In the interest of small business' cost of debt: A matter of CSR disclosure

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A B S T R A C T

Traditional understanding is that small firms pay more in debt related expenses than larger firms with a history of financial performance. In the current study, we examine the impact that corporate social responsibility (CSR) disclosure has on the cost of debt for small firms. Using data from Bloomberg 2014 on CSR disclosure, we find that the cost of debt for small businesses decreases as firms increase their CSR disclosure transparency. Specifically, firms who disclose more social responsibility information faced reduced costs to debt financing. We argue that disclosure of Environment, Social, and Governance (ESG) records provide value relevant information for lenders to use to mitigate the magnified information asymmetry inherent to lending to firms earlier in their lifecycle. Our results suggest that disclosure of ESG information corresponds with improved information transparency, which leads to less costly debt for small businesses.

Introduction

The ability to secure financing is critical for start-up companies to be able to grow and survive (Desa & Basu, 2013). In addition to commonly used personal and familial funding, startup capital is available via multiple sources, including angel investors, venture capitalists, banks, the Small Business Administration (SBA), credit cards, among others. And, while some small businesses leverage equity financing, the relatively higher costs to equity financing often forces them to rely on debt financing. Moreover, the relatively high cost of debt for small businesses, as compared to large ones, can make for a fragile economic situation for a small firm. While the impacts of the cost of debt are great for entrepreneurial ventures, and therefore the desire to decrease that cost is high, our understanding of the factors that help small firms to minimize it is incomplete. The goal of this study is to explore how small firms can achieve lower costs of debt. Specifically, we aim to determine the impact that disclosure

of information about corporate social responsibility efforts has on the cost of debt financing for small firms.

Starting a business is a risky venture, with volatile successes that result in over 70% of startups failing before they make it 10 years (Small Business Administration, 2012). Reasons for failure are numerous, since many small businesses lack organizational systems that are essential for improving performance (Bendickson, Muldoon, Liquori, & Midgett, 2017), but the most common reasons relate to under-capitalization and/or inability to access financing (Speights, 2017). Thus, it would be beneficial for entrepreneurs to understand how to reduce factors contributory to increasing the expense of debt financing.

In addition to the practical reason mentioned above, this study also adds to our understanding about small and medium-sized enterprise (SME) financing through an agency lens (Ang, 1992) and the relative financing cost associated with information asymmetry. Agency costs, which have been firmly established by Jensen and Meckling's (1976) seminal work and numerous other studies are relevant for companies of every size. Therefore, this phenomenon of attempting to align shareholder and management desires has

garnered a great deal of attention in the finance literature. However, the issues related to agency concerns are different for small, privately held, firms than they are for large firms (Ang, Cole, & Lin, 2000; Bendickson, Davis, Cowden, & Liguori, 2015; Murphy & Tocher, 2017). Indeed, the information asymmetry gap impacts small businesses as well as startup financers to a greater extent, due to the fact that market forces often credited with reducing information asymmetry (e.g., credit ratings, analyst following, more developed investor relations, etc.) are less apparent with these firms. A common result of this imbalance is the high cost of debt associated with small business loans. Research has found some evidence that small businesses can decrease the cost of debt, such as through accrual accounting (Cassar, Ittner, & Cavalluzzo, 2015). However, our understanding of other factors that influence this relationship is incomplete. We propose that Environment, Social, and Governance (ESG) disclosure can help to minimize the cost of debt by acting to mitigate issues of information asymmetry. When investors with asymmetric information characterized markets, market participants price protect themselves thus increasing transaction costs (Hellwig, 1980; Grossman & Stiglitz, 1980; Kyle, 1985, Amihud & Mendelson, 1986; Amihud, 2002). One such causal factor of information asymmetry arises from inadequate disclosure (Verrecchia, 2001). Prior literature argues that complete and transparent disclosure acts to mitigate the issues associated with information asymmetry (Diamond & Verrecchia, 1991; Welker, 1995). Dhaliwal, Li, Tsang, and Yang (2011) argue that this effect extends to both mandatory and voluntary disclosure so long as the disclosure is value-relevant. Studies exploring the impact of ESG disclosure on various facets of corporate financial performance suggest that corporate ESG disclosure is one such type of value-relevant, voluntary disclosure (Orlitzky, Schmidt, & Rynes, 2003; Al-Tuwaijri, Christensen, & Hughes, 2004; Dhaliwal et al., 2011; Reverte, 2012; Kaymak & Bektas, 2017; Arrive & Feng, 2018; Egginton & McBrayer, 2019). Dhaliwal et al. (2011) and Reverte (2012) find that voluntary ESG disclosure is associated with reductions in a firm's cost of equity capital. Egginton and McBrayer (2019) find that equity trading costs are significantly reduced for firms with transparent ESG disclosure practices. Further, the authors find that the most pronounced effects are for firms without analyst following (i.e., those firms who, arguably, suffer from greater information asymmetry). In this study, we seek to explore the findings of Dhaliwal et al. (2011), Reverte (2012), and Egginton and McBrayer (2019) in the context of debt financing. Specifically, we study the relation between complete, transparent ESG disclosure policies and corporate debt costs.

Our findings are consistent with the literature, that small businesses pay a much higher price for business loans. Additionally, regression analysis results suggest that disclosure of ESG does, in fact, have a positive impact on small firms for minimizing the cost of debt. In the next section, we provide a theoretical development – applying agency costs – to hypothesize positive effects on debt financing for ESG disclosure for small firms. The method applied to the study is explained, along with the results of the analysis. Discussion and limitations of the study are included, along with a conclusion of our research.

Theory and Hypothesis Development

Entrepreneurial financing can take many forms, but generally involves the interaction of one party providing funding (investor) to another party who requires capital (entrepreneur or small business owner) to get a company off the ground or to help it to be able to continue to operate as it progresses toward making a profit. Research has found that entrepreneurial financing comes from many sources, such as business angels, venture capitalists, banks, credit cards, institutional investors, family and friends, as well as other places. Most of these relationships can be described from an agency-based perspective, whereby there are asymmetries that exist regarding the information possessed by the entrepreneurs and that possessed by investors (Gregory, Rutherford, Oswald, & Gardiner, 2005). As a result, the investor, assuming more financial risk, attempts to mitigate that risk by implementing some form of control over the business. Since our interest here is small business lending by banks, we will focus on their main type of control, which is the interest charged on the debt offered.

It is obvious that greater costs of debt, due to higher interest rates, is negatively related to profits. Thus, all else equal, companies prefer to have the lowest in-

terest rates possible (Felício, Rodrigues, & Samagaio, 2016). However, due to the risky nature of startup businesses, banks minimize the risk associated with high default rates, by trying to recoup their investment capital more quickly by charging high-interest rates. Older and larger firms generally can achieve lower interest on debt acquired than younger, smaller firms. This phenomenon exists because the amount of information these firms can supply to debtors is greater and more complete. We propose that disclosure of ESG information provides value-relevant information to investors that helps minimize risk associated with information asymmetries. However, the disclosure of ESG information is costly for firms (Prencipe, 2004) and is in most cases voluntary (McBrayer, 2018). Therefore, firms must determine the costs and benefits of such disclosure. For small businesses relying on debt, the cost of disclosure must be offset by decreases in the cost of debt. Research has found that ESG disclosure is beneficial enough in equity markets to make up for the costs associated with disclosure (Egginton & Mc-Brayer, 2019). We reason that debt backed businesses would experience similar benefits from ESG disclosure due to the value-relevant information it provides to banks providing financing. Environment, social, and governance disclosure provides information about the positive and negative information about a company, providing valuable information to lenders. Since ESG information disclosed provides valuable information to banks, their risk is mitigated, allowing them to apply lower debt costs. Therefore, we propose that the value-relevant information that ESG disclosure provides decreases information asymmetry between small firms and banks, leading banks to provide cheaper debt in the way of decreased interest rates.

The contribution of this study is to advance our understanding of value relevance of complete, transparent ESG disclosure in the process of debt financing. Given the extant literature, we hypothesize that: small firms will face higher costs to debt financing; that firms with more complete, transparent ESG disclosure policies will have reduced interest costs of debt financing; and, that the reduction in debt costs for firms with transparent ESG disclosure policies will be most pronounced for small firms with transparent disclosure. We test these hypotheses in three ways. First, we examine how corporate debt costs differ for small-er, more entrepreneurial firms relative to larger firms, which are later in their lifecycle. Second, we explore how ESG disclosure transparency relates to corporate debt costs. Finally, we investigate how debt costs differ for firms who are both smaller and more entrepreneurial yet have more complete, transparent ESG disclosure policies.

Hypothesis 1. Small firms face higher debt costs.

Hypothesis 2. Firms with more transparent ESG disclosure strategies have reduced debt costs.

Hypothesis 3. The reduction in debt costs for firms with transparent ESG disclosure policies is most pronounced for small firms with transparent disclosure policies.

Method

Data on ESG disclosure come from Bloomberg Data Services (Bloomberg, 2014) over the period January 1st, 2005 through December 31st, 2015. Bloomberg's 2014 ESG group provides a proprietary score based on the "extent of a company's Environmental, Social, and Governance disclosure." Bloomberg 2014 provides yearly composite scores for each firm followed by its ESG group, as well as scores for the three components of ESG, i.e., environmental, social, and governance scores. The methodology Bloomberg uses to compute its scores is proprietary to the firm, however, they do provide resources indicating the types of factors considered in its construction. Figure 1 provides a listing of the categories of factors considered by Bloomberg 2014, by ESG component, in creating the score. Though the categories are broad, the figure does provide insight in the types of considerations Bloomberg 2014 uses in their scoring.

The ESG score (*ESG Score*) measures the completeness, or transparency, of a firm's disclosures across a number of industry-relevant ESG dimensions, and not the firm's ESG performance, or ESG quality. It is this characteristic of the Bloomberg's ESG score (i.e., the fact that the score quantifies disclosure completeness, or transparency, and not necessarily firm "goodness") which makes it score an ideal measure to explore the association between corporate ESG transparency and

Environmental	Social	Governance
Carbon Emissions	Supply Chain	Cumulative Voting
Climate Change Effects	Discrimination	Executive Compensation
Pollution	Political Contributions	Shareholders' Rights
Waste Disposal	Diversity	Takeover Defense
Renewable Energy	Human Rights	Staggered Boards
Resource Depletion	Community Relations	Independent Directors

Figure 1. Categories considered by Bloomberg 2014 in ESG scoring
This figure describes the categories of factors considered by Bloomberg in ESG scoring. The table is recreated from a table contained in a publication released by Bloomberg entitled 'Look Beyond'.

corporate debt costs. Bloomberg's ESG score ranges from 0.1 for firms who disclose a "minimum amount of ESG data" to 100 for "those that disclose every data point collected by Bloomberg." Bloomberg records a score of "N/A" for firms that do not disclosure any information pertinent to the construction of ESG Score or for firms which are not followed by the ESG group. The ESG score is also tailored to different industries so that each company is only evaluated in terms of the data that is relevant to its industry sector. As such, the data, by construction, limit cross-industry comparison without including appropriate controls. Further, an additional characteristic of the Bloomberg data, which makes it preferable in our setting is the fact that the data are gathered for a large subset of firms regardless of their preferences for inclusion. In this way, we are able to avoid many of the selection bias issues faced by prior studies. The Bloomberg data contain the annual composite measure of disclosure transparency by firm as well as disclosure scores for the individual components of ESG [i.e., environmental disclosure score (*Environ*), social disclosure score (*Social*), and governance disclosure score (*Govnce*)] where available.

We collected data on corporate debt costs from Compustat over the same period. Our measure of corporate debt costs is constructed as the ratio of a firm's interest expense, as reported on its income statement, scaled by a firm's total interest-bearing debt (*Interest Exp*). The denominator in our measure of debt is the sum of the firm's short-term and long-term debt. By using the total interest expense of the firm we are able to mitigate, to some extent, factors associated with any specific issue, which may potentially confound our analysis (e.g., debt covenants, flotation costs, etc.). In

addition to the data on corporate debt costs, we collected data on firm characteristics for the firms in our sample to inform our analysis and to act as control variables in multivariate testing. Consistent with prior studies exploring ESG disclosure (e.g., Gamerschlag, Moller, & Verbeeten, 2011; Huang, 2013), we excluded firms in the financial sector. From our analysis and construct measures of firm size (*Total Assets*), firm age (*Age*), the firm's use of debt (*Leverage*), the existence of a corporate credit rating (*Rated*), firm growth opportunities (*Marketto-Book*), corporate investment (*CapEx*), profitability (*ROS*), and of the tangibility of the firm's assets (*Tangible Assets*). A detailed description of variable calculations is provided in Appendix A.

Descriptive statistics on the sample are provided in Table 1. The result of our sample identification data and matching procedures results in a final sample of 16,113 firm-year observations for 3,018 unique firms. *ESG Score* for the mean (median) firm-year in our sample is 19.520 (13.223). Of the observations in our sample with ESG scores, 5,908, 9,789, and 16,101 firm-year observations have data for *Environ*, *Social*, and *Govnce*, respectively. Panel B of Table 1 presents the distribution of firm-year observations by year (left half) and Fama and French (1997) 17-industry classification (right half). ESG Scores are highest in the first two years of our sample period leveling afterward. The distribution by Fama and French (1997) 17-industry shows that our roughly 34% of our sample is from the Oil, Machinery, Transportation, and Retail industries. Cross-industry comparison of *ESG Score* provides little insight as the score is tailored to specific industries such that data are collected only for "industry relevant" ESG factors.

Table 1
Descriptive statistics

Panel A: Summary Statistics

Variable	N	Mean	Meadian	Std Dev	Min	p25	p75	Max
ESG Score	16,113	19.520	13.223	13.279	0.826	11.157	21.901	86.777
Environ Score	5,908	23.788	20.155	18.397	0.775	6.977	37.985	93.798
Social Score	9,789	21.082	14.035	17.491	3.125	8.772	31.250	96.875
Govnce Score	16,101	50.867	50.000	7.437	3.571	48.214	51.786	85.714

Panel B: ESG Scores by Year/Industry

Year	N	Mean	Meadian	Industry	N	Mean	Median
2005	138	27.528	24.273	Food	615	21.981	14.876
2006	295	26.893	25.283	Mining	489	27.232	19.422
2007	85	20.880	14.050	Petroleum	1,200	21.231	14.108
2008	1.121	20.020	14.050	Clothing	231	17.639	13.876
2009	1.310	20.452	14.050	Durables	283	17.369	11.984
2010	2.002	18.190	12.810	Chemicals	533	23.558	15.289
2011	2.162	18.219	12.076	Consumer Goods	780	22.408	13.223
2012	2.191	18.976	12.919	Construction	646	18.483	13.223
2013	2.175	19.418	12.919	Steel	277	11.984	11.984
2014	2.210	19.547	13.223	Fabricated Products	158	15.480	11.984
2015	1.659	19.890	13223	Machinery	2.333	13.223	13.223
				Automobiles	374	21.263	14.050
				Transportation	918	18.902	13.223
				Utilities	758	27.383	22.264
				Retail	1.003	17.847	13.876
				Other	5.515	16.860	11.984

Panel C: Financial Characteristics

	N	Mean	Meadian	Std Dev	Min	p25	p75	Max
Interest Exp	16,113	0.111	0.056	0.363	0.000	0.039	0.077	3.677
Total Assets (mil$)	16,113	8.392	1.926	15.288	0.000	0.460	7.433	66.010
Age	16,113	24.982	20.000	17.556	2.000	11.000	36.000	66.000
Leverage	16,113	0.270	0.246	0.234	0.000	0.119	0.369	7.343
Rated	16,113	0.471	0.000	0.499	0.000	0.000	1.000	1.000
Market-to-Book	16,113	1.891	1.277	3.266	-23.346	0.769	2.186	62.062
CapEx	16,113	0.156	0.043	0.536	0.000	0.022	0.104	7.500
ROS	16,113	-0.472	0.095	6.427	-107.552	0.037	0.159	0.636
Tangible Assets	16,113	0.307	0.227	0.252	0.000	0.099	0.472	0.960

This table presents descriptive statistics on the sample of firm-year observations included in the period January 1, 2005 through December 31, 2015. Our sample includes all firms with ESG data available from Bloomberg and complete financial characteristics data from Compustat. *ESG Score* and its component scores are obtained directly from Bloomberg. Panel A presents descriptive statistics on ESG measures. Panel B presents statistics on *ESG Score* by fiscal-year end and Fama and French (1997) 17-industry classifications. Panel C presents descriptive statistics on firm characteristics Remaining variable definitions are provided in Appendix A.

Empirical Results

Univariate analysis. Table 2 presents a pairwise correlation matrix covering the variables in our analysis where Pearson (Spearman) correlations are presented below (above) the diagonal. In a univariate setting, we find that *ESG Score* is negatively related to *Interest Exp* consistent with our second hypothesis that firms with more transparent ESG disclosure strategies have reduced debt costs. The Pearson (Spearman) correlation between *Interest Exp* and *ESG Score* is -0.065 (-0.111) and is significant at better than the 1% level.

The correlation results provide evidence consistent with our first hypothesis that small firms face higher debt costs. Specifically, corporate interest expense is negatively related to *Total Assets*. For the remainder of the firm characteristics in our sample, we find that interest expense is negatively and statistically significantly related to *Age*, *Leverage*, *Rated*, *ROS*, and *Tangible Assets* and that it is positively related to *Market-to-Book*. As for *ESG score*, the correlation results suggest that larger, older, credit rated, firms with higher profitability and greater asset tangibility have higher ESG scores.

To further examine the association between debt costs, ESG disclosure transparency, and firm size, we split our sample into two groups based on firm size using the number of individuals employed by the firm as our measure of size. We construct an indicator variable, *Small*, which takes on a value of one if the observation is for a firm-year where the firm employs less than 500 people, and zero otherwise. We then split our sample into two subsamples based on this measure and examine how firm characteristics differ across the two groups. The results of this analysis are presented in Table 3.

The left third of Table 3 presents descriptive statistics for firm-year observations where *Small* equals one and the middle third where *Small* equals zero. The right-third presents the differences in means and medians by *Small* and provides statistical results on the differences from t-tests for means and k-sample tests for medians. The differences in means (medians) for *Interest Exp* is consistent with hypothesis one, i.e., smaller firms face higher interest expenses. At the mean values, firms where *Small* equals one are younger, are less likely to be credit rated, have higher growth opportunities, have greater capital expenditures, and are less profitable. These results are consistent at median values as well.

Table 2
Correlation matrix

Pearson (Spearman) Correlations Below (Above) Diagonal

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Interest Exp	**1.000**	-0.111 ***	-0.137 ***	-0.086 ***	-0.038 ***	0.030	-0.131 ***	-0.058 ***	-0.172 ***	0.025 ***
ESG Score	-0.065 ***	**1.000**	0.675 ***	0.329 ***	0.041 ***	0.443 ***	0.009	0.162 ***	0.279 ***	0.200 ***
Total Assets (mil$)	-0.072 ***	0.659 ***	**1.000**	0.329 ***	0.254 ***	0.662 ***	-0.084 ***	0.237 ***	0.409 ***	0.240 ***
Age	-0.068 ***	0.281 ***	0.291 ***	**1.000**	-0.014 *	0.328 ***	-0.104 ***	-0.055 ***	0.134 ***	0.102 ***
Leverage	-0.136 ***	-0.021 ***	0.019 **	-0.046 ***	**1.000**	0.354 ***	-0.078 ***	0.173 ***	0.109 ***	0.236 ***
Rated	-0.111 ***	0.394 ***	0.430 ***	0.350 ***	0.228 ***	**1.000**	-0.091 ***	0.129 ***	0.259 ***	0.182 ***
Market-to-Book	0.047 ***	-0.031 ***	-0.034 ***	-0.089 ***	-0.008	-0.079 ***	**1.000**	-0.002	0.240 ***	-0.212 ***
CapEx	0.011	-0.053 ***	-0.032 ***	-0.099 ***	0.098 ***	-0.022 ***	0.050 ***	**1.000**	0.223 ***	0.688 ***
ROS	-0.082 ***	0.057 ***	0.051 ***	0.062 ***	-0.048 ***	0.083 ***	-0.148 ***	-0.481 ***	**1.000**	0.141 ***
Tangible Assets	-0.076 ***	0.113 ***	0.097 ***	0.060 ***	0.177 ***	0.153 ***	-0.109 ***	0.292 ***	0.064 ***	**1.000**

Table 2 presents a correlation matrix of the *ESG Score* and firm financial characteristics used in our analysis.
Statistical tests on the relation between variables are performed for both measurements of correlation with the results are presented to the right of each correlation statistic.
Variable definitions are provided in Appendix A.
*, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Table 3
Descriptive statistics conditioned on firm size

	Small Firms			**Large Firms**			**Difference**	
	N	**Mean**	**Median**	**N**	**Mean**	**Median**	**Mean**	**Median**
Interest Exp	2,531	0.1720	0.0656	13,582	0.0992	0.0549	0.0728 ***	0.0107 ***
ESG Score	2,531	11.8095	11.1570	13,582	20.9570	14.0496	-9.1475 ***	-2.8926 ***
Total Assets (mil$)	2,531	0.8490	0.1344	13,582	9.7975	2.6644	-8.9485 ***	-2.5300 ***
Age	2,531	15.7867	14.0000	13,582	26.6950	21.0000	-10.9084 ***	-7.0000 ***
Leverage	2,531	0.2731	0.1910	13,582	0.2698	0.2536	0.0033	-0.0626 ***
Rated	2,531	0.1063	0.0000	13,582	0.5387	1.0000	-0.4324 ***	-1.0000 ***
Market-to-Book	2,531	2.7746	1.5849	13,582	1.7260	1.2371	1.0486 ***	0.3479 ***
CapEx	2,531	0.4642	0.0484	13,582	0.0982	0.0427	0.3661 ***	0.0057 *
ROS	2,531	-3.3761	0.0073	13,582	0.0693	0.1034	-3.4454 ***	-0.0961 ***
Tangible Assets	2,531	0.3107	0.1362	13,582	0.3068	0.2368	0.0039	-0.1006 ***

Table 3 reports descriptive statistics on *ESG Score* and firm characteristics for the sample firms conditioned on firm size. To construct our two subsamples, we create an indicator variable, *Small*.
Statistical significance on differences in means and medians is computed using t-tests for mean estimates and k-sample tests for median estimates.
Variable definitions are provided in Appendix A.
*, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively

Multivariate Analysis. Univariate results provide evidence consistent with our first two hypotheses, i.e., smaller firms and firms with less transparent ESG disclosure strategies pay higher interest expenses. However, the univariate analyses also present significant heterogeneity in our sample. To account for the difference in the financial characteristics of the firms in our sample, we conduct a set of cross-sectional, time-series regressions on the relation between interest expense, firm size, and ESG disclosure. We use the following regression model in our analysis:

$$Interest\ Exp_{i,} = \alpha + \beta_1 ESG\ Score_i + \beta_2 Small_{i,t} + \beta_3 ESG \\ Score\ x\ Small_{i,t} + \gamma Controls_{i,t} + \varepsilon_{i,t} \quad (1)$$

where *Interest Exp* is our primary measure of corporate debt costs; *ESG Score*$_{i,t}$ is firm *i*'s *ESG Score* at time *t*; *Small*$_{i,t}$ is firm *i*'s value of *Small* at time *t*; *ESGScore x Small*$_{i,t}$ is the interaction of *ESG Score* and *Small* for firm *i* at time *t*; and, $\gamma Controls_{i,t}$ is a vector of control variables which includes *Total Assets*, *Age*, *Leverage*, *Rated*, *Market-to-Book*, *CapEx*, *ROS*, and *Tangible Assets*. All regression specification include fixed effects for Fama and French (1997) 17-industry classifica-

tion to account for the industry adjustment inherent in Bloomberg's 2014computation of ESG scores. Further, we include fixed effects for year and compute robust standard errors clustered by industry where indicated. The results of these regression analyses are presented in Table 4 with t-statistics reported in parentheses below the coefficient estimates.

The coefficient estimates on *ESG Score* are negative in all four regression specifications and are statistically significant at conventional levels for three of the four specifications. The statistical results on *ESG Score* are economically meaningful as well. The coefficient estimate in our fully specified model suggests that a one standard deviation increase in *ESG Score* translates to a reduction in *Interest Exp* of nearly 40 basis points (13.279 * −0.0003 = 0.0040), roughly 3.6% of the mean *Interest Exp*. The coefficient estimates on *Small* are all positive and statistically significant at better than the 1% level. In the fully specified model, firms where *Small* equals one have a value of *Interest Exp* that is 9.72 percentage points higher controlling for other factors. The coefficient estimates on *Small* and *ESG Score* provide evidence consistent with hypothesis one (i.e., that smaller firms face higher interest costs) and hypothesis two (i.e., that firms with

Table 4
Interest expense and ESG score

	Dependent Variable = Interest Exp.			
	(1)	**(2)**	**(3)**	**(4)**
ESG Score	-0.0018***	-0.0013***	-0.0003	-0.0003*
	(-8.205)	(-5.781)	(-0.956)	(-2.112)
Small Firm		0.1368***	0.1020***	0.0972***
		(4.829)	(3.598)	(3.769)
ESG Score x Small Firm		-0.0064***	-0.0059***	-0.0057**
		(-2.811)	(-2.603)	(-2.755)
Total Assets (mil$)			-0.0006**	-0.0006***
			(-2.387)	(-3.947)
Age			-0.0008***	-0.0007***
			(-4.253)	(-6.163)
Leverage			-0.1984***	-0.1913***
			(-15.451)	(-5.791)
Rated			-0.0226***	-0.0235***
			(-3.238)	(-3.433)
Market-to-Book			0.0023***	0.0026
			(2.615)	(1.395)
CapEx			-0.0145**	-0.0130
			(-2.165)	(-1.348)
ROS			-0.0033***	-0.0032
			(-3.270)	(-1.353)
Tangible Assets			-0.0622***	-0.0651**
			(-4.106)	(-2.919)
Constant			0.0048	0.0052
			(1.277)	(0.626)
Year controls	N	N	N	Y
Industry Controls	Y	Y	Y	Y
Clustered Errors	N	N	N	Y
Observations	16,113	16,113	16,113	16,113
Adj. R^2	0.004	0.008	0.039	0.042

Table 4 reports coefficient estimates from ordinary-least-squares regression tests on the association between Interest Exp, ESG Score, and a vector of control variables.
Specifications include fixed effects for fiscal year and industry using Fama and French (1997) 17-industry classifications and compute robust standard errors clustered by industry where denoted.
t-statistics are presented in parentheses below the coefficient estimates.
Remaining variable definitions are provided in Appendix A.
*, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

less transparent ESG disclosure strategies pay higher interest expenses), respectively. To explore our third hypothesis, that the reductions in debt costs for firms with transparent ESG disclosure policies is most pronounced for small firms with transparent disclosure policies, we include the interaction term. If the benefits to transparent ESG disclosure policies are most pronounced for small firms, then we would expect a negative coefficient estimate on the interaction term. Our regression results confirm this conjecture in all three specifications. Coefficient estimates on the interaction term are negative and statistically significant at better than the 5% level. In economic terms, a one standard deviation increase in ESG Score is associated with a reduction in *Interest Exp* of 797 basis points [13.279 * (−0.0003 + −0.0057) = 0.0797], roughly 46% of the mean *Interest Exp* paid by small firms. Stated differently, the effect of a one standard deviation increase in *ESG Score* for small firms almost completely offsets the increased debt costs suggested by the coefficient estimate on *Small*.

The regression results suggest that debt costs are reduced for firms with transparent ESG disclosure strategies and that the result is most pronounced for smaller firms. Given that Bloomberg's 2014 ESG composite score encapsulates three dimensions of ESG disclosure (i.e., environmental, social, and governance disclosure), the question remains as to what dimension(s), if any, in particular, are responsible for the result. To explore this question, we examine our results against the component disclosure scores. The number of observations varies across this series of tests as a result of data availability limitations by Bloomberg 2014. Consistent with our prior, fully specified model specification, the component specifications include fixed effects for fiscal year and Fama and French (1997) 17 industry and compute robust standard errors clustered by industry. The results of these tests are presented in Table 5.

The first column of Table 5 presents the results from the fully specified model displayed in Table 4 for ease of comparison. The remaining three columns present the results where *Environ*, *Social*, and *Govnce* are substituted into the specification, respectively, as the measure of ESG. Higher ESG component scores are associated with reductions in *Interest Exp* across the three specifications, though, the association is not statistically significant. Consistent with our prior tests, firms where *Small* equals one face higher debts costs. This relation is significant at better than the 5% level for the component specifications using *Social* and *Govnce* as their measure of ESG disclosure transparency. Finally, the coefficient estimates on the interaction term are negative and statistically significant in the specifications using *Social* and *Govnce*. We interpret this result as evidence that transparent social and governance disclosures are responsible for the observed relation on the composite score. Firms with complete and transparent disclosure strategies pertaining to social concerns and governance quality seem to face reductions in debt costs.

Discussion

Our study contributes several important elements in regards to entrepreneurial financing. First, it provides practical advice for small business owners who aim to minimize the cost of debt-financed prospects. Results suggest that small businesses can create the opportunity to decrease interest rates on their loans by providing more complete, more transparent ESG disclosure. Therefore, if entrepreneurs who seek financing can mitigate risk for banks, by decreasing information asymmetries through ESG disclosure, their ventures can decrease overall costs and improve their economic position.

Our results also expand the literature on entrepreneurial financing by highlighting the impacts of ESG practices on small business debt costs expanding our understanding of agencybased issues that have long impacted small business capitalization. According to agency theory, financers of business startups impose various types of controls on those small businesses in order to mitigate the risk associated with having incomplete information. The most common means for banks to impose such control is through higher interest rates on small business loans. High interest rates, however, decrease the overall operating ability for small firms, whose financial position is typically constrained. Our findings suggest that reporting of ESG information provides value-relevant information to banks, which minimizes information asymmetry concerns, resulting in lower interest rates charged on small business loans.

Table 5
Interest expense and component ESG disclosure scores

| | Dependent Variable = Interest Exp. | | | |
	ESG Score	**Environ Score**	**Social Score**	**Govnce Score**
ESG Variable	-0.0003*	-0.0000	-0.0000	-0.0005
	(-2.112)	(-0.538)	(-0.087)	(-1.372)
Small Firm	0.0972***	0.0008	0.0565**	0.2738**
	(3.769)	(0.061)	(2.756)	(2.818)
ESG Variable x Small	-0.0057**	0.0001	-0.0026**	-0.0052**
	(-2.755)	(0.144)	(-2.312)	(-2.586)
Total Assets (mil$)	-0.0006***	-0.0005***	-0.0006***	-0.0007***
	(-3.947)	(-3.199)	(-3.685)	(-4.575)
Age	-0.0007***	-0.0005***	-0.0006***	-0.0007***
	(-6.163)	(-3.761)	(-5.042)	(-5.777)
Leverage	-0.1913***	-0.2409***	-0.2156***	-0.1919***
	(-5.791)	(-5.978)	(-6.437)	(-5.758)
Rated	-0.0235***	-0.0168*	-0.0160*	-0.0238***
	(-3.433)	(-1.893)	(-2.211)	(-3.355)
Market-to-Book	0.0026	-0.0011	0.0023**	0.0026
	(1.395)	(-0.737)	(2.255)	(1.395)
CapEx	-0.0130	0.0039	-0.0463***	-0.0139
	(-1.348)	(0.682)	(-3.654)	(-1.416)
ROS	-0.0032	0.0102	-0.0125	-0.0033
	(-1.353)	(0.286)	(-1.806)	(-1.385)
Tangible Assets	-0.0651**	-0.0368***	-0.0194	-0.0669**
	(-2.919)	(-4.024)	(-1.205)	(-2.947)
Constant	0.1840***	0.1841***	0.1822***	0.2037***
	(10.622)	(7.896)	(8.439)	(9.583)
Year controls	Y	Y	Y	Y
Industry Controls	Y	Y	Y	Y
Clustered Errors	Y	Y	Y	Y
Observations	16,113	5,908	9,789	16,101
Adj. R^2	0.042	0.038	0.056	0.043

Table 5 presents the results of ordinary-least-squares regression testing on the relation between *Interest Exp*, ESG component scores, and a vector of control variables.
t-statistics are presented in parentheses below the coefficient estimates.
Variable definitions are provided in Appendix A.
*, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Our prediction that small firm and firms with less transparent ESG reporting would suffer from higher interest rates on debt financing, was supported by our analysis. We also found support for the prediction that increased transparency through ESG reporting would decrease debt costs and that this improvement would be magnified for smaller firms. These results contribute to the entrepreneurial finance literature, and agency costs for small businesses, by showing a direct relationship between ESG information disclosure and the cost of debt.   While these results do not test the mechanism through which ESG disclosure mitigates information asymmetry, several explanations are worth noting. One such explanation is that information contained in the disclosure itself could decrease uncertainty on the part of financers. As the party who otherwise would suffer the risk of information asymmetry, it could be that the information provided in the disclosure minimizes the information disparity therefore leading lenders to lessen restrictions on the borrower via lower debt. Another explanation is that it is the act of disclosing information voluntarily that is rewarded. In this sense, voluntarily releasing information signals a transparent culture, whereby the borrower indicates a willingness to mitigate information asymmetries. Following this logic, the information provided may not minimize the disparity of information possessed by the two parties, but minimizes their concern all the same. While we are not able to distinguish between these two factors with the Bloomberg 2014 data, either outcome provides justification for increases in ESG disclosure.

Limitations and Future Research. Our study provides a framework for future research to examine the role of CSR, and specifically the elements of ESG, along with other similar reporting (McMillan, Dunne, Aaron, & Cline, 2017; Shields, Welsh, & Shelleman, 2018), on small firms' ability to decrease the cost of debt. While we see ESG reporting on Bloomberg 2014 as a strong proxy for information that is relevant for mitigating lending institution risk, it is possible that ESG disclosure has a positive effect through another signal that helps to improve debt costs. Thus, future studies could seek to uncover the mechanisms through with value-relevant information of ESG disclosure is observed by banks. Further, the interest rate charged by debt financiers is one means by which debt inves-

tors are able to influence the actions of firm management and impose control, debt contract characteristics and covenant are another. Further study is needed on the association between ESG disclosure transparency and debt covenant costs.

Conclusion

The cost of debt faced by many small businesses is a challenge, and in some instances contributes directly to the failure of entrepreneurial ventures. Our results, however, show a direct link between ESG disclosure transparency by small businesses and their cost of debt. By providing lenders with more value-relevant information – through more transparent ESG disclosure – smaller firms are able to minimize the amount of interest paid on business debt, improving their overall economic position and enabling them to focus on growth.

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Appendix A
*Variable definition*s

Variable	Definition
ESG Score	Bloomberg's 2014 proprietary score based on the extent of a company's environmental, social, and governance disclosure. The score ranges from 0.1 to 100 with higher numbers reflecting greater ESG disclosure.
Environmental Score	Bloomberg's 2014 proprietary score based on the extent of a company's environmental disclosure. Higher values reflect increased environmental disclosure.
Social Score	Bloomberg's 2014 proprietary score based on the extent of a company's social disclosure. Higher values reflect increased social disclosure.
Governance Score	Bloomberg's 2014 proprietary score based on the extent of a company's governance disclosure. Higher values reflect increased governance disclosure.
Interest Exp.	The ratio of a firm's interest expense, as reported on its income statement, scaled by the sum of the firm's short-term and long-term debt measured at fiscal year-end.
Small	An indicator variable which takes on a value of one if the firm employs less than 500 individuals in a given year, and zero otherwise.
Total Assets	Total book assets expressed in millions of dollars as reported by Compustat at fiscal year-end.
Age	A count of the number of years the firm has been tracked by Compustat.
Leverage	The sum of total long-term debt plus the current portion of long-term debt scaled by book assets at fiscal year-end.
Rated	An indicator variable which takes a value of one if the firm has an S&P long-term issuer rating, and zero otherwise.
Market-to-Book	The market value of a firm's equity at the fiscal year-end scaled by its book value of equity.
CapEx	The capital expenditures for a firm at fiscal year-end scaled by the firm's total revenues.
ROS	EBIT scaled by total revenue at fiscal year-end.
Intangible Assets	Total book assets less intangible assets all scaled by total book assets at fiscal year-end.