Supplemental Information for

“Corporate Lobbying and ESG Reports: Patterns Among U.S. Companies, 1999-2017”

Appendix

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A The Number of Companies by Sector and Year

Sector (2-digit NAICS code)	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Agriculture, Forestry, Fishing and Hunting	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	2	2	1	1
Mining, Quarrying, and Oil and Gas Extraction	26	26	27	28	28	28	28	27	27	27	29	29	28	29	29	31	31	28	24
Utilities	49	49	49	50	50	50	51	53	54	54	53	54	54	54	50	51	50	46	43
Construction	7	7	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6
Manufacturing (1)	36	36	36	36	37	38	38	39	40	42	41	39	41	42	42	42	45	41	34
Manufacturing (2)	74	74	75	78	83	84	84	86	88	88	87	90	83	90	87	89	84	79	74
Manufacturing (3)	118	119	119	120	122	121	125	125	124	127	128	125	131	131	138	140	136	118	105
Wholesale Trade	18	18	18	18	18	18	18	19	19	18	19	19	19	20	20	19	19	18	16
Retail Trade (1)	17	17	17	17	17	17	18	18	18	18	18	18	18	19	19	17	17	17	16
Retail Trade (2)	11	12	12	12	12	12	12	12	12	12	12	12	12	12	13	12	10	10	10
Transportation and Warehousing (1)	13	14	14	14	14	14	14	14	14	15	16	16	17	15	16	16	16	16	13
Transportation and Warehousing (2)	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	2
Information	31	31	32	35	37	38	39	40	41	42	42	43	43	47	45	44	44	45	39
Finance and Insurance	60	62	64	64	66	68	69	70	70	69	69	69	71	71	71	71	70	70	65
Real Estate and Rental and Leasing	23	23	23	24	24	26	26	26	27	27	27	27	26	26	27	30	31	30	25
Professional, Scientific, and Technical Services	16	16	16	16	16	16	19	20	19	17	17	18	19	19	20	20	19	17	14
Administrative and Support and Waste Management and Remediation Services	13	13	13	13	13	13	13	13	13	13	13	13	14	14	15	15	18	15	14
Educational Services	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Health Care and Social Assistance	9	9	9	9	9	10	10	10	11	11	11	11	12	12	12	12	12	11	11
Arts, Entertainment, and Recreation	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
Accommodation and Food Services	11	12	12	13	13	13	13	13	12	13	14	14	17	16	16	16	15	15	12
Other Services (except Public Administration)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Table 4: Number of companies by sector and year in sample

B Additional Analysis

B.1 Using the S&P 500 Sample

	Dependent variable:		
	Decision to issue ESG report		
	(1)	(2)	(3)
Issued ESG report in previous year			0.61***
			(0.10)
Lobby	0.10***	0.09**	0.05
	(0.04)	(0.04)	(0.04)
Campaign contributions		0.40**	0.29
		(0.18)	(0.19)
Lobby × Campaign contributions		0.01	0.01
		(0.05)	(0.05)
Market value			0.01***
			(0.003)
Number of employees			0.01**
			(0.002)
ESG prevalence in sector			0.14
			(0.58)
Constant	−23.31	−23.30	−22.31
	(5,617.78)	(5,617.65)	(10,125.58)
Company FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	10,459	10,459	8,595
Log Likelihood	−2,174.60	−2,171.68	−1,921.21
Akaike Inf. Crit.	5,833.19	5,831.36	5,136.41
Note:			*p<0.1; **p<0.05; ***p<0.01
			Standard errors clustered by company and year.

Table 5: Logit models of lobbying, campaign contributions, and ESG reporting (based on cumulative S&P 500 sample)

	Dependent variable:		
	Percentage of ESG report composed of numbers		
	(1)	(2)	(3)
Lobby	0.01^{***}	0.01^{***}	0.01
	(0.003)	(0.003)	(0.01)
Campaign contributions		0.34	0.34
		(0.23)	(0.28)
Lobby $\times$ Campaign contributions		-0.03	-0.03
		(0.03)	(0.03)
Market value			-0.0004
			(0.002)
Number of employees			-0.003
			(0.002)
ESG prevalence in sector			0.36
			(1.47)
Constant	2.49^{***}	2.56^{***}	2.25^{***}
	(0.16)	(0.20)	(0.30)
Company FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	2,737	2,737	2,574
R^2	0.34	0.34	0.35
Adjusted R^2	0.24	0.24	0.24
χ^2	$1{,}147.28^{***}$	$1{,}148.58^{***}$	$1{,}094.15^{***}$
Note:			*p<0.1; **p<0.05; ***p<0.01
			Standard errors clustered by company and year.

Table 6: Linear regressions of lobbying, campaign contributions, and technicality of ESG reports (based on cumulative S&P 500 sample)

B.2 Alternative Measurements of Campaign Contributions

	Dependent variable:		
	Decision to issue ESG report		
	(1)	(2)	(3)
Issued ESG report in previous year	0.57***	0.56***	0.57***
	(0.07)	(0.07)	(0.07)
Lobby	0.44**	0.44**	0.41**
	(0.20)	(0.19)	(0.18)
Campaign contributions (individual)	0.14		
	(0.12)		
Campaign contributions (individual and PAC)		0.14	
		(0.14)	
Campaign contributions (PAC, two cycles)			0.04
			(0.15)
Lobby × Campaign contributions (individual)	−0.19		
	(0.23)		
Lobby × Campaign contributions (individual and PAC)		−0.26	
		(0.25)	
Lobby × Campaign contributions (PAC, two cycles)			−0.26
			(0.27)
Market value	0.01***	0.01***	0.01***
	(0.003)	(0.003)	(0.003)
Number of employees	0.01***	0.01***	0.01***
	(0.002)	(0.002)	(0.002)
ESG prevalence in sector	0.26	0.26	0.26
	(0.40)	(0.40)	(0.40)
Constant	−4.80***	−4.80***	−4.76***
	(1.15)	(1.15)	(1.16)
Company FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	10,714	10,714	10,714
Log Likelihood	−3,724.59	−3,724.58	−3,724.89
Akaike Inf. Crit.	8,949.18	8,949.16	8,949.78
Note:			*p<0.1; **p<0.05; ***p<0.01
			Standard errors clustered by company and year.

Table 7: Logit models of lobbying, campaign contributions, and ESG reporting (using alternative measures of campaign contributions)

	Dependent variable:		
	Percentage of ESG report composed of numbers		
	(1)	(2)	(3)
Lobby	0.02**	0.02**	0.02**
	(0.01)	(0.01)	(0.01)
Campaign contributions (individual)	0.23		
	(0.30)		
Campaign contributions (individual and PAC)		0.14	
		(0.34)	
Campaign contributions (PAC, two cycles)			0.03
			(0.67)
Lobby × Campaign contributions (individual)	0.01		
	(0.02)		
Lobby × Campaign contributions (individual and PAC)		0.04	
		(0.02)	
Lobby × Campaign contributions (PAC, two cycles)			0.06
			(0.08)
Market value	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)
Number of employees	−0.002	−0.002	−0.002
	(0.001)	(0.001)	(0.002)
ESG prevalence in sector	0.75	0.74	0.73
	(1.04)	(1.12)	(1.13)
Constant	1.09***	1.19***	1.34***
	(0.36)	(0.33)	(0.31)
Company FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	4,103	4,103	4,103
R^2	0.41	0.41	0.41
Adjusted R^2	0.28	0.28	0.28
χ^2	2,145.70***	2,145.24***	2,145.06***
Note:			*p<0.1; **p<0.05; ***p<0.01
			Standard errors clustered by company and year.

Table 8: Linear regressions of lobbying, campaign contributions, and technicality of ESG reports (using alternative measures of campaign contributions)

B.3 Controlling for Time Trend

	Dependent variable:		
	Decision to issue ESG report		
	(1)	(2)	(3)
Issued ESG report in previous year			0.60***
			(0.16)
Lobby	0.49**	0.51**	0.37**
	(0.20)	(0.21)	(0.18)
Campaign contributions		0.21	−0.002
		(0.19)	(0.17)
Lobby × Campaign contributions		−0.17	−0.04
		(0.35)	(0.36)
Market value			0.01*
			(0.003)
Number of employees			0.01***
			(0.002)
ESG prevalence in sector			1.22**
			(0.61)
Year trend	0.35***	0.34***	0.23***
	(0.05)	(0.05)	(0.07)
Constant	−4.83***	−4.83***	−4.48***
	(0.52)	(0.52)	(0.46)
Company FE	Yes	Yes	Yes
Year FE	No	No	No
Observations	12,847	12,847	10,714
Log Likelihood	−4,540.28	−4,539.12	−3,865.98
Akaike Inf. Crit.	10,604.55	10,606.24	9,199.96
Note:			*p<0.1; **p<0.05; ***p<0.01
			Standard errors clustered by company and year.

Table 9: Logit models of lobbying, campaign contributions, and ESG reporting (controlling for linear time trend)

	Dependent variable:		
	Percentage of ESG report composed of numbers		
	(1)	(2)	(3)
Lobby	0.04^{**}	0.04^{**}	0.02^{**}
	(0.02)	(0.01)	(0.01)
Campaign contributions		0.03	0.09
		(0.33)	(0.35)
Lobby × Campaign contributions		0.03	0.03
		(0.06)	(0.08)
Market value			−0.0002
			(0.002)
Number of employees			−0.001
			(0.002)
ESG prevalence in sector			2.76
			(1.92)
Year trend	0.05	0.05	−0.08
	(0.07)	(0.07)	(0.15)
Constant	1.71^{***}	1.71^{***}	1.96^{**}
	(0.62)	(0.63)	(0.84)
Company FE	Yes	Yes	Yes
Year FE	No	No	No
Observations	4,475	4,475	4,103
R^2	0.39	0.39	0.40
Adjusted R^2	0.26	0.26	0.27
χ^2	$2{,}190.61^{***}$	$2{,}190.71^{***}$	$2{,}075.38^{***}$
Note:			*p<0.1; **p<0.05; ***p<0.01
			Standard errors clustered by company and year.

Table 10: Linear regressions of lobbying, campaign contributions, and technicality of ESG reports (controlling for linear time trend)

B.4 Modeling the FOG Index of ESG Reports

Scholars have laid out concerns about the construct validity of the Gunning FOG index of readability. On one hand, high linguistic complexity has been perceived as intentional obfuscation. Li (2008) indicates that managers purposefully convey messages in a complex manner to hide bad news. Leuz and Wysocki (2016) also show that managers use discretion both to inform and to obfuscate since they need to strike a balance between the benefits of enhanced disclosure and the costs of sending information to competitors. In addition, they suggest that managers obfuscate to engage in self-interested activities. To manipulate the complexity of corporate reports strategically

and mislead investors' understanding of company value, managers often legally obscure information by burying the awkward revelation in an overwhelming amount of uninformative text and data (e.g. Leuz and Wysocki 2016; Lo, Ramos and Rogo 2017; Loughran and McDonald 2016). On the other hand, linguistic complexity as measured by FOG could simply represent the complexity and technicality of that businesses that companies do (Bushee, Gow and Taylor 2018). For example, one complex word defined by the Fog measure that occurs in company filings is "telecommunication," which is unlikely to either confuse or impress readers (Loughran and McDonald 2014).

The results show that, on average, reports issued by lobbying companies require a fifth to a quarter year of additional education for readers to comprehend compared to those issued by non-lobbying companies, but the statistical significance of this difference depends on model configuration. The bivariate relationship between lobbying and the FOG index (controlling for two-way fixed effects, as always) is insignificant though positive. When lobbying interacts with campaign contributions, the former's main effect is significant, suggesting that lobbying is associated with harder-to-read reports for non-contributing companies. But this effect becomes insignificant, too, when the model includes the company- and sector-level control variables. Campaign contributions do not meaningfully interact with lobbying in predicting the FOG index, as with the proportion of numerical content.

	Dependent variable:		
	Gunning FOG index		
	(1)	(2)	(3)
Lobby	0.20	0.41***	0.27
	(0.13)	(0.09)	(0.20)
Campaign contributions		−0.84	−0.65
		(1.46)	(2.09)
Lobby × Campaign contributions		−0.65	−1.15
		(1.07)	(1.32)
Market value			−0.0002
			(0.003)
Number of employees			−0.01
			(0.03)
ESG prevalence in sector			3.36
			(3.46)
Constant	15.50***	15.41***	17.76***
	(0.34)	(0.50)	(0.88)
Company FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	4,475	4,475	4,103
R^2	0.13	0.13	0.13
Adjusted R^2	−0.05	−0.05	−0.06
χ^2	631.48	633.07	559.87
Note:			*p<0.1; **p<0.05; ***p<0.01
			Standard errors clustered by company and year.

Table 11: Linear regressions of lobbying, campaign contributions, and technicality of ESG reports (using Gunning FOG index)

B.5 Using Continuous Measures of Political Activities

	Dependent variable:					
	Decision to issue ESG report					
	(1)	(2)	(3)	(4)	(5)	(6)
Issued ESG report in previous year					0.56***	0.57***
					(0.15)	(0.15)
Number of lobbying firms	0.13***		0.13***		0.09**	
	(0.04)		(0.04)		(0.04)	
Amount of lobbying spending		0.15		0.15		0.04
		(0.11)		(0.11)		(0.08)
Amount of campaign contributions			0.89**	0.72**	0.54	0.49
			(0.40)	(0.34)	(0.40)	(0.35)
Number of lobbying firms × Amount of campaign contributions			−0.07		−0.03	
			(0.06)		(0.05)	
Amount of lobbying spending × Amount of campaign contributions				0.02		−0.01
				(0.22)		(0.19)
Market value					0.01***	0.01***
					(0.003)	(0.003)
Number of employees					0.01***	0.01***
					(0.002)	(0.002)
ESG prevalence in sector					0.26	0.28
					(0.39)	(0.39)
Constant	−6.49***	−6.52***	−6.46***	−6.49***	−4.70***	−4.74***
	(0.40)	(0.42)	(0.40)	(0.42)	(0.24)	(0.29)
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,847	12,847	12,847	12,847	10,714	10,714
Log Likelihood	−4,346.51	−4,355.77	−4,341.63	−4,351.33	−3,720.43	−3,725.21
Akaike Inf. Crit.	10,251.01	10,269.54	10,245.26	10,264.66	8,940.86	8,950.42

Note: *p<0.1; **p<0.05; ***p<0.01
Standard errors clustered by company and year.

Table 12: Logit models of lobbying, campaign contributions, and ESG reporting (using continuous measures of political activities)

	Dependent variable:					
	Percentage of ESG report composed of numbers					
	(1)	(2)	(3)	(4)	(5)	(6)
Number of lobbying firms	0.03		0.03		0.04	
	(0.02)		(0.02)		(0.02)	
Amount of lobbying spending		0.04*		0.04*		0.02**
		(0.02)		(0.02)		(0.01)
Amount of campaign contributions			0.06	0.11	0.08	0.13*
			(0.06)	(0.07)	(0.06)	(0.07)
Number of lobbying firms × Amount of campaign contributions			0.02***		0.01	
			(0.01)		(0.01)	
Amount of lobbying spending × Amount of campaign contributions				−0.03***		−0.03***
				(0.01)		(0.01)
Market value					0.001	0.001
					(0.001)	(0.001)
Number of employees					−0.002	−0.002
					(0.001)	(0.001)
ESG prevalence in sector					0.71	0.72
					(1.04)	(1.04)
Constant	2.49***	2.56***	2.50***	2.56***	1.34***	1.32***
	(0.21)	(0.24)	(0.20)	(0.24)	(0.28)	(0.25)
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,475	4,475	4,475	4,475	4,103	4,103
R^2	0.40	0.40	0.40	0.40	0.41	0.41
Adjusted R^2	0.27	0.27	0.27	0.27	0.28	0.28
χ^2	2,269.18***	2,270.23***	2,269.37***	2,270.56***	2,145.01***	2,145.12***
Note:						*p<0.1; **p<0.05; ***p<0.01
						Standard errors clustered by company and year.

Table 13: Linear regressions of lobbying, campaign contributions, and technicality of ESG reports (using continuous measures of political activities)

B.6 Heckman Selection Model

Below we show results of a Heckman selection model. The selection equation (Model 1) predicts the likelihood for company-year observations to correspond to an ESG report being issued. Here, we use the probit link function rather than logit to calculate the inverse Mills ratio for each observation, which serves as an additional predictor in the outcome equation (Heckman 1976). The outcome equation (Model 2) predicts the outcome of the percentage of report content composed of numbers. For both, we control for company- and year-specific fixed effects as always along with lobbying and campaign contributions. Informed by our earlier analysis, however, we leave out their interaction for a simpler model because it is not a significant predictor of either selection or the outcome. The selection equation also controls for companies' market value and number of employees, as well as the sector-wide yearly prevalence of ESG reporting. We omit these controls from the outcome equation; it is generally required that the selection equation include at least one predictor that should affect selection but—in theory—not the outcome, and we believe that these controls meet these criteria.

As expected, the coefficient estimates for the selection equation confirm that lobbying is a

significant predictor of companies' decision to issue ESG reports, as are the three control variables. In the outcome equation, the estimate for lobbying is significant and positive and that for campaign contributions is positive but insignificant. In the presence of the inverse Mills ratios calculated from the selection equation as an additional control, the effects of the two political activities are substantively similar to their effects shown in the "naive" regression of Model 2 in Table 3 (naive in the sense of not considering sampling selection bias). The inverse Mills ratio is not a significant predictor, indicating that the selection model does not detect sample selection bias for estimating the outcome under the assumptions of the model and that the naive OLS regression suffices.

	Dependent variable:	
	Decision to issue ESG report (selection)	Percentage of numbers (outcome)
	probit	*OLS*
	(1)	(2)
Lobby	0.22**	0.02**
	(0.09)	(0.01)
Campaign contributions	0.11	0.17
	(0.07)	(0.27)
Market value	0.01***	
	(0.001)	
Number of employees	0.004***	
	(0.001)	
ESG prevalence in sector	0.65***	
	(0.23)	
Inverse Mills ratio from selection equation		−0.33
		(1.20)
Constant	−2.71***	2.02
	(0.62)	(2.62)
Company FE	Yes	Yes
Year FE	Yes	Yes
Observations	10,715	4,103
R^2		0.41
Adjusted R^2		0.28
Log Likelihood	−3,782.45	
Akaike Inf. Crit.	9,060.91	
χ^2		2,145.01***
Note:		*p<0.1; **p<0.05; ***p<0.01

Table 14: Heckman selection model of lobbying, campaign contributions, and technicality of ESG reports