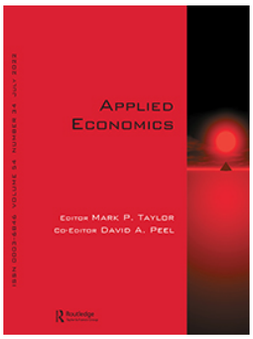

Applied Economics

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/raec20

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To cite this article: Hao Gao, Jing He & Yong Li (2022) Media spotlight, corporate sustainability and the cost of debt, Applied Economics, 54:34, 3989-4005, DOI: 10.1080/00036846.2021.2020710

To link to this article: https://doi.org/10.1080/00036846.2021.2020710

APPLIED ECONOMICS
2022, VOL. 54, NO. 34, 3989–4005
https://doi.org/10.1080/00036846.2021.2020710

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Media spotlight, corporate sustainability and the cost of debt

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ABSTRACT
In this study, we examine the effect of media spotlight of corporate environmental, social, and governance (ESG) performance on corporate debt financing. We use the most influential media firm's rankings of corporate ESG performance from 2009 to 2017 as a proxy of media spotlight. Positive media ESG spotlight significantly reduces firms' cost of debt through enhancing reputation in supply chains, reducing financial risk and increasing corporate transparency. Media ESG spotlight plays a more important role for firms with poor corporate governance and firms located in provinces with more serious pollution.

KEYWORDS
Media; corporate social responsibility; cost of debt; ESG

JEL CLASSIFICATION
M14; G14

I. Introduction

The media actively shape public attention and categories of thought in the financial market (Gerber, Karlan, and Bergan 2009; Shiller 2015). Media coverage can promulgate a firm's financial information and affect investors' decisions (Griffin, Hirschey, and Kelly 2011; Kaniel and Parham 2017; Liu, McConnell, and Xu 2017; Liu and McConnell 2013). Several papers find that media coverage increases public recognition of corporate environmental, social, and governance (ESG) performance (Byun and Oh 2018; Lyon and Shimshack 2015; Naumer and Yurtoglu 2020), a central issue of increasing concern to investors and policymakers (Eliwa, Aboud, and Saleh 2019; Salvi, Giakoumelou, and Bertinetti 2020). We therefore analyse the effect of media spotlight on corporate ESG in China, the largest emerging economy facing rampant environment challenges. We focus on the effect of media spotlight of corporate ESG in the lending market, the most important market for corporate financing in China.

It is well known that China's rapid economic development has been accompanied by serious ESG problems created by firms, such as the 2008 milk scandal and 2010 Zijin Mining water pollution (Du et al. 2017; Liang and Renneboog 2017; McGuinness, Vieito, and Wang 2017). In addition, the ESG information is diffused and scarce. Therefore, media attention to corporate ESG performance is increasing. One of the most respected outlets in the Chinese media landscape is the newspaper *Southern Weekly*, founded in 1984. *Southern Weekly* has been listed among China's 500 most valuable brands, and it is the largest weekly newspaper in China. In 2018, it was named China's best-selling newspaper by *China Post* for the 11th consecutive year. It is a credible and serious newspaper with wide influence in China. More than 78% of its subscribers are highly educated.[1] *Southern Weekly* is the first nationally recognized media outlet to cover ESG topics, and it has become the authority on monitoring Chinese firms' ESG activities. From 2009 to 2017, the newspaper published annual lists of the 100 'best corporate social responsibility firms' according to ESG performance (hereafter the best ESG list).

Research shows that the market tends to react positively to positive reports coming from reputable media sources. Lyon and Shimshack (2015) find that firms on the top of *Newsweek*'s environmental ranking have higher abnormal returns. Byun and Oh (2018) find that publicized ESG activities are positively associated with shareholder value. Cheng et al. (2017) document that achieving a higher ranking in *Fortune*'s list of most admired

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[1]For more introduction regarding *Southern Weekly*, please refer to its official website (http://www.infzm.com/about).
Supplemental data for this article can be accessed here.

companies can increase the value of a manager's reputational capital. Kaniel and Parham (2017) demonstrate that mutual funds included in the *Wall Street Journal* 'Category Kings' ranking list attract more fund flows. Based on these studies, we argue that the best ESG list published by the *Southern Weekly* represents a significant media spotlight on corporate ESG engagement, which is important to stakeholders and creditors (Barigozzi and Tedeschi 2015; Chava 2014; Jiraporn et al. 2014; Lins, Servaes, and Tamayo 2017). The best ESG list is constructed from surveys conducted by *Southern Weekly*, and this information has been acknowledged by market participants. Therefore, this media spotlight does not convey new fundamental corporate information, and the best ESG list is the list itself (Cheng et al. 2017; Kaniel and Parham 2017). We use the best ESG list as a proxy of positive media spotlight to investigate its relation with debt financing costs. The best ESG list provides a relatively clean setting, as it enables us to avoid the self-reporting bias present in studies of corporate social responsibility (Lyon and Shimshack 2015). Consistent with the view that lenders value ESG performance and put pressure on underperforming firms' management when negotiating debt refinancing contracts (Goss and Roberts 2011; Menz 2010; Stellner, Klein, and Zwergel 2015), we find that the cost of debt for firms on the best ESG list is significantly lower than it is for firms not on the list. We use a propensity score matching (PSM) method to control potential confounding factors, and confirm the result. In addition, higher-ranked firms on the best ESG list have lower costs of debt relative to lower-ranked firms. Change-on-change regressions show that as a firm's ranking rises, its cost of debt decreases significantly; this suggests that lenders capture the signal of the best ESG list and reward better ESG firms.

Entry onto or exit from the best ESG list can be treated as a media shock to address potential endogeneity issues (Cheng et al. 2017; Focke, Maug, and Niessen-Ruenzi 2017; Kaniel and Parham 2017). Difference-in-differences (DID) regressions show that list entry and exit have asymmetric effects. We provide evidence that entry onto the best ESG list significantly reduces the cost of debt but that the effect of exiting from the list is limited. We attribute this asymmetry to investors' limited attention: lenders are more likely to notice and reward firms' improvements as reflected by entry onto the list. Instrument variable (IV) and generalized method of moments (GMM) regressions also confirm our conclusions. Taken together, our results support the proposition that positive media spotlight of corporate ESG performance can reduce the cost of debt.

We explore the channels through which media spotlight affects the cost of debt in three ways. The first draws on reputation theory. Media coverage can effectively enhance corporate reputation (Barakat et al. 2019; Liu, McConnell, and Xu 2017; Liu and McConnell 2013). In addition, corporate ESG is a key source of moral capital that creates trust and reciprocity, which facilitates contracting and operations (Du, Bhattacharya, and Sen 2011). We test the reputation theory explanation by investigating firms' trade credit in the supply chain (Bae et al. 2019; Gualandris et al. 2015; Porteous, Rammohan, and Lee 2015). We find that appearance on the best ESG list significantly enhances firm reputation in the supply chain and leads to lower cost of debt.

The second channel that we investigate draws on risk perception theory (Albuquerque, Koskinen, and Zhang 2018; Byun and Oh 2018; Du et al. 2017; Goss and Roberts 2011; Sharfman and Fernando 2008). Media spotlight can increase public awareness of corporate risk, whereas corporate ESG performance reduces risk exposure (Chava 2014; Du et al. 2017; Gong, Xu, and Gong 2018; Goss and Roberts 2011; Tsai, Lu, and Hung 2016; Ye and Zhang 2011). We show that media coverage of corporate ESG performance significantly reduces financial risk, which leads to lower cost of debt. Therefore, financial risk is a key channel through which media coverage of corporate ESG performance can reduce the cost of debt.

The third channel draws on information asymmetry theory, which argues that corporate transparency reduces financing costs (Byun and Oh 2018; Francis, Nanda, and Olsson 2008). We provide evidence that firms on the best ESG list have more analyst coverage, which reduces information asymmetry and enhances corporate ESG transparency. We thus show that corporate transparency is

also a key channel through which media spotlight of corporate ESG performance reduces the cost of debt.

Corporate governance can also reduce financing costs (Chen, Chen, and Wei 2009; El Ghoul et al. 2011). It is an open question whether the relationship between media spotlight of corporate ESG performance and the cost of debt interacts with corporate governance (Borochin and Cu 2018). One hypothesis is that corporate ESG performance is an integral part of good corporate governance and that media spotlight therefore plays a complementary role in reducing the cost of debt (Bhojraj and Sengupta 2003; Ferrell, Liang, and Renneboog 2016). Another hypothesis is that corporate ESG performance is indispensable nonfinancial information for investors, and that therefore media spotlight plays a substitutionary role for firms with poor corporate governance (Dhaliwal et al. 2014; Du et al. 2017; Gong, Xu, and Gong 2018). We test these competing hypotheses and find that media spotlight of corporate ESG performance reduces more cost of debt for firms with poor corporate governance.

Environmental pollution can also affect investors' decisions and financing outcomes (Griffin, Neururer, and Sun 2018). Therefore, the public pressure imposed by media spotlight of corporate ESG performance can be interacted with environmental pollution. Specifically, we assign firms to two groups based on province-level air pollution. We find that media spotlight of corporate ESG performance reduce the cost of debt for firms located in both high-air-pollution provinces to a greater extent. This finding implies that lenders are more concerned with firms in high-air-pollution provinces, and thus respond more positively to media spotlight on these firms.

Our study contributes to the literature in four ways. First, our work contributes to studies on 'the power of the pen,' which document that the media have become an external corporate governance monitoring mechanism that can affect corporate financial outcomes (Dyck, Morse, and Zingales 2010; Liu, McConnell, and Xu 2017; You, Zhang, and Zhang 2018). We study the effects of media spotlight on corporate debt financing cost, which is a departure from the stream of research on stock markets (Ahmad et al. 2016; Baloria and Heese 2018; Fang, Peress, and Zheng 2014; Fang and Peress 2009; GarcíGarcíA 2013). Gao et al. (2019) show a negative relation between media coverage and the cost of debt in the U.S. market. P. Gao et al. (2019) document that media coverage affects public financing costs. Rather than a broad concept of media coverage, we specifically investigate the effect of media spotlight of corporate ESG performance on the cost of debt. We find that media tone significantly drives the cost of debt: firms on the best ESG list have lower costs of debt.

Second, we use entry onto or exit from the best ESG list as a proxy for media shock to mitigate concerns that potential unobserved confounding factors also affect the cost of debt (Eichholtz et al. 2019; Flammer 2015). Our empirical design is inspired by Focke, Maug, and Niessen-Ruenzi (2017), who use *Fortune*'s ranking of America's most admired companies to investigate chief executive officers' compensation. Lyon and Shimshack (2015) use *Newsweek*'s green company rankings over one year to examine stock market reactions to corporate environmental performance. However, this list includes all S&P 500 companies, making it impractical to examine the effect of entry onto or exit from this list. Our media rankings form a nearly 10-year panel dataset that allows us to identify a time-varying relation between media shocks and the cost of debt. Similarly, Dougal et al. (2012) use exogenous scheduling of *Wall Street Journal* columnists to identify a causal relation between financial reporting and stock market performance. Kaniel and Parham (2017) use the *Wall Street Journal Category Kings* list of the top 10 mutual funds to examine the relation between media attention and fund flows.

Third, Byun and Oh (2018) show that media coverage increases public awareness of corporate ESG activities and enhances shareholder value. We provide evidence that lenders value media spotlight of ESG performance. Media spotlight plays a substitutionary role and reduces the cost of debt for firms with poor corporate governance. Furthermore, the media effects on reducing the cost of debt are greater for firms located in provinces with worse air pollution. We contribute to the literature by identifying the channels through which media spotlight of corporate ESG performance reduces the cost of debt. We show that

positive media ESG spotlight improves a firm's reputation on the supply chain, reduces its financial risk, and enhances its corporate transparency, which are three channels through which the cost of debt decreases.

Finally, we contribute to the ongoing debate on the relation between corporate ESG performance and the cost of debt. One strand of the literature argues that corporate social responsibility can reduce the cost of debt (Chava 2014; Du et al. 2017; Eichholtz et al. 2019; Gong, Xu, and Gong 2018; Goss and Roberts 2011). However, a counter argument is that better corporate ESG performance implies that a firm is departing from optimal resource allocation, creating potential default risk and thereby increasing the cost of debt (Menz 2010; Sharfman and Fernando 2008; Stellner, Klein, and Zwergel 2015). Aside from these two strands of the literature, Ye and Zhang (2011) document a U-shaped relationship between corporate philanthropy and the cost of debt. In this study, we provide evidence that there is a significantly negative association between corporate ESG performance and the cost of debt from the angle of media attention. We also highlight the fact that in China, unlike in developed countries, the state-owned banking sector dominates the financing channel for firms (Allen, Qian, and Gu 2017).[2] Therefore, our results provide indirect evidence regarding whether the national credit system in China responds to media spotlight of corporate ESG performance.

The remainder of this paper is organized as follows: Section II describes the data and key variables. Section III reports the baseline results, and Section IV presents the results of the endogeneity control tests. Section V analyzes possible channels for the identified effect. Sections VI, VII and VIII report results of extended analyses. Section IX concludes the paper.

II. Data, key variables, and descriptive statistics

In this section, we present the sample selection, definitions of the key variables, and summary statistics.

Data and sample selection

Our initial sample begins with all A-share listed firms on the Shanghai and Shenzhen Exchanges. We source firms' accounting, ownership, and analyst data from the China Stock Market and Accounting Research (CSMAR) Database. We exclude financial firms from our sample and require that firms have non-missing information on financial statements and ownership structure. We hand-collect the names of firms on the best ESG list from the website of the China Corporate Social Responsibility (CSR) Research Center. The China CSR Research Center, established in June 2008 and affiliated with *Southern Weekly*, conducts site visits to gather information on Chinese companies' CSR and annually discloses and ranks the 100 firms with the best ESG performance. There are 337 unique firms on the best ESG list over the period 2009–2017. After removing financial firms and firms listed overseas, we obtain 126 unique firms in our sample. In Appendix A, we provide an example by reporting the top 10 and bottom 10 firms in 2009, 2013, and 2017. Panel A reports the top 10 firms. In 2009, the top three firms are CNPC, Sinopec Group, and CSEC; in 2013, the top three firms are CRCC, CSCEC, and SAIC Motor; and in 2017, the top three firms are SAIC Motor, KweiChow Moutai, and Haier. Panel B reports the bottom 10 firms. In 2009, the bottom three firms are Shenzhen Kaifa Technology, Shanghai Material Trading, and Xishan Coal Electricity Group; in 2013, the bottom three firms are Anyang Iron & Steel, Maanshan Iron & Steel, and West Mining; and in 2017, the top three firms are CNCEC, China Pingmei Shenma Group, and GD Power Development. These rankings show that firms' rankings on the best ESG list are time-varying.

Variables definitions

The key dependent variable in our analysis is the cost of debt (*CoD*), which is defined as interest expenses divided by interest-bearing liabilities (Du et al. 2017). The interest-bearing liabilities

[2]A large proportion of commercial banks in China are state-owned (Bank of China, Industrial and Commercial Bank of China, China Construction Bank, Bank of Communications, etc.) and are able to control the main source of firms' debt.

include short-term loans, long-term liabilities due within one year, long-term loans, bonds payable, and long-term payables.

We define three variables based on the best ESG list to proxy the media spotlight on corporate ESG performance. The first is a dummy variable *List* that equals 1 if a firm is on the best ESG list in a given year and 0 otherwise. The second is *NList* that denotes the number of times a firm has entered the best ESG list by the year. The third is *Rank* that denotes a firm's ranking on the best ESG list.

We use seven explanatory variables to control for the impacts of firm-level factors on the cost of debt. Firm size (*Size*) controls for a firm's financing flexibility and information asymmetry. *Size* is calculated as the natural logarithm of total assets. The return on assets (*ROA*), asset turnover ratio (*AT*), sales growth rate (*SG*), and leverage ratio (*Lev*) control for a firm's operational and financial performance. *ROA* is calculated as net income divided by total assets. *AT* is calculated as net sales divided by average total assets at the beginning and end of the year. *SG* is calculated as the annual increase in sales divided by total sales in the previous year. *Lev* is calculated as total liabilities divided by total equity. The largest shareholder's ownership (*Own*) controls for conflicts involving shareholders and debtholders. *Own* is the shareholdings of the largest shareholder divided by total shares outstanding. Following the conglomeration reform, the *Southern Weekly* completed a commercialization process that transformed it into a nonofficial newspaper (Piotroski, Wong, and Zhang 2017). Nevertheless, given that its parent firm, Nanfang Daily Media, is a state-owned company, there may be concerns over biased sample selection. To mitigate this concern, we use the dummy variable *State* as a control variable, which equals 1 if a firm is state-owned and 0 otherwise. Appendix B summarizes the definitions of the variables used in our analysis.

Table 1. Descriptive statistics.

Panel A. Summary statistics

	25%	Median	Mean	75%	Std	N
CoD	3.47%	5.11%	5.74%	6.82%	0.043	19,330
List	0	0	0.0348	0	0.183	19,330
NList	0	0	0.167	0	0.894	19,330
Size (Billion Yuan)	1.59	3.37	14.90	8.50	72.07	19,330
ROA	1.35%	3.69%	3.93%	6.85%	0.145	19,330
Lev	31.30%	46.70%	50.40%	62.40%	1.074	19,330
SG	−2.11%	12.04%	19.97%	30.15%	0.423	19,330
AT	0.36	0.57	0.69	0.85	0.581	19,330
Own	23.40%	33.50%	35.50%	45.90%	0.155	19,330
State	0	0	0.40	1	0.488	19,330
SC	−8.44%	−0.75%	−0.15%	6.89%	0.154	19,330
DFL	1.021	1.137	1.504	1.468	1.043	16,607
NAnalysts	1	4	7.51	11	9.020	19,330

Panel B. Comparing the cost of debt for firms on and not on the best ESG list.

	List = 1		*List* = 0		Tests of differences	
	Mean	N	Mean	N	Mean	T-statistics
Panel B.1. Full sample						
CoD	4.893%	683	5.774%	18647	−0.881%***	−5.52
Panel B.2. 1-to-1 PSM sample						
CoD	4.893%	683	5.479%	683	−0.586%***	−3.17

In this table, we report the descriptive statistics. Panel A reports the summary statistics of the variables across firm-year observations. The sample period covers the period 2009 to 2017. We exclude financial firms from our sample. The definitions of all of the variables are provided in Appendix B. Panel B reports the results of comparing the cost of debt for firms on and not on the best ESG list. *List* is a dummy variable that equals 1 if a firm is on the best ESG list and 0 otherwise. Panel B.1 reports the results using the full sample and Panel B.2 reports results using a 1-to-1 PSM sample. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

Descriptive statistics

Panel A of Table 1 reports the descriptive statistics for the cost of debt and characteristics of Chinese non-financial firms. We have 19,330 firm-year observations in our sample. For all non-financial firms, the mean cost of debt is 5.74% and the median value is 5.11%. The mean value of the dummy variable *List* indicates that 3.48% of all firm-year observations are firms appearing on the best ESG list. The mean value of total assets is 14.9 billion yuan. The mean return on assets (*ROA*) is 3.93%. The mean sales growth rate (*SG*) is 19.97%. The mean asset turnover ratio (*AT*) is 0.69. The mean leverage ratio (*Lev*) is 50.4%. The mean largest shareholder's ownership (*Own*) is 35.5%. The mean value of *State* is 0.4, indicating that state-owned firms account for 40% of the whole sample. All of the variables are in a normal range.

Panel B of Table 1 shows the comparison of the costs of debt of firms that are on and not on the best ESG list. We calculate the mean value of the cost of debt for these two groups of firms. Panel B.1 shows the results using the full sample. The

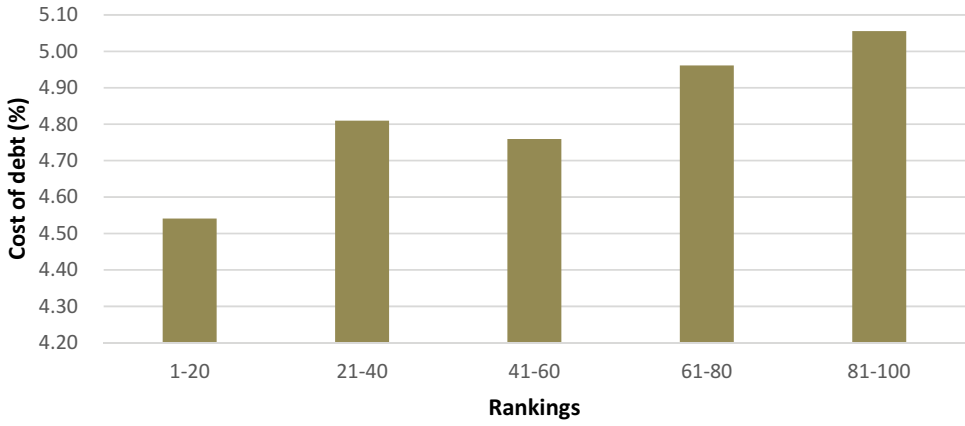

Figure 1. Cost of debt of firms ranked on the best ESG list.

mean cost of debt of firms on the best ESG list is 4.89%, while the mean cost of debt of firms not on the best ESG list is 5.77%. The t-statistics show that the cost of debt of firms on the best ESG list is significantly lower than that of firms not on the best ESG list. Panel B.2 reports the results using a 1-to-1 PSM sample. We use the PSM method to match firms that appear on the best ESG list with firms that never appear on the best ESG list by *Size*, *ROA*, *SG,* and *State* to mitigate endogeneity concerns (Gao et al. 2019). The mean value of the cost of debt of firms on the best ESG list is 4.89%, while the mean value of the cost of debt of matched firms is 5.48%. The cost of debt of firms on the best ESG list is again significantly lower than that of firms that never appear on the best ESG list.

Lastly, we assign firms appearing on the best ESG list to five groups based on their rankings. Figure 1 illustrates the five groups' mean cost of debt. In the figure, the x-axis divides the firms into five groups of 20, and the y-axis represents the mean value of the cost of debt. We show that the cost of debt increases with decreasing ranking on the list.

Taken together, the descriptive statistics illustrate preliminary findings that an inverse relation exists between media spotlight of corporate ESG performance and the cost of debt. Appearing on the best list can reduce the cost of debt. In the following sections, we perform regressions to confirm this relationship.

III. Effects of media ESG spotlight and the cost of debt

In this section, we first propose baseline regressions to examine the effect of appearing on the best ESG list on the cost of debt. Next, for firms on the best ESG list, we use a change-on-change setting to examine what impact a change in the ranking has on the change in debt financing costs.

Baseline regressions

In this subsection, we examine the effect of appearing on the best ESG list on the cost of debt. Specifically, the baseline regression is established as follows

$$CoD_{i,t} = \alpha + \beta List_{i,t-1} + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (1)$$

The dependent variable is the cost of debt, which is defined as interest expenses divided by interest-bearing liabilities. The key independent variable is *List*, which is a dummy variable that equals 1 if a firm *i* is on the best ESG list in year *t* and 0 otherwise. *X* is a vector of variables to control firm-level characteristics. We use *Size* to control for a firm's financing flexibility and information asymmetry, and we use *ROA*, *AT*, *SG*, and *Lev* to control for a firm's operational and financial performance (Chava 2014). Next, we use *Own* to control for conflicts involving shareholders and debtholders (Anderson, Mansi, and Reeb 2004) and *State* to control for the

Table 2. Media spotlight of corporate ESG performance and the cost of debt.

	(1)	(2)	(3)
Panel A. Full sample			
Dependent variables:	*CoD*	*CoD*	*ΔCoD*
	Equation (1)	Equation (1)	Equation (2)
List	−0.003**		
	(−2.53)		
NList		−0.001**	
		(−2.21)	
ΔRank			−0.013**
			(−1.99)
(Δ)*Size*	−0.015***	−0.011***	−0.015
	(−6.55)	(−4.89)	(−0.86)
(Δ)*ROA*	−0.030***	−0.029***	−0.007
	(−6.06)	(−5.86)	(−0.10)
(Δ)*Lev*	0.065***	0.077***	−0.130***
	(9.07)	(9.91)	(−2.99)
(Δ)*SG*	−0.020***	−0.030***	0.900*
	(−3.37)	(−5.09)	(1.68)
(Δ)*AT*	0.023***	0.024***	−0.017**
	(4.96)	(5.38)	(−2.03)
(Δ)*Own*	−0.012***	−0.012***	0.121**
	(−7.39)	(−7.82)	(2.07)
(Δ)*State*	−0.004	−0.003	−0.003
	(−0.82)	(−0.55)	(−0.07)
Constant	0.087***	0.078***	0.005**
	(2.75)	(3.34)	(2.13)
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
Adj. R^2	0.098	0.089	0.106
Observations	13,673	13,673	500
Panel B. PSM sample			
	Equation (1)	Equation (1)	Equation (1)
PSM samples:	1-to-1	1-to-3	1-to-5
List	−0.007**	−0.006**	−0.005**
	(−2.01)	(−2.03)	(−2.07)
Size	−0.035**	−0.081***	−0.019***
	(−2.31)	(−3.84)	(−2.66)
ROA	−0.097***	−0.093***	−0.095***
	(−3.49)	(−4.35)	(−6.09)
Lev	0.247***	0.131*	0.117***
	(2.94)	(1.91)	(3.21)
SG	−0.031	0.004	−0.002
	(−0.78)	(0.13)	(−1.01)
AT	0.065***	0.083***	0.060***
	(3.66)	(4.71)	(4.63)
Own	−0.010	−0.007	−0.003
	(−1.31)	(−1.07)	(−0.57)
State	−0.010***	−0.005**	−0.005***
	(−3.14)	(−1.97)	(−2.79)
Constant	0.061**	0.070***	0.095***
	(2.48)	(3.46)	(6.30)
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
Adj. R^2	0.143	0.108	0.0936
Observations	1,043	1,925	2,776

This table reports the results of testing the baseline relation between media ESG spotlight and the cost of debt. The dependent variable is the (change in) cost of debt. Columns (1) and (2) report results of Equation (1). In column (1), the key independent variable is *List*, which equals 1 if a firm is on the best ESG list in a given year and 0 otherwise. In column (2), the key independent variable is *NList*, which denotes the times that a firm has entered the best ESG list by the year. In Column (3), we report the results of the change-on-change regressions (Equation (2)) using the sample of the firms appeared on the best ESG list. Panel A reports the results with the full sample. Panel B reports results of Equation (1) with the PSM sample. All of the control variables are lagged by one period. Appendix B presents the definitions of all of the variables. Robust *t*-statistics are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

heterogeneity between state-owned and non-state-owned companies (Du et al. 2017). Appendix B summarizes the definitions of the variables used in our analysis. We also include firm- and year-fixed effects to control for unobserved factors affecting the results, and we cluster standard errors at the firm level.

Panel A of Table 2 reports the results for the full sample. In Column (1), we see that the coefficient on *List* is significantly negative. The cost of debt of firms on the best ESG list is 0.3% lower than that of firms not on the list after controlling for firm-specific characteristics and fixed effects. This difference accounts for 5.23% of sample mean and thus it is economically sizable. In Column (2), we replace the key independent variable *List* with *NList*, which denotes the number of times a firm has entered the best ESG list. The significantly negative relation remains. These findings suggest that the media spotlight on corporate ESG performance reduces the cost of debt in the subsequent period.

Next, we use the firms appeared on the best ESG list to examine what impact a change in ranking has on the change in debt financing costs. Using the change-on-change setting is also helpful in removing the influence of time-invariant variables. We specify the regression as follows:

$$CoD_{i,t} = \alpha + \beta Rank_{i,t} + \mathrm{F}Controls_{i,t} + Fixed\ Effects + \varepsilon_{i,t} \quad (2)$$

The dependent variable is the change in the cost of debt. The key independent variable $\triangle Rank$ is the change in the ranking of a firm on the best ESG list. Specifically, $\Delta Rank_{i,t} = -\frac{Rank_{i,t} - Rank_{i,t-1}}{100}$. We also include firm- and year-fixed effects to control for unobserved factors. Column (3) of Panel A of Table 2 reports the results of the change-on-change regressions. We find that the coefficients of change in the cost of debt are significantly negative. As the rank on the best ESG list increases, the cost of debt significantly decreases. Taking when the rank rises by one, the cost of debt decreases by 0.013%.

Furthermore, we use the PSM sample to re-run Equation (1). We require the matched not-on-the-list firms to have the closest *Size*, *ROA* and *SG*, be in the same industry and be as the same type (in terms of state-owned or not) as firms on the best ESG list. Panel B of Table 2 reports the results using the PSM

sample. We report the results using 1-to-1 (column (1)), 1-to-3 (column (2)), and 1-to-5 (column (3)) matched samples with the controls and firm- and year-fixed effects. Our results are consistent, and the coefficients of *List* are all significantly negative.

Table 2 shows that a negative relation exists between media coverage of corporate ESG performance and the cost of debt. The market rewards firms that appear on the best ESG list with lower costs of debt compared to their counterparts. Further, we choose an official newspaper as a robustness test. Guided by Chen, Hung, and Wang (2018), we rerun the baseline regressions using the list of firms receiving the People's Corporate Social Responsibility Award – presented by the *People's Daily*, a well-known official Communist Party newspaper – from 2015 to 2017. The results, included in the online appendix, show that firms receiving this award have a lower cost of debt than their counterparts. Therefore, the cross-reference results also strongly indicate that the media spotlight on ESG significantly reduces the cost of debt.[3]

IV. Endogeneity tests

Section III shows that a significantly negative relation exists between media spotlight of corporate ESG performance and the cost of debt. However, potential endogeneity issues may render the observed relation suspicious. In this section, we exploit features of the best ESG list to test endogeneity in three ways. First, we use entry onto or exit from the list as a media shock to address causality. Second, we use initial rankings as an instrument variable to run 2SLS regressions. Third, we use the two-level system GMM regressions to address the dynamic relations between media ESG spotlight and the cost of debt.

The DID setting

In this subsection, we use DID examinations to identify the causal relation between media spotlight of corporate ESG performance and the cost of debt. Specifically, we use firms' entry onto or exit from the best ESG list as a media shock and examine these firms' change in cost of debt relative to their counterparts. We choose firms that newly enter (or exit) the best ESG list as the treated group and use the PSM method to obtain a control group. The firms in the control group have never appeared on the best ESG list. The DID regression is as follows:

$$CoD_{i,t} = \alpha + \beta_1 D_{i,t} * Post_{i,t} + \beta_2 Post_{i,t} + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (3)$$

In Equation (3), *D* is a dummy variable that equals 1 if a firm is in the treated group and 0 otherwise. The examination window is from one year before to one year after a firm's entry onto or exit from the best ESG list. *Post* equals 1 after a firm enters the best ESG list and 0 otherwise. The coefficient of the interaction term *D*Post* indicates the change in the cost of debt of firms in the treated group relative to firms in the control group.

Table 3 reports the results of the DID regressions. In the odd-numbered columns, we report the results using a 1-to-1 matched sample, whereas in the even-numbered columns, we report the results using a 1-to-5 matched sample. Columns (1) and (2) report the results for the cases in which firms enter onto the best ESG list. The coefficients of the interaction term *D*Post* are significant and negative, indicating that entry onto the best ESG list significantly reduces the cost of debt. Columns (3) to (4) report the results for the cases in which firms exit the best ESG list. We do not find significant results for the coefficients of the interaction term *D*Post*, indicating that exiting the best ESG list has a limited impact on the cost of debt.

The results of the DID regressions show that entering the best ESG list reduces the cost of debt, whereas exiting the list does not significantly influence the cost of debt in the subsequent period. This asymmetric effect may be due to investors' limited attention; that is, the market is more likely to notice and reward firms that show quick improvement in ESG performance.

[3]We have shown that appearing on the best ESG list can reduce the cost of debt. From 2010 to 2016, *Southern Weekly* also published an annual list of greenwashing firms. However, there are only 25 non-financial firms on the greenwashing list. Although we find a positive relationship between being on the greenwashing list and the cost of debt, we regard these results as indicative only and report them in the online appendix.

Table 3. Endogeneity examinations: DID analyses.

	Entry		Exit	
	(1)	(2)	(3)	(4)
*D*Post*	−0.006***	−0.004**	−0.003	−0.040
	(−3.07)	(−2.08)	(−0.68)	(−0.87)
Post	0.004	0.001	0.002	0.002
	(1.50)	(0.10)	(0.71)	(0.69)
Size	−0.016***	−0.031***	−0.034***	−0.203***
	(−5.06)	(−2.68)	(−6.25)	(−5.17)
ROA	−0.034	−0.135	−0.115***	−0.755***
	(−0.25)	(−1.10)	(−4.23)	(−3.56)
Lev	−0.156**	−0.030	−0.108***	−0.468***
	(−2.42)	(−1.10)	(−4.85)	(−4.14)
SG	−0.031	−0.014	0.002	0.000
	(−1.04)	(−1.37)	(1.43)	(0.10)
AT	0.009	0.068***	0.005	0.012
	(0.35)	(2.64)	(1.03)	(0.25)
Own	−0.023*	−0.022**	−0.010	0.004
	(−1.84)	(−2.01)	(−1.08)	(0.62)
State	0.009**	0.001	−0.082***	−0.034**
	(2.44)	(0.47)	(−3.87)	(−2.27)
Constant	0.434***	0.128***	1.014***	0.579***
	(5.88)	(2.79)	(7.78)	(6.30)
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Adj. R^2	0.123	0.554	0.444	0.354
PSM	1-to-1	1-to-5	1-to-1	1-to-5
Observations	654	1,630	1,284	3,116

This table reports the results of the DID regressions (Equation (3)). *D* is a dummy variable that equals 1 if a firm enters (or exits) the best ESG list. *Post* is a dummy that equals 1 after a firm enters (or exits) the best ESG list. *D*Post* is an interaction term of *D* and *Post*. In columns (1) and (2), we report the results for the cases in which firms enter the best ESG list. In columns (3) and (4), we report the results for the cases in which firms exit the best ESG list. We report the results using 1-to-1 and 1-to-5 PSM samples for both entry and exit. Appendix B presents the definitions of all of the variables. Robust t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

The IV method

Next, we use the IV approach to mitigate potential endogeneity concerns. We use a firm's initial ranking (*IRank*) on the best ESG list as an instrument (Benlemlih and Bitar 2018; Bhandari and Javakhadze 2017). The initial ranking is related to future ranking performance, but it is less likely to determine the current cost of debt. To validate the effectiveness of *IRank* as an instrumental variable, we regress *Rank* on *IRank* and the control variables as the first-stage regression:

$$Rank_{i,t} = \alpha + \beta_1 IRank_i + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (4)$$

We obtain the fitted value of the dependent variable of Equation (4) denoted by *Fit_Rank* and thereby construct the second-stage regression as follows:

$$CoD_{i,t+1} = \alpha + \beta_1 Fit\_Rank_{i,t} + +\Phi Controls_{i,t} + Fixed\ Effects + \varepsilon_{i,t} \quad (5)$$

Columns (1) and (2) of Table 4 report the results of the two stage least squares (2SLS) regressions in Equations (4) and (5), respectively. Column (1) reports the results of the first-stage regression Equation (4). The coefficient of *IRank* is significantly positive, indicating that a firm's initial ranking on the best ESG list is positively related to its future ranking performance. Both Cragg–Donald and K.P. Wald F-statistics reject the null hypothesis that *IRank* is a weak instrumental variable. Column (2) reports the results of the second-stage regression in Equation (5). The coefficient of *Fit_Rank* is

Table 4. Endogeneity examinations: IV 2SLS and GMM methods.

	2SLS		GMM
	(1) Equation (4)	(2) Equation (5)	(3) Equation (6)
Dependent variables:	*Rank*	*CoD*	*CoD*
IRank	0.475***		
	(12.20)		
Fit_Rank		−0.013**	
		(−2.04)	
List			−0.004**
			(−2.16)
Size	−0.935***	0.001	0.003*
	(−3.05)	(0.31)	(1.84)
ROA	−0.896***	−0.036	0.011
	(−2.94)	(−1.00)	(0.59)
Lev	−0.575	0.001	0.042**
	(−0.59)	(0.13)	(1.99)
SG	0.716	−0.001	−0.001
	(1.47)	(−0.11)	(−0.97)
AT	−0.145	0.003	0.003
	(−0.95)	(1.58)	(0.62)
Own	−0.160**	0.007	0.020
	(−2.02)	(0.97)	(1.43)
State	0.072*	−0.002	−0.002
	(1.67)	(−0.50)	(−0.34)
LagCoD			0.172***
			(4.44)
Constant	2.655***	0.021	−0.057
	(3.48)	(0.21)	(−1.48)
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Cragg–Donald F-statistic	145.887		
K.P. Wald F-statistics	129.449		
AR(1) test (p-value)			0.000
AR(2) test (p-value)			0.393
Hansen test (p-value)			0.418
Adj. R^2	0.305	0.044	-
Observations	596	596	11,092

This table reports the results of IV regressions and GMM regressions. Columns (1) and (2) report the results of IV 2SLS regressions. Column (1) reports the results of first-stage regression (Equation (4)), in which the dependent variable (*Rank*) is a firm's ranking on the best ESG list and the IV variable *IRank* is a firm's initial rank. Column (2) reports the results of second-stage regression (Equation (5)), in which the dependent variable is the cost of debt (*CoD*) and the key independent variable is the fitted value of dependent variable of the first stage regression *Fit_Rank*. Column (3) reports the results of GMM regressions. We include the lagged *CoD* in Equation (1) and construct dynamic panel data (Equation (6)). Appendix B reports the definitions of all of the variables. Robust *t*-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

significantly negative. Thus, the 2SLS regressions show that higher media ESG ranking leads to lower debt financing costs.

The GMM regression

Finally, we use the two-level system GMM method to substantiate our findings (Arellano and Bond 1991). We include the lagged *CoD* in the baseline regression Equation (1) and obtain dynamic panel data. The regression is specified as follows.

$$CoD_{i,t} = \alpha + \beta_1 List_{i,t-1} + \beta_2 CoD_{i,t-1} + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (6)$$

Column (3) of Table 4 reports the results of the GMM estimation. The coefficient of *List* remains significantly negative after including the lagged *CoD* in the regression. The *p*-value of the Hansen test is greater than 0.1, indicating that there is no over-identification. The results of AR (1) and AR (2) tests, respectively, indicate that the autocorrelation exists with respect to the first-order difference of the disturbance term, and it does not exist with respect to the second-order difference, which are in line with the requirements of the system GMM method. Taken together, these tests validate the results of the two-level system GMM method. The negative relation between media spotlight of corporate ESG performance and the cost of debt is robust.

Overall, the endogeneity tests – the DID regressions, IV approach, and GMM estimation – show that positive media spotlight of corporate ESG performance can lead to lower cost of debt, which is consistent with the results of the baseline regressions.

V. Channel analyses

In this section, we investigate three channels through which the media spotlight on corporate ESG performance can affect the cost of debt: reputation, operational risk, and corporate transparency. Following Deng, Li, and Li (2018), we use a two-step approach to carry out channel analysis for each channel variable. In the first step, we confirm that there is a significant link between the media spotlight, a channel variable, and the cost of debt. Further, because the fitted value of the dependent variable in the first-stage regression contains the largest correlation between the channel variable and the media spotlight, in the second-stage regression, if we find a significant relationship between the cost of debt and the fitted value, we can conclude that the media spotlight on ESG significantly affects the cost of debt through the hypothesized channel variables. We also use the intersection term approach to corroborate our findings and report the results in the online appendix.

Reputation

Corporate ESG is an important source of moral capital while media spotlight can enhance corporate reputation among stakeholders. Corporate reputation is a key factor in reducing debt financing costs (Barakat et al. 2019; Du, Bhattacharya, and Sen 2011; Liu, McConnell, and Xu 2017; Liu and McConnell 2013). Hence, we posit that media spotlight of corporate ESG performance can reduce the cost of debt by increasing corporate reputation. We measure a firm's reputation from the perspective of its trade credit in the supply chain (*SC*) (Bae et al. 2019; Gualandris et al. 2015; Porteous, Rammohan, and Lee 2015). *SC* is calculated as (accounts payable + advance from customers – accounts receivable – advances to suppliers)/total assets. Greater *SC* means greater trade credit and better corporate reputation in the supply chain. We first examine the relation between corporate reputation on the supply chain and media spotlight of corporate ESG performance as follows:

$$SC_{i,t} = \alpha_0 + \alpha_1 List_{i,t-1} + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (7)$$

Next, we identify the relation between corporate supply chain reputation and the cost of debt:

$$CoD_{i,t} = \beta_0 + \beta_1 SC_{i,t-1} + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (8)$$

Finally, we carry out a two-stage analysis. In the first step, we obtain the fitted value of the dependent variable (*Fit_SC*) from Equation (7). In

the second step, we replace *SC* with the fitted value *Fit_SC* in Equation (8) and obtain the following regression:

$$CoD_{i,t} = \gamma_0 + \gamma_1 Fit\_SC_{i,t-1} + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (9)$$

In Equations (7) to (9), all of the control variables and fixed effects are the same as in Equation (1). In Equation (7), if α_1 is significantly positive, then media spotlight of corporate ESG performance can promote corporate reputation on the supply chain. In Equation (8), ifβ_1 is significantly negative, then corporate supply chain reputation can reduce the cost of debt. In Equation (9), if γ_1 is significantly negative, then corporate reputation is a channel through which media spotlight of corporate ESG performance can reduce the cost of debt.

Panel A of Table 5 reports the results of testing supply chain reputation as a channel through which media spotlight of corporate ESG performance can reduce the cost of debt. Column (1) reports the results of Equation (7). The coefficient of *List* is significantly positive, indicating that media spotlight of corporate ESG performance can enhance corporate reputation in the supply chain. Column (2) shows the results of Equation (8). The coefficient of *SC* is significantly negative at the 5% level, indicating that corporate supply chain reputation can reduce the cost of debt. Column (3) shows the results of Equation (9). The coefficient of *Fit_SC* is significantly negative at the 1% level. Taking these results together, we conclude that media spotlight of corporate ESG performance improves corporate reputation, which is a channel for reducing the cost of debt.

Financial risk

The second channel draws on risk perception theory (Albuquerque, Koskinen, and Zhang 2018; Byun and Oh 2018; Du et al. 2017; Goss and Roberts 2011; Sharfman and Fernando 2008). The cost of debt is essentially compensation for financial risk. Media spotlight of corporate ESG performance is helpful in reducing corporate risk exposure (Chava 2014; Du et al. 2017; Gong, Xu, and Gong 2018; Goss and Roberts 2011; Tsai, Lu, and Hung 2016; Ye and Zhang 2011). Therefore, media spotlight of corporate ESG performance can reduce financial risk and thereby reduce the cost of debt. We use the degree of financial leverage (*DFL*) to measure corporate financial risk. *DFL* refers to the elasticity of *EPS* relative to *EBIT*, which is calculated as $DFL = \frac{EPS/EPS}{EBIT/EBIT}$.

We first test the relation between financial risk and media spotlight of corporate ESG performance

$$DFL_{i,t} = \alpha_0 + \alpha_1 List_{i,t-1} + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (10)$$

Next, we identify the relation between the cost of debt and financial risk:

$$COD_{i,t} = \beta_0 + \beta_1 DFL_{i,t-1} + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (11)$$

Finally, we carry out a two-stage analysis. In the first step, we obtain the fitted value of the dependent variable (*Fit_DFL*) from Equation (10). In the second step, we replace *DFL* with *Fit_DFL* in Equation (11) and obtain the following regression:

$$COD_{i,t} = \gamma_0 + \gamma_1 Fit\_DFL_{i,t-1} + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (12)$$

In Equations (10) to (12), all of the control variables and fixed effects are the same as in Equation (1). In Equation (10), if α_1 is significantly negative, then media spotlight of corporate ESG performance can reduce corporate financial risk. In Equation (11), If β_1 is significantly positive, then financial risk can increase the cost of debt. In Equation (12), if γ_1 is significantly positive, then financial risk is a channel through which media spotlight of corporate ESG performance can reduce the cost of debt.

Panel B of Table 5 presents the results of testing financial risk as a channel through which media spotlight of corporate ESG performance can reduce the cost of debt. Column (1) reports the results of Equation (10). The coefficient of *List* is significantly negative, indicating that media spotlight of corporate ESG performance can reduce financial risk. Column (2) reports the results of Equation (11). The coefficient of *DFL* is significantly positive at the 1% level, indicating that higher financial risk leads to a higher cost of debt. Column (3) reports

the results of Equation (12). The coefficient of *Fit_DFL* is also significantly positive. Taking these findings together, we conclude that media spotlight of corporate ESG performance can reduce financial risk and thereby reduce the cost of debt.

Corporate transparency

The third channel draws on information asymmetry theory, which assumes that corporate transparency reduces financing costs (Byun and Oh 2018; Francis, Nanda, and Olsson 2008). Research shows that media attention significantly affects analysts' spotlight, which proxies for corporate transparency (Frijns and Huynh 2018). Therefore, the third mechanism that we propose is that media spotlight of corporate ESG performance can reduce the cost of debt by increasing corporate transparency. We use the number of analysts covering a firm (*NAnalysts*) to measure corporate transparency. If appearing on the best ESG list is associated with higher analyst spotlight, it can reduce information asymmetry and enhance corporate transparency.

We first test the relation between media spotlight of corporate ESG performance and corporate transparency:

$$N\ Analysts_{i,t} = \alpha_0 + \alpha_1 List_{i,t-1} + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (13)$$

Next, we identify the relation between corporate transparency and the cost of debt:

$$CoD_{i,t} = \beta_0 + \beta_1 NAnalysts_{i,t-1} + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (14)$$

Finally, we carry out a two-stage analysis. In the first step, we obtain the fitted value of the dependent variable (*Fit_NAnalysts*) from Equation (13). In the second step, we replace *NAnalysts* with *Fit_NAnalysts* in Equation (14) and obtain the following regression:

$$CoD_{i,t} = \gamma_0 + \gamma_1 Fit\_NAnalysts_{i,t-1} + \Phi Controls_{i,t-1} + FixedEffects + \varepsilon_{i,t} \quad (15)$$

Table 5. Channel analyses.

	(1)	(2)	(3)
Panel A. Reputation on the supply chain			
	Equation (7)	Equation (8)	Equation (9)
Dependent variables:	*SC*	*CoD*	*CoD*
List	0.011***		
	(2.88)		
SC		−0.010**	
		(−2.24)	
Fit_SC			−0.065***
			(−3.85)
Constant	−0.132***	0.137***	0.114***
	(−5.14)	(6.98)	(7.61)
Control variables	YES	YES	YES
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
Adj. R^2	0.110	0.027	0.209
Observations	13,673	13,673	13,673
Panel B. Financial risk			
	Equation (10)	Equation (11)	Equation (12)
Dependent variables:	*DFL*	*CoD*	*CoD*
List	−0.207***		
	(−4.44)		
DFL		0.024***	
		(5.35)	
Fit_DFL			0.194***
			(3.19)
Constant	0.820***	0.239***	0.332***
	(4.80)	(3.98)	(5.69)
Control variables	YES	YES	YES
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
Adj. R^2	0.210	0.294	0.303
Observations	11,605	11,605	11,605
Panel C. Corporate transparency			
	Equation (13)	Equation (14)	Equation (15)
Dependent variables:	*NAnalysts*	*CoD*	*CoD*
List	3.498**		
	(2.21)		
NAnalysts		−0.020***	
		(−3.55)	
Fit_NAnalysts			−0.025***
			(−8.53)
Constant	−69.274***	0.107***	−0.065***
	(−5.92)	(6.23)	(−4.60)
Control variables	YES	YES	YES
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
Adj. R^2	0.606	0.284	0.261
Observations	13,673	13,673	13,673

This table reports the results of channel analyses using two-step regressions. Panel A reports the results of testing corporate supply chain reputation. Panel B reports the results of testing corporate operational risk. Panel C reports the results of testing corporate transparency. Appendix B shows the definitions of all of the variables. Robust t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

In Equations (13) to (15), all of the control variables and fixed effects are the same as in Equation (1). In Equation (13), if α_1 is significantly positive, then media spotlight of corporate ESG performance can enhance corporate transparency. In Equation (14), if β_1 is significantly negative, then

corporate transparency can reduce the cost of debt. In Equation (15), if γ_1 is significantly negative, then corporate transparency is a channel through which media spotlight of corporate ESG performance can reduce the cost of debt.

Panel C of Table 5 reports the results of testing corporate transparency as a channel through which corporate ESG performance can reduce the cost of debt. Column (1) reports the results of Equation (13). The coefficient of *List* is significantly positive, indicating that media spotlight of corporate ESG performance can enhance corporate transparency. Column (2) reports the results of Equation (14). The coefficient of *NAnalysts* is significantly negative, indicating that higher corporate transparency leads to a lower cost of debt. Column (3) reports the results of Equation (15). The coefficient of *Fit_NAnalysts* is also significantly negative. Taking these results together, we conclude that media spotlight of corporate ESG performance can enhance corporate transparency and thereby reduce the cost of debt.

Overall, we show that corporate reputation, financial risk, and transparency are three channels through which media spotlight of corporate ESG performance can reduce the cost of debt. Positive media ESG spotlight can improve corporate reputation, reduce financial risk, and enhance corporate transparency and thereby reduce the cost of debt.

VI. Media spotlight of corporate ESG performance, corporate governance, and the cost of debt

In this section, we discuss the substitutionary and complementary roles of media spotlight of corporate ESG performance and corporate governance, as they both affect the cost of debt. We assign firms to high and low corporate governance groups and examine in which group media spotlight of corporate ESG can reduce the cost of debt to a greater extent. If media spotlight of corporate ESG performance is a substitute for the role of corporate governance, then it will reduce the cost of debt to a greater extent in the low corporate governance group; otherwise, the extent of the effect will be larger in the high corporate governance group. We classify a firm as having high corporate governance if it satisfies three criteria: no CEO duality (i.e. a CEO does concurrently serve as chairman), at least four directors on the board, and firms and their independent directors being located in the same city. We construct the regression as follows.

$$CoD_{i,t} = \alpha + \beta_1 List_{i,t-1} * LCG_{i,t-1} + \beta_2 List_{i,t-1} + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (16)$$

where *List* is a dummy variable that equals 1 if a firm is on the best ESG list and 0 otherwise. *LCG* is also a dummy variable that equals 1 if a firm is in the low corporate governance group and 0 otherwise. The coefficient of the interaction term *List*LCG* is our main interest.

Column (1) of Table 6 reports the results. We can see that the coefficient of *List*LCG* is significantly negative at the 5% level. This means that the marginal effect of media ESG spotlight is greater in low corporate governance firms than high corporate governance firms. Thus, media spotlight of corporate ESG performance plays a substitutionary role in reducing the cost of debt.

VII. Media spotlight of corporate ESG performance, environmental pollution, and the cost of debt

Both media spotlight and environmental pollution can increase public awareness of corporate ESG performance and affect debt financing cost. In this section, we examine whether media spotlight of corporate ESG performance reduces the cost of debt to a greater extent in high- or low-pollution provinces. We source city-level PM2.5 emission data from the Socioeconomic Data and Applications Center hosted by Columbia University (https://sedac.ciesin.columbia.edu/). We then take the average to obtain province-level air pollution data. We assign firms to two groups: those located in high-air-pollution provinces and those located in low-air-pollution provinces. We construct the regression as follows.

Table 6. The heterogeneity effect of Media ESG spotlight on the cost of debt.

	(1) Equation (16) Corporate governance	(2) Equation (17) Air pollution
*List*LCG*	−0.002**	
	(−2.35)	
*List*HAP*		−0.001*
		(−1.85)
List	−0.002*	−0.001*
	(−1.66)	(−1.80)
Size	−0.030***	−0.020***
	(−6.04)	(−3.42)
ROA	−0.017***	−0.016***
	(−6.92)	(−6.28)
Lev	0.091***	0.040***
	(7.19)	(7.23)
SG	−0.012**	−0.010*
	(−1.99)	(−1.84)
AT	0.011	0.061
	(0.64)	(0.67)
Own	−0.073*	−0.072*
	(−1.79)	(−1.94)
State	−0.002	−0.004**
	(−0.95)	(−2.38)
Constant	0.029**	0.042***
	(2.21)	(3.57)
Firm FE	YES	YES
Year FE	YES	YES
Adj. R^2	0.093	0.355
Observations	13,673	13,673

This table reports the results of heterogeneity tests. Column (1) report results of testing the effect of media ESG spotlight on the cost of debt in high and low corporate governance firms. Column (2) report results of testing the effect of media ESG spotlight on the cost of debt for firms locating in high and low air pollution provinces. Appendix B presents the definitions of all of the variables. Robust t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

$$CoD_{i,t} = \alpha + \beta_1 List_{i,t-1} * HAP_{i,t-1} + \beta_2 List_{i,t-1} + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (17)$$

where *List* is a dummy variable that equals 1 if a firm is on the best ESG list and 0 otherwise. *HAP* is also a dummy variable that equals 1 if a firm locates in the high-air-pollution province and 0 otherwise. The coefficient of the interaction term *List*HAP* is our main interest.

Column (2) of Table 6 reports the results of the subsample regressions for firms located in high- and low-air-pollution provinces. We find the coefficient of *List*HAP* is significantly negative at the 10% level, indicating media ESG spotlight reduces more cost of debt to for firms locating in high-air-pollution provinces. Lenders tend to be more concerned with the ESG issues of firms located in high-air-pollution areas, and our results show that positive media spotlight mitigates this concern to a greater extent.

VIII. Conclusion

We examine the relation between media spotlight of corporate ESG performance and the cost of debt using the *Southern Weekly* best ESG list as a proxy for positive media ESG spotlight. We show that debt financing costs are significantly lower for firms that appear on the best ESG list compared to firms that do not. This result is confirmed using a PSM-matched sample. The results of change-on-change regression show that an increase in the ranking on the best ESG list can reduce the cost of debt. Thus, a significantly negative relation exists between media spotlight of corporate ESG performance and the cost of debt.

Our results are robust when we implement three endogeneity examinations. First, we use entry onto and exit from the best ESG list as a media attention shock to test the relation between media spotlight of corporate ESG performance and the cost of debt. We find that entering the list reduces the cost of debt in the subsequent period, whereas the effect of exiting the list is limited. Second, we use the initial ranking on the best ESG list as an instrumental variable, and the results of 2SLS regressions show a negative relation between media rankings of corporate ESG and the cost of debt. Third, we use the two-level system GMM estimation to control for the dynamic relations between media spotlight of corporate ESG performance and the cost of debt, and the results are consistent.

We also provide evidence that positive media spotlight of corporate ESG performance can improve corporate reputation, reduce financial risk, and enhance corporate transparency, all of which reduce the cost of debt.

Lastly, we find that media spotlight of corporate ESG performance reduces the cost of debt for firms with poor corporate governance to a greater extent, revealing the substitutionary role of media ESG spotlight in reducing the cost of debt for such firms. In addition, we show that media ESG spotlight has a greater effect on reducing the cost of debt for firms located in provinces with worse air pollution. Media spotlight mitigates lenders' concerns about the ESG of firms in heavy-pollution provinces to a greater extent than firms in low-pollution provinces.In this figure, we illustrate the mean cost of debt of firms on the best ESG list. We assign these firms to five groups

based on their rankings. The x-axis indicates the five groups from the top 20 to the bottom 20, and the y-axis indicates the mean value of the cost of debt as a percentage.

Acknowledgments

We thank Bing Han, Jacquelyn Humphrey and Lin Peng for their helpful comments. This research is partially supported by the National Natural Science Foundation of China (grant numbers 71903036, 72102042), Fundamental Research Funds for Central universities, UIBE (CXTD12-03) and MOE (Ministry of Education in China) Project of Humanities and Social Sciences (Project No.21YJC630026). We remain responsible for all errors and omissions.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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