

Table 5
ESG Issues and Bank Impact

Environmental issues	(1) chg_rri_cc	(2) chg_rri_lp	(3) chg_rri_iol	(4) chg_rri_oaw	(5) chg_rri_wi	(6) chg_rri_am
ESG_diff	0.0007**	0.0001	0.0005	0.0000	−0.0004	−0.0007*
	(1.975)	(0.055)	(0.550)	(0.137)	(−0.730)	(−1.866)

Community issues	(1) chg_rri_hra	(2) chg_rri_ioc	(3) chg_rri_lpi	(4) chg_rri_sd
ESG_diff	0.0029**	0.0016	0.0004**	0.0009*
	(1.977)	(1.178)	(2.138)	(1.822)

Employee issues	(1) chg_rri_fl	(2) chg_rri_cl	(3) chg_rri_foa	(4) chg_rri_die	(5) chg_rri_oh	(6) chg_rri_pec
ESG_diff	0.0000	0.0002	0.0010	−0.0001	0.0022	−0.0014
	(0.117)	(1.431)	(1.135)	(−0.165)	(1.393)	(−1.499)

Governance issues	(1) chg_rri_cbe	(2) chg_rri_ec	(3) chg_rri_mc	(4) chg_rri_fd	(5) chg_rri_te	(6) chg_rri_to	(7) chg_rri_ap
ESG_diff	−0.0001	0.0005	−0.0000	−0.0012	0.0000	0.0006	0.0007
	(−0.075)	(0.782)	(−0.040)	(−0.594)	(0.038)	(0.977)	(0.854)

Cross-cutting Issues	(1) chg_rri_cp	(2) chg_rri_phe	(3) chg_rri_voi	(4) chg_rri_von	(5) chg_rri_sci
ESG_diff	0.0009	n/a	n/a	n/a	−0.0002
	(1.509)	n/a	n/a	n/a	(−0.288)

Negative reputational news events and changes in banking relationship

What drives the mechanism of this evolution? Three possible mechanisms:

- an "association" effect, in which borrowers tend to gradually incorporate the viewpoints and policies of the parties they contract with (including their bankers)
- take active steps to encourage their borrowers to improve their ESG ratings over time
- borrowers take steps to improve their ESG because they want to ensure that the bank renews their loan and/or provides them with additional financing over time.

Possible to examine the 3rd: by examining the relationship between the damages to the borrower's reputation, and the likelihood of initiating new loan(s) with the same lead lender within a 2-year period centered on the original package's end date:

$$Pr(Same_{i,j,te}=1)=\phi(\alpha+\beta Num\ Rep\ Event_{i,ts,te}+\gamma X_{i,te-1}+S_{i,j} + I_{ffindustry}+\delta_t+\xi_{i,j,t}) \quad (4)$$

restrict the regression sample to borrowers who received at least one package financing within the 2-year period centered on the original package's end date;
all news reports (if any) covered within the same month as one negative reputational shock

Table 6
Negative reputational news incidents and switch in lending relationship

	(1) Same All	(2) Same Public	(3) Same res All	(4) Same res Public	(5) Same sgl All	(6) Same sgl Public
Num rep event	−0.0489***	−0.0242*	−0.0546***	−0.0278**	−0.0704***	−0.0624**
	(−4.99)	(−1.75)	(−5.60)	(−1.99)	(−3.01)	(−1.97)
ESG_borrower_start	0.0147***	0.00401	0.0117***	0.00245	0.0191***	0.00843
	(5.54)	(1.23)	(4.55)	(0.77)	(3.53)	(1.14)
Num of facilities		−0.107		−0.102		−0.303**
		(−1.58)		(−1.45)		(−2.14)
Book leverage		0.0762		−0.0387		0.128
		(0.39)		(−0.19)		(0.36)
Tobin's q		−0.0432		−0.0902		−0.223**
		(−0.75)		(−1.54)		(−2.08)
Return on assets		0.654		0.595		1.951**
		(1.48)		(1.25)		(2.19)
log assets		0.0273		−0.0415		0.0718
		(0.81)		(−1.25)		(1.15)
Chg in book leverage		0.0705		0.114		−0.0249
		(0.26)		(0.42)		(−0.05)
Chg in Tobin's q		0.00496		−0.0378		−0.0484
		(0.08)		(−0.63)		(−0.44)
Chg in return on assets		0.562**		0.603*		1.921***
		(2.03)		(1.88)		(2.83)
Chg in log assets		−0.0531		−0.0907		0.0394
		(−0.68)		(−1.16)		(0.26)
Original package length		−0.143***		−0.125***		−0.0598
		(−5.57)		(−4.78)		(−1.22)
Investment grade		0.0181		0.213**		−0.0314
		(0.20)		(2.41)		(−0.18)
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Yes	Yes	Yes	Yes	Yes	Yes

Examine the ESG profile of the new lead lender(s)

Examine the ESG profile of the new lead lender(s) as a function of the number of borrowers' reputational incidents during the original package period:

$$Lender\_Diff = \alpha + \beta Num\ Rep\ Event_{i,ts,te} + \sigma Same_{i,j,te} + \gamma X_{i,te-1} + S_{i,j} + I_{ffindustry} + \delta_t + \xi_{i,j,t}. \quad (5)$$

Lender_Diff is defined as the ESG rating of the lender(s) of the new package minus the ESG rating of the lender(s) of the original package.

positive and statistically significant in all of the columns
= borrowers who are exposed in greater number of reputational events obtain loan financing from lenders with much worse ESG ratings at the expiration date of the original loan package.

DID with bank mergers: quasi-exogenous shocks to the bank's ESG standard

measure the quasi-exogenous variation to the lender's ESG standard with: ESG_Shock_j for the treatment group using the following specification, and assign zero to all control units:

$$\begin{aligned} ESG\_Shock_j &= (RRI_a - RRI_t) \times Size_a/(Size_a + Size_t), \\ &\quad if\ the\ lender\ j\ is\ the\ target \\ ESG\_Shock_j &= -(RRI_a - RRI_t) \times Size_t/(Size_a + Size_t), \\ &\quad if\ the\ lender\ j\ is\ the\ acquirer. \end{aligned} \tag{6}$$

Pair each treated loan one-to-one with a control unit (initiated in the same year-month, different borrower and lender, borrower with closest ex ante RRI)

$$\begin{aligned} RRI_{i,t} = \alpha + \beta ESG\_Shock_j \times Post_t + \varsigma ESG\_Shock_j + \tau Post_t \\ + \gamma X_{i,j} + I_{ffindustry} + \xi_{i,j,t}, \end{aligned} \tag{7}$$

Table 9
Diff-in-diff analysis using bank mergers

	(1) ESG	(2) ESG	(3) ESG	(4) ESG	(5) ESG_chg
ESG_shock × Post	0.186***	0.180***	0.143**	0.147**	
	(3.57)	(3.42)	(2.41)	(2.46)	
ESG_shock	0.130**	−0.029	−0.040	−0.043	0.265***
	(2.59)	(−0.57)	(−0.35)	(−0.38)	(3.05)
Post	2.212***	2.122***			
	(4.91)	(4.85)			
ESG_borrower					−0.701***
					(−12.14)
Num of facilities		−0.213***		0.026	−0.368*
		(−7.44)		(0.71)	(−1.83)
log package amt		2.546***		−0.340	1.396***
		(7.72)		(−1.20)	(3.59)
USA		−8.809***		1.066	−8.335*
		(−5.22)		(0.91)	(−1.77)
Public		4.031***		3.872**	1.284
		(5.56)		(2.19)	(1.21)
Ind FE	Yes	Yes	No	No	Yes
Borrower FE	No	No	Yes	Yes	No
Year FE	No	No	Yes	Yes	Yes
Cluster	Yes	Yes	Yes	Yes	Yes
N	1,851	1,851	1,879	1,879	455
Adj. R^2	.059	.235	.703	.703	.398

Robustness checks

- main explanatory variable: use the raw instead of sector-month-adjusted RRIs
- an alternative method of defining lead lender(s)
- alternative sampling criteria
- alternative specifications:
  - level variables instead of changes

The end!