Finance Research Letters xxx (xxxx) xxx

Contents lists available at ScienceDirect

Finance Research Letters

journal homepage: www.elsevier.com/locate/frl

Bank debt signalling and corporate sustainability: Does incongruence blur the message?

Gabriel de la Fuente, Pilar Velasco *

Universidad de Valladolid, Faculty of Economics and Business, Avenida Valle del Esgueva, 6, 47011 Valladolid (SPAIN)

ARTICLE INFO

JEL codes:
G30
G32
M14

Keywords:
Signalling theory
Signal incongruence
Bank debt
CSR
Sustainability pillars
Firm value

ABSTRACT

This paper examines the interplay between the signalling function of bank debt and other indicators which might reveal incongruence among a firm's actions and question the sincerity of its sustainability engagement. Empirical evidence on a sample of U.S. companies reveals that the presence of bank debt in a firm's leverage improves the performance of sustainability. This beneficial effect of bank debt is greater for the environmental pillar. However, bank debt signalling weakens (or even disappears) in the presence of other indicators that express incongruence, such as a low uniformity in the commitment across sustainability pillars and belonging to a culpable industry. Overall, this study highlights the importance of harmonizing the signal set so that it has an impact on firm value.

1. Introduction

How genuine a firm's engagement to sustainability actually proves to be is by no means a trivial matter. Some firms lack any genuine orientation to sustainability. Instead, their sole purpose is merely to appear to be sustainable ("window dressing") so as to benefit from a reputation insurance which might protect them from potential negative events or even against upcoming irresponsible practices (Luo et al., 2018). Given such informational noise, signalling mechanisms that might shape stakeholders' perceptions regarding a firm's sustainability genuineness become a main determinant of this strategy's impact on market value (McShane and Cunningham, 2012; Cuypers et al., 2016).

Bank debt may be used as one such signalling mechanism. The idiosyncrasy of bank-firm relationships leads banks to interact frequently with borrowers and in long-term time horizons, providing these creditors with proprietary information about borrowers' strategies (Fama, 1985; Boot, 2000). Hence, bank creditors are in a privileged position to distinguish whether or not a firm's sustainability strategy is a true undertaking. Such an advantaged position endows the granting of bank debt with a signalling ability to legitimize borrower strategies (Boot, 2000; Epure and Guasch, 2020).

This article builds on the signalling function of bank debt vis-à-vis the sincerity of corporate sustainability engagement and its interaction with other indicators which might make the favourable and informative bank debt signal incongruent. Contradictory signals sent by firms confuse receivers (Connelly et al., 2011), question firms' credibility (Fuller et al., 2000) and reduce market response to them (Rimbey and Officer, 1992).

Our empirical analyses are based on a sample of U.S. listed companies from 2010 to 2018. Results support our signal (in)

* Corresponding author.
E-mail addresses: gabriel.fuente@uva.es (G. Fuente), pilar.velasco@uva.es (P. Velasco).

https://doi.org/10.1016/j.frl.2021.102288
Received 27 October 2020; Received in revised form 23 December 2020; Accepted 1 July 2021
Available online 6 July 2021

congruence hypothesis. Bank debt is seen to enhance the impact of sustainability on a firm's market value, although this positive influence is greater in the case of the environmental pillar, whose nature is more consistent with a non-self-serving orientation. Further, we find that the benefit of bank debt signalling disappears if it coexists with other indicators of low sustainability credibility, such as low sustainability consistency across the three broad pillars of sustainability (environmental, social, and governance), or belonging to a culpable industry.

This study's contribution is twofold. First, we advance research on the signalling (in)congruence phenomenon (Stern et al., 2014; Vergne et al., 2018; Zhang et al., 2020; Colombo, 2021) by illustrating its importance for sustainability. Earlier literature has largely neglected interactions between signals. We contribute to ongoing research which advocates paying greater attention to interpreting 'signal sets' (Drover et al., 2018; Paruchuri et al., 2020). Second, we contribute to reconciling the inconclusive evidence on the sustainability-value relationship. Our results support the notion that signal incongruence downplays the impact of a firm's message concerning the genuineness of its sustainable practices, and suggest the relevance of harmonizing cues in order to gain credibility and enhance the value of sustainability. This question acquires even greater relevance during economic downturns, such as the COVID-19 pandemic, and which fuel interest in sustainable investing (Singh, 2020).

The paper proceeds as follows. Section 2 develops the hypotheses. Section 3 details the sample, variables and model. Section 4 explains the results. Section 5 concludes.

2. Hypotheses

Signals are communication vehicles between a firm's insiders and stakeholders which help to alleviate informational gaps and, thereby, prompt a better appraisal of corporate decisions (Spence, 1974; Riley, 1975; Connelly et al., 2011; Vergne et al., 2018; Kim et al., 2020). While signal observability and signal cost are widely acknowledged as determinants of signal effectiveness, other attributes such as signal (in)congruence remain underexplored.

Recent research has called for further attention to 'signal sets', in which the interplay between the combined signals can modify each individual effect (Stern et al., 2014; Kavadis et al., 2020; Paruchuri et al., 2020). Firms need to show congruence between signals in order to guarantee their effectiveness and credibility (Gao et al., 2008; Colombo, 2021), otherwise signal incongruence will make a firm's information noisy and difficult to interpret by stakeholders, prompting a negative assessment (Vergne et al., 2018; Zhang et al., 2020).

First, we argue that the informational content provided by bank debt may interact differently with the information conveyed by each sustainability pillar: environmental, social, and governance. The environmental and social pillars are associated with a wide range of secondary stakeholders and therefore, these pillars are more likely *per se* to signal an 'other-considering' disposition by the firm (Godfrey et al., 2009). In contrast, the governance dimension mainly involves a firm's primary trading stakeholders and is more prone to be driven by self-serving interests and power deals (Godfrey et al., 2009). Therefore, the signalling content from the governance pillar may be perceived as being less genuine than the one stemming from the environmental and social pillars. Based on this rationale, we formulate our first hypothesis:

H1. The influence of bank debt signalling on the relationship between sustainability and firm value is stronger in the environmental/social pillars than in the governance pillar.

Next, we posit that the strength of bank debt signalling may be altered by other indicators that affect sustainability credibility. McShane and Cunningham (2012) highlight that CSR needs to be aligned with the identity of the company itself if it is to be perceived as authentic. Wang and Choi (2013) argue that greater similarity in social performance across stakeholder groups enhances the trustworthiness of a firm's CSR strategy. Vergne et al. (2018) find that CEO overcompensation receives more media disapproval if the firm is engaged in corporate philanthropy. Signal incongruence may be penalized by financial markets because it might be seen as a sign of hypocrisy and deemed untrustworthy by stakeholders.

Following on from these arguments, we hypothesize that bank debt is likely to exert a weaker (or even null) signalling effect on the sustainability-firm value relationship if there are other indicators which cast doubt on the credibility of the firm's engagement and which point to signal incongruence. In particular, we posit these two hypotheses:

H2a. The influence of bank debt signalling on the relationship between sustainability and firm value weakens in the presence of low consistency across sustainability pillars.

H2b. The influence of bank debt signalling on the relationship between sustainability and firm value weakens if the firm belongs to a culpable industry.

3. Data and methodology

3.1. Sample selection

Our sample encompasses non-financial U.S. listed firms between 2010 and 2018. Data was sourced from the *Eikon* platform by Refinitiv. Financial data comes from *Worldscope*, stock prices from *Datastream*, and sustainability from ESG scores in *Eikon* (formerly, Thomson Reuters ASSET4). We collect data on bank debt and liabilities from the ORBIS database by Bureau van Dijk. We exclude firm-year observations with missing or negative equity book value and/or market capitalization, and observations with missing data in ESG and/or basic financial variables. We winsorize variables (except ESG scores) at the top and bottom 1%. These sample selection criteria produce 5380 firm-year observations (1263 firms).

Table 1
Descriptive statistics and variable description.

Variable	Variable description	N	Mean	SD	p25	Median	p75
TOBINQ	Tobin's Q, measured by the ratio of market value to replacement costs.	5380	5.0799	3.6381	2.1045	3.9931	7.3386
ESGoverall	Overall sustainability score, as the average of the scores of the three pillars (environmental, social, and governance).	5380	4.7502	1.6380	3.4591	4.5623	5.9605
ENV	Sustainability score of the environmental pillar.	5380	4.4105	2.1451	2.6885	4.0175	5.9900
SOC	Sustainability score of the social pillar.	5380	4.7315	1.8805	3.2850	4.5155	6.0180
GOV	Sustainability score of the governance pillar.	5380	5.1087	2.1024	3.4415	5.0905	6.7545
BANKLB	Firm reliance on bank debt, measured by the ratio of bank debt to total liabilities.	4252	0.4366	0.1965	0.3101	0.4461	0.5784
PPEsales	Asset tangibility, proxied by the ratio of property, plant and equipment divided by total sales.	5380	0.7290	1.1683	0.1331	0.2458	0.6369
lnTA	Firm size, calculated as the natural logarithm of the book value of total assets.	5380	14.956	1.1333	14.202	15.021	15.831
CAPEXsales	Investment opportunities, captured by the ratio of capital expenditures to total sales.	5380	0.1184	0.2387	0.0234	0.0412	0.0908
EBITsales	Firm profitability, obtained as the ratio of EBIT to total sales.	5380	0.0780	0.2153	0.0414	0.0925	0.1500
CASHTA	Firm cash holdings, proxied by the ratio of total cash divided by total assets.	5380	0.0904	0.0895	0.0221	0.0643	0.1338

3.2. Variables definition

3.2.1. Dependent variable: firm value

We proxy firm value by Tobin's Q (*TOBINQ*), which is the ratio of market value to replacement costs (Dowell et al., 2000). Market value is calculated as the sum of market capitalization, book value of long-term debt, and current liabilities. Replacement costs are proxied by the sum of the book value of inventory and the value of property, plant and equipment (net of accumulated reserves for depreciation, depletion and amortization).

3.2.2. Independent variables: sustainability pillar scores, bank debt leverage, consistency across pillars, and culpable industries

Sustainability is captured by the pillar scores: environmental (*ENV*), social (*SOC*), and governance (*GOV*). Following Gomes (2019), we measure overall sustainability (*ESGoverall*) by the average of the three pillar scores.

A firm's bank debt leverage (*BANKLB*) is computed as the ratio of bank debt to total liabilities (Demiroglu and James, 2015). Alternatively, we rely on *dumBANKLB*, which equals 1 if *BANKLB* is higher than or equal to the sample median, and 0 otherwise.

For each firm-year observation, the degree of consistency across pillars (*CONSISTENCY*) is calculated as the negative of the variance in the normalized sustainability scores of the environmental, social, and governance pillars:

$$CONSISTENCY_{i,t} = -\frac{\left(ENV_{i,t} - ESGoverall_{i,t}\right)^2 + \left(SOC_{i,t} - ESGoverall_{i,t}\right)^2 + \left(GOV_{i,t} - ESGoverall_{i,t}\right)^2}{3} \quad (1)$$

The lower the variance of scores across pillars, the higher the *CONSISTENCY* and the more credible sustainability appears to be.[1]

Following Fu et al. (2020), we identify as culpable industries: tobacco (SIC 2100–2199), weapons and defence industries (SIC 3760–3769, 3795, 3480–3489), natural resources (SIC 0800–0899, 1000–1119, 1400–1499), and alcohol (SIC 2080, 2082–2085).

3.2.3. Control variables

To alleviate the omitted-variable problem (Li et al., 2018; Wong et al., 2020), we consider a number of control variables: asset tangibility (*PPEsales*), firm size (*lnTA*), investment opportunities (*CAPEXsales*), profitability (*EBITsales*), and cash holdings (*CASHTA*). Table 1 presents the descriptive statistics and variable definitions.

3.3. Baseline model

Our model specification for assessing the bank debt signalling effect on the relationship between pillar sustainability and firm value is:

$$TOBINQ_{i,t} = \gamma_0 + \gamma_1 Sustainability_{i,t} + \gamma_2 Sustainability_{i,t} \times BANKLB_{i,t} + \gamma_3 BANKLB_{i,t} + \gamma_4 Controls_{i,t} + IND_k + YEAR_t + \eta_i + \varepsilon_{i,t} \quad (2)$$

where *i, k* and *t* denote firm, industry and year, respectively. $Sustainability_{i,t}$ denotes the sustainability score (either *ESGoverall, ENV, SOC* or *GOV*); $Controls_{i,t}$ is the vector of firm-level control variables; IND_k comprises a vector of Fama and French (1997) industry dummies; $YEAR_t$ is a set of year dummies of time-fixed effects; η_i is the time-invariant, firm-specific effect; and $\varepsilon_{i,t}$ is the stochastic error term. We use a fixed-effect panel data analysis to control for companies' unobserved and time-invariant characteristics (Servaes and

[1] Wang and Choi (2013) use a similar formula to measure the degree of consistency in the level of social performance across stakeholder groups.

Tamayo, 2013; Yang and Baasandorj, 2017).[2]

4. Results

4.1. Bank debt signalling by pillars

Table 2 presents the results of equation [2]. Bank debt leverage has a positive signalling effect on the value of sustainability. *ESGoverall* has a negative effect on firm value ($\gamma=-0.1697$, $p = 0.005$), which is alleviated by higher bank debt leverage, as shown by the positive sign of the interaction *ESGoverall* × *BANKLB* ($\gamma=0.3779$, $p = 0.001$). To test Hypothesis 1, columns (3) to (8) report the estimations of the moderating effect of bank debt by pillars. Odd-number columns have the results with *BANKLB* and even-number columns repeat the estimations by using *dumBANKLB*. *ENV* ($\gamma=-0.1509$, $p = 0.001$) and *GOV* ($\gamma=-0.1250$, $p = 0.001$) display negative and statistically significant coefficients. The estimated coefficient of *SOC* is positive, and loses its statistical significance when *BANKLB* is used ($\gamma=0.0201$, $p = 0.701$). The interactions *ENV* × *BANKLB, SOC* × *BANKLB* and *GOV* × *BANKLB* are positive and statistically significant, supporting the favourable signalling effect of bank debt on the value of sustainability. Their economic significance mitigates the negative impact of sustainability when considered individually (or even offsets it, in *BANKLB* regressions).

Our evidence suggests that the signalling role of bank debt is more salient in the environmental pillar. If *ENV* increases by a one standard deviation, *TOBINQ* decreases by 17.35 percentage points in below-median bank-leveraged companies ($\gamma=-0.0809$, $p = 0.007$). Yet the same variation of *ENV* reduces *TOBINQ* by only 0.21 percentage points in their above-median bank-leveraged counterparts ($\sum=-0.0809+0.0799=-0.0010$). Altogether, our results partially support Hypothesis 1. The economic significance of *ENV* × *BANKLB* ($\gamma=0.2597$, $p = 0.004$) is greater than that of *GOV* × *BANKLB* ($\gamma=0.1960$, $p = 0.009$). The signalling intensity of bank debt is stronger in *GOV* than in *SOC* ($\gamma=0.1908$, $p = 0.064$), although the difference between the coefficients of *SOC* × *BANKLB* and *GOV* × *BANKLB* is negligible. In view of these results, the beneficial signalling role of bank debt is greater in the environmental pillar than in the social and governance pillars. Results also hold when we enter the ratio of bank debt to total assets as an alternative proxy for bank debt leverage.[3]

4.2. Bank debt signalling and signal (in)congruence

When testing Hypotheses 2a and 2b, we adopt a sample-split approach. Panel A of Table 3 re-estimates the model by subsamples of above-mean and below-mean *CONSISTENCY*. Results partially support Hypothesis 2a. The effect of the bank debt signal indeed disappears in the low-consistency subsample: bank debt and inconsistency among pillars are incongruent signals, which lead a firm's sustainability commitment to be perceived as less legitimate by stakeholders. In the high-consistency subsample, bank debt signal retains statistical significance in *ESGoverall* and *GOV*. This provides some evidence that bank debt signalling is only meaningful in companies that commit more similarly across all pillars of sustainability.

Panel B of Table 3 shows the estimations by subsamples based on whether the firm belongs to a culpable industry or not. Hypothesis 2b receives strong support. The positive moderating effect of bank debt on the relationship between sustainability (pillars) and firm value only presents statistical significance in the non-culpable industry subsample. Bank debt signal appears as incongruent with the business activity of culpable industries and is regarded as less legitimate.

5. Conclusions

This article joins the research debate stressing the need for firms not only to embrace the 2030 Agenda sustainable development goals into corporate decision-making but also to involve effective signalling mechanisms in order to legitimize their responsible actions. Our analyses delve into the signalling role of bank debt and its interaction with other indicators of sustainability credibility. Our evidence reveals that the beneficial effect of bank debt is undermined in the presence of signalling incongruence.

Our work has interesting managerial implications. In order to achieve a more accurate assessment of a firm's sustainability strategy, it is important not only to draw on adequate signalling mechanisms but also to identify potential negative cues which might blur the message and reduce its informative effectiveness. Future research could examine other signalling indicators which suggest incongruence. A multi-country analysis could help to explore how the degree of informational transparency granted by each institutional context might influence the strength of corporate signalling actions.

Author statement

All authors have contributed equally to this paper.

[2] Robustness estimations are conducted by 2SLS with instrumental variables to account for endogeneity. Sustainability is instrumented by: the average industry sustainability score and a dummy which identifies whether the company has executive compensation linked to ESG. The Durbin-Wu-Hausman statistic indicates that endogeneity is not a concern in our dataset ($p>0.10$), such that OLS are therefore more efficient than 2SLS (Greene, 2018). Results are available upon request.

[3] Results are available upon request.

Table 2
The signalling role of bank debt by sustainability pillars.

	Dependent variable: TOBINQ							
	Overall sustainability		Environmental pillar		Social pillar		Governance pillar	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	5.7688*** (1.4594)	5.4967*** (1.4418)	5.4352*** (1.4512)	5.3712*** (1.4400)	5.5716*** (1.4569)	5.4967*** (1.4387)	5.6859*** (1.4555)	5.6723*** (1.4452)
Sustainability								
ESGoverall	−0.1697*** (0.0603)	−0.0598 (0.0392)						
ENV			−0.1509*** (0.0472)	−0.0809*** (0.0297)				
SOC					0.0201 (0.0524)	0.0762** (0.0313)		
GOV							−0.1250*** (0.0374)	−0.0685*** (0.0238)
Interaction effects with bank debt								
ESGoverall × BANKLB	0.3779*** (0.1145)							
ESGoverall × dumBANKLB		0.1011*** (0.0356)						
ENV × BANKLB			0.2597*** (0.0903)					
ENV × dumBANKLB				0.0799*** (0.0274)				
SOC × BANKLB					0.1908 (0.1028)			
SOC × dumBANKLB						0.0535* (0.0317)		
GO × BANKLB							0.1960*** (0.0744)	
GOV × dumBANKLB								0.0542** (0.0260)
Leverage								
BANKLB	−1.7912*** (0.5939)		−1.1198** (0.4608)		−0.9296* (0.5485)		−0.9865** (0.4475)	
dumBANKLB		−0.4168** (0.1935)		−0.2775* (0.1466)		−0.1799 (0.1760)		−0.1937 (0.1557)
Control variables								
PPEsales	−0.4296*** (0.0717)	−0.4328*** (0.0716)	−0.4319*** (0.0717)	−0.4352*** (0.0716)	−0.4182*** (0.0716)	−0.4223*** (0.0714)	−0.4336*** (0.0717)	−0.4352*** (0.0716)
lnTA	−0.0365 (0.0965)	−0.0552 (0.0952)	−0.0229 (0.0965)	−0.0412 (0.0953)	−0.0855 (0.0965)	−0.1017 (0.0953)	−0.0403 (0.0960)	−0.0611 (0.0947)
CAPEXsales	0.7002*** (0.2425)	0.6826*** (0.2425)	0.6763*** (0.2423)	0.6692*** (0.2421)	0.6710*** (0.2419)	0.6663*** (0.2418)	0.6791*** (0.2425)	0.6629*** (0.2424)
EBITsales	0.7451*** (0.1267)	0.7551*** (0.1263)	0.7429*** (0.1267)	0.7511*** (0.1263)	0.7424*** (0.1266)	0.7557*** (0.1262)	0.7447*** (0.1267)	0.7563*** (0.1263)
CASHTA	6.0754*** (0.4469)	6.0930*** (0.4471)	6.0633*** (0.4469)	6.0964*** (0.4469)	6.0607*** (0.4463)	6.0913*** (0.4465)	6.0992*** (0.4470)	6.0999*** (0.4471)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	4252	4252	4252	4252	4252	4252	4252	4252
F-statistic	38.46***	38.41***	38.42***	38.58***	38.93***	39.02***	38.48***	38.45***
Adjusted R^2	0.8882	0.8882	0.8882	0.8882	0.8884	0.8885	0.8882	0.8882

This table shows the fixed effects OLS panel regression results of the moderating effect of bank debt on the relationship between sustainability and firm value by sustainability pillars. All regressions control for firm, industry, and year fixed effects. The F-statistic evaluates the null hypothesis of no joint significance of the explanatory variables. Standard errors are in parentheses. ***, ** and * refer to statistical significance at the 1%, 5% and 10% levels, respectively.

Table 3
The signalling role of bank debt with other indicators of sustainability credibility.

	Panel A: Level of consistency among pillars. Dependent variable: TOBINQ							
	High consistency subsample (above-mean consistency among pillars)				Low consistency subsample (below-mean consistency among pillars)			
Constant	8.2356***	7.9682***	7.9271***	8.3025***	2.2475	2.1342	2.5987	1.6023
	(2.2240)	(2.2134)	(2.2257)	(2.2217)	(2.3856)	(2.3614)	(2.3498)	(2.3564)
Sustainability								
ESGoverall	−0.1584*				−0.0362			
	(0.0857)				(0.1167)			
ENV		−0.1554**				−0.1048		
		(0.0735)				(0.0797)		
SOC			−0.0332				0.1079	
			(0.0794)				(0.0827)	
GOV				−0.1615**				−0.0250
				(0.0671)				(0.0609)
Interaction effects with bank debt								
ESGoverall × BANKLB	0.3382**				0.2063			
	(0.1576)				(0.2229)			
ENV × BANKLB		0.1923				0.2284		
		(0.1393)				(0.1439)		
SOC × BANKLB			0.1797				0.1180	
			(0.1549)				(0.1611)	
GOV × BANKLB				0.3837***				−0.0458
				(0.1279)				(0.1200)
BANKLB	−1.0457	−0.3029	−0.3704	−1.3318*	−1.2911	−1.2910*	−0.8894	−0.0187
	(0.8037)	(0.6965)	(0.8063)	(0.7055)	(1.1727)	(0.7558)	(0.8817)	(0.7627)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2121	2121	2121	2121	2131	2131	2131	2131
F-statistic	17.01***	17.02***	16.85***	17.30***	17.70***	17.75***	18.65***	17.72***
Adjusted R^2	0.8918	0.8918	0.8916	0.8922	0.8939	0.8940	0.8949	0.8939

	Panel B:Industry of a firm'S operations (culpable industry vs. non-culpable industry). Dependent variable: TOBINQ							
	Non-culpable industry subsample				Culpable industry subsample			
Constant	5.9181***	5.5898***	5.6929***	5.8621***	5.6990	5.5496	4.6040	5.4745
	(1.5036)	(1.4950)	(1.5007)	(1.5003)	(7.2967)	(7.2503)	(7.1130)	(7.3115)
Sustainability								
ESGoverall	−0.1630***				−0.5784			
	(0.0609)				(0.5311)			
ENV		−0.1454***				−0.5582		
		(0.0476)				(0.4054)		
SOC			0.0269				−0.3947	
			(0.0528)				(0.5141)	
GOV				−0.1268***				−0.1025
				(0.0379)				(0.2895)
Interaction effects with bank debt								
ESGoverall × BANKLB	0.3826***				0.7340			
	(0.1155)				(0.9664)			
ENV × BANKLB		0.2577***				0.8533		
		(0.0911)				(0.7457)		
SOC × BANKLIAB			0.1889*				0.6719	
			(0.1037)				(0.8722)	
GOV × BANKLB				0.2065***				0.0053
				(0.0756)				(0.5207)
BANKLB	−1.7664***	−1.0647**	−0.8739	−0.9902**	−5.3809	−5.7784	−5.3238	−2.1825
	(0.6003)	(0.4665)	(0.5552)	(0.4541)	(4.8082)	(3.7966)	(4.3162)	(3.0664)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(*continued on next page*)

Table 3 (*continued*)

	Panel B:Industry of a firm'S operations (culpable industry vs. non-culpable industry) Dependent variable: TOBINQ							
	Non-culpable industry subsample				Culpable industry subsample			
N	4132	4132	4132	4132	120	120	120	120
F-statistic	36.34***	36.25***	36.87***	36.35***	3.87***	3.92***	3.77***	3.79***
Adjusted R^2	0.8883	0.8883	0.8886	0.8883	0.8845	0.8851	0.8832	0.8835

This table shows the fixed effects OLS panel regression results of the moderating effect of bank debt on the relationship between sustainability and firm value by subsamples of other indicators of sustainability credibility (the degree of consistency among pillars, and whether the firm operates in a culpable/non-culpable industry). All regressions control for firm, industry, and year fixed effects. The F-statistic evaluates the null hypothesis of no joint significance of the explanatory variables. Standard errors are in parentheses. ***, ** and * refer to statistical significance at the 1%, 5% and 10% levels, respectively.

Acknowledgements

The authors thank Philip Jaggs, the Editors (Narjess Boubakri and Samuel Vigne) and the anonymous referees for their helpful suggestions. Part of this research was done while Pilar Velasco was a Visiting Researcher at the University of Valladolid before she joined the faculty staff. This work is supported by the Spanish Ministry of Science and Innovation [grants ECO2017-84864-P and PID2020-114797GB-I00].

References

Boot, A., 2000. Relationship banking: what do we know? J. Financ. Intermed. 9 (1), 7–25. https://doi.org/10.1006/jfin.2000.0282.
Colombo, O., 2021. The use of signals in new-venture financing: a review and research agenda. J. Manage. 47 (1), 237–259. https://doi.org/10.1177/0149206320911090.
Connelly, B., Certo, T., Ireland, D., Reutzel, C., 2011. Signaling theory: a review and assessment. J. Manage. 37 (1), 39–67. https://doi.org/10.1177/0149206310388419.
Cuypers, I., Koh, P., Wang, H., 2016. Sincerity in corporate philanthropy, stakeholder perceptions and firm value. Organ. Sci. 27 (1), 173–188. https://doi.org/10.1287/orsc.2015.1030.
Demiroglu, C., James, C., 2015. Bank loans and troubled debt restructuring. J. Financ. Econ. 118 (1), 192–210. https://doi.org/10.1016/j.jfineco.2015.01.005.
Dowell, G., Hart, S., Yeung, B., 2000. Do corporate global environmental standards create or destroy market value? Manage. Sci. 46 (8), 1059–1074. https://doi.org/10.1287/mnsc.46.8.1059.12030.
Drover, W., Wood, M., Corbett, A., 2018. Toward a cognitive view of signalling theory: individual attention and signal set interpretation. J. Manage. Stud. 55 (2), 209–231. https://doi.org/10.1111/joms.12282.
Epure, M., Guasch, M., 2020. Debt signaling and outside investors in early stage firms. J. Bus. Ventur. 35 (2), 105929 https://doi.org/10.1016/j.jbusvent.2019.02.002.
Fama, E., 1985. What's different about banks? J. Monet. Econ. 15 (1), 29–39. https://doi.org/10.1016/0304-3932(85)90051-0.
Fama, E., French, K., 1997. Industry costs of equity. J. Financ. Econ. 43 (2), 153–193. https://doi.org/10.1016/S0304-405X(96)00896-3.
Fu, R., Tang, Y., Chen, G., 2020. Chief sustainability officers and corporate social (Ir)responsibility. Strat. Manag. J. 41 (4), 656–680. https://doi.org/10.1002/smj.3113.
Fuller, S., Edelman, L., Matusik, S., 2000. Legal readings: employee interpretation and mobilization of law. Acad. Manag. Rev. 25 (1), 200–216. https://doi.org/10.5465/amr.2000.2791610.
Gao, H., Darroch, J., Mather, D., MacGregor, A., 2008. Signaling corporate strategy in IPO communication: a study of biotechnology IPOs on the NASDAQ. J. Bus. Commun. 45 (1), 3–30. https://doi.org/10.1177/0021943607309349.
Godfrey, P., Merrill, C., Hansen, J., 2009. The relationship between corporate social responsibility and shareholder value: an empirical test of the risk management hypothesis. Strat. Manag. J. 30 (4), 425–445. https://doi.org/10.1002/smj.750.
Gomes, M., 2019. Does CSR influence M&A target choices? Finance Res. Lett. 30, 153–159. https://doi.org/10.1016/j.frl.2018.09.011.
Greene, W., 2018. Econometric Analysis. Ed, 8th edition. Pearson, United States.
Kavadis, N., Heyden, M., Sidhu, J., 2020. Fresh in the saddle: the influence of a new CEO's vision and origin, and CEO succession type on market actors' reactions. Long Range Plann. (in press) 10.1016/j.lrp.2020.102050.
Kim, J., Yang, I., Yang, T., Koveos, P., 2020. The impact of R&D intensity, financial constraints, and dividend payout policy on firm value. Finance Res. Lett. https://doi.org/10.1016/j.frl.2020.101802 (in press).
Li, Y., Gong, M., Zhang, X., Koh, L., 2018. The impact of environmental, social, and governance disclosure on firm value: the role of CEO power. Br. Account. Rev. 50 (1), 60–75. https://doi.org/10.1016/j.bar.2017.09.007.
Luo, J., Kaul, A., Seo, H., 2018. Winning us with trifles: adverse selection in the use of philanthropy as insurance. Strat. Manag. J. 39 (10), 2591–2617. https://doi.org/10.1002/smj.2935.
McShane, L., Cunningham, P., 2012. To thine own self be true? Employees' judgements of the authenticity of their organization's corporate social responsibility program. J. Bus. Ethics 108, 81–100. https://doi.org/10.1007/s10551-011-1064-x.
Paruchuri, S., Han, J., Prakash, P., 2020. Salient expectations? Incongruence across capability and integrity signals and investor reactions to organizational misconduct. Acad. Manag. J. https://doi.org/10.5465/amj.2018.0698 (in press).
Riley, J., 1975. Competitive signalling. J. Econ. Theory 10 (2), 174–186. https://doi.org/10.1016/0022-0531(75)90049-6.
Rimbey, J., Officer, D., 1992. Market response to subsequent dividend actions of dividend-initiating and -omitting firms. Q. J. Bus. Econ. 31 (1), 3–20.
Servaes, H., Tamayo, A., 2013. The impact of corporate social responsibility on firm value: the role of customer awareness. Manage. Sci. 59 (5), 1045–1061. https://doi.org/10.1287/mnsc.1120.1630.
Singh, A., 2020. COVID-19 and safer investment bets. Finance Res. Lett. 36, 101729 https://doi.org/10.1016/j.frl.2020.101729.
Spence, M., 1974. Competitive and optimal responses to signals: an analysis of efficiency and distribution. J. Econ. Theory 7 (3), 296–332. https://doi.org/10.1016/0022-0531(74)90098-2.
Stern, I., Dukerich, J., Zajac, E., 2014. Unmixed signals: how reputation and status affect alliance formation. Strat. Manag. J. 35 (4), 512–531. https://doi.org/10.1002/smj.2116.
Vergne, J.P., Wernicke, G., Brenner, S., 2018. Signal incongruence and its consequences: a study of media disapproval and CEO overcompensation. Organ. Sci. 29 (5), 796–817. https://doi.org/10.1287/orsc.2018.1209.
Wang, H., Choi, J., 2013. A new look at the corporate social-financial performance relationship: the moderating roles of temporal and interdomain consistency in corporate social performance. J. Manag. 39 (2), 416–441. https://doi.org/10.1177/0149206310375850.

Wong, W.C., Batten, J., Ahmad, A.H., Mohamed-Arshad, S.B., Nordin, S., Adzis, A.A., 2020. Does ESG certification add firm value? Finance Res. Lett. https://doi.org/10.1016/j.frl.2020.101593 (in press).

Yang, A.S., Baasandorj, S., 2017. Exploring CSR and financial performance of full-service and low-cost air carriers. Finance Res. Lett. 23, 291–299. https://doi.org/10.1016/j.frl.2017.05.005.

Zhang, T., Zhang, Z., Yang, J., 2020. When does corporate social responsibility backfire in acquisitions? Signal incongruence and acquirer returns. J. Bus. Ethics. https://doi.org/10.1007/s10551-020-04583-5 (in press).