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Article

The Value of CSR in Times of Increased Policy Uncertainty: Evidence from the Brexit Referendum

Junior Management Science (JUMS)

Provided in Cooperation with:

Junior Management Science e. V.

Suggested Citation: Hohlwegler, Olivia (2021) : The Value of CSR in Times of Increased Policy Uncertainty: Evidence from the Brexit Referendum, Junior Management Science (JUMS), ISSN 2942-1861, Junior Management Science e. V., Planegg, Vol. 6, Iss. 1, pp. 1-24, <https://doi.org/10.5282/jums/v6i1pp1-24>

This Version is available at:

<https://hdl.handle.net/10419/294943>

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Online-Appendix zu

„The Value of CSR in Times of Increased Policy Uncertainty: Evidence from the Brexit Referendum“

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Junior Management Science 6(1) (2021) 1-24

APPENDIX

TABLE 4
Empirical Evidence on the Effects of CSR on Corporate Financial Performance

Financial Performance	CSR Measure	Author	Sample	Countries	Relationship
Panel A: Overall Performance					
Shareholder value: returns	Aggregated and individual scores for employee relationships, environment, and community activities	Brammer, Brooks and Pavelin (2006)	2002-2004	UK	Lower shareholder value is realised by firms with higher social performance; significantly negative relationship exists between scores on a composite social performance indicator and stock returns
Valuation multipliers (book-to-market, price-to-earnings ratio), returns over 12-months	KLD: Community, environment, diversity, product concerns and strengths	Bird <i>et al.</i> (2007)	1991-2003	USA	Stock returns hold a positive relationship with employee-related activities, however there is an inverse relationship with environmental activities
Stock returns, ROA	KLD: aggregated score across employee relations, product, community relations, environment, equality, environmental issues, military contracts; individual levels	Nelling and Webb (2009)	1993-2000	USA	Greater firm investment regarding CSR devoted to employee relations is triggered by stronger stock market performance, however, financial performance is not influenced by CSR activities devoted to employee relations
Tobin's Q, ROA	Environmental performance by Innovest Strategic Value Advisors	Guenster <i>et al.</i> (2011)	1997-2004	na	Environmental activities have a positive relationship with operating performance and firm value
Tobin's Q	Aggregated KLD score across: employee relations, diversity, product characteristics, community relations, environmental performance	Jiao (2010)	1992-2003	USA	A one-basis point increase in CSR measure results in an increase in Tobin's Q by 0.587. These positive effects are driven by firms' performance on employee relations and environmental issues, while the valuation effects vary across stakeholders

TABLE 4 – *Continued*

Financial Performance	CSR Measure	Author	Sample	Countries	Relationship
Industry-adjusted Tobin's Q	KLD community, diversity, employee relations, environment, and product. Governance and monitoring scores from Risk metrics	Jo and Harjoto (2011)	1993-2004	USA	CSR subclasses controlling for wider external social enhancement for instance community relation and environmental concerns, are less likely to enhance firm value that CSR subclasses controlling for internal social enhancement within the firm
Systematic & idiosyncratic risk	Composite measure across community, diversity, employee relations, environment, product, human rights, corporate governance	Bouslah, Kryzanowski and M'Zali (2013)	1991 - 2007	USA	Positive association between Employee, Diversity and Corporate Governance concerns and firm risk (for S&P500 Companies); Negative association between Community and risk
Systematic risk	Community, Employment and Environmental Concerns	Oikonomou, Brooks and Pavelin (2012)	1992 - 2009	USA	Community, employment, environmental concerns and systematic risk exhibit a significant positive relation
Firm risk (idiosyncratic and systematic risk)	Community, diversity, employee relations, environment, and product	Jo and Na (2012)	1991-2010	USA	CSR engagement is found to have an inverse relationship with firm risk after controlling for multiple firm characteristics
Cost of corporate debt and credit ratings	Community, diversity, employee relations, environmental issues, product safety, quality.	Oikonomou, Brooks and Pavelin (2014)	1991-2008	USA	Through lower and higher corporate bond yield spreads, good performance is rewarded while corporate transgressions are penalized, respectively
Stock price crash risk (conditional skewness of return distribution)	Community, diversity, employee relations, environment, product	Kim, Li and Li (2014)	1995-2009	USA	After controlling for alternative determinants of crash risk, the relationship of CSR performance and future crash risk is of negative nature

TABLE 4 – *Continued*

Financial Performance	CSR Measure	Author	Sample	Countries	Relationship
KZ index of capital constraints, indicator for absence of stock repurchase activity, SA index, WW index	Environmental, social, governance measure as composite measure	Cheng, Ioannou and Serafeim (2014)	2002-2009	49 countries	CSR overall, as well as social and environmental activities, reduces capital constraints.
Analyst dispersion, stock return volatility, cost of capital, firm value	Community, corporate governance, diversity, employee relations, environment, human rights, and product	Harjoto and Jo (2015)	1993-2009	USA	A relationship for the overall CSR score is of a positive nature, while the normative CSR score exhibits an inverse relationship
Tobin's Q, equity issuance, excess growth, debt issuance, investment intensity, probability of bankruptcy, payable turnover, sales growth	Environmental and social performance score	Ghoul, Guedhami and Kim (2017)	2003-2010	53 countries	Positive impact of CSR on firm value, transaction costs, access to financing, lower default risk, higher future sales growth; Effects are more pronounced in countries with reduced market-supporting institutions
Information asymmetries: bid-ask spread; dispersion of analysts' forecasts; price impact measure	Community, corporate governance, diversity, employee relations, environment, human rights, and product	Cui, Jo and Na (2018)	1991-2010	USA	Mitigation of information asymmetries

TABLE 4 – *Continued*

Financial Performance	CSR Measure	Author	Sample	Countries	Relationship
Panel B: Shock-based Evidence					
Excess returns, operating performance, access to financing	Aggregated score across community, diversity, employee relations, environment, human rights	Lins, Servaes and Tamayo (2017)	2008 - 2009	USA	Pays off during periods of crisis - more resistant
Firm risk: systematic risk, idiosyncratic risk, volatility	Composite measure across community, diversity, employee relations, environment, product, human rights, corporate governance	Bousslah, Kryzanowski and M'Zali (2018)	1991 - 2012	USA	Risk reduction during an adverse economic environment
Tobin's Q, stock returns	Social, Environmental and Governance	Bousslah, Kryzanowski and M'Zali (2018)		USA	Positive effect on Tobin's Q before and after the 2008 financial crisis, negative effect during the 2008 financial crisis; CSR firms experience higher changes in returns than firms without CSR disclosure during the financial crisis
Cumulative abnormal returns	Community, corporate governance, employee relations, environmental stewardship, diversity, product quality	Godfrey, Merrill and Hansen (2009)	1991-2002	USA	Positive effect on CAR during firm-level legal shocks

TABLE 5
Descriptive Statistics for Cross-Sectional Regression

This table presents the descriptive statistics of the ESG scores, firm characteristics and financial health variables as of 31/12/2015, factor exposures estimated over the two years prior to 2016, and shock-period BHAR employed in the cross-sectional regression. Variables are defined in TABLE 1. Further note that CSR measures as of 2015 and 2016 are included as well. The suffix *w* indicates winsorization at the 1% and 99% level. * in the correlation matrix denotes significance at the 0.01 level.

Panel A: Summary statistics										
Variables	Mean	St.Dev	min	max	p25	Median	p75	skewness	kurtosis	N
esg_14	71.628	22.962	3.31	96.37	55.68	80.125	90.575	-.918	2.858	320
es_14	65.31	22.738	8.145	95.295	48.222	69.265	85.213	-.579	2.311	320
gov_14	80.382	14.173	3.53	97.15	75.28	84.805	90.035	-1.976	8.325	320
esg_15	78.105	19.336	7.43	96	70.18	86.17	92.39	-1.507	4.712	308
es_15	71.674	19.954	10.42	95.345	58.375	77.535	88.505	-.915	3.08	308
cgs_15	81.801	15.595	16.06	97.83	78.385	86.315	92.165	-2.016	7.141	308
esg_16	83.07	15.453	12.86	96.36	78.955	88.74	93.46	-2.037	7.117	292
es_16	76.479	17.134	17.85	95.575	66.66	81.338	89.865	-1.168	3.806	292
cgs_16	84.746	13.623	20.95	97.89	81.67	89.5	93.345	-2.048	7.608	292
sizew	14.575	1.583	11.012	18.989	13.432	14.406	15.382	.592	3.163	274
ltd_atw	.204	.172	0	.781	.052	.191	.307	.817	3.446	274
dlc_atw	.289	.163	.027	.868	.171	.265	.385	.994	4.232	274
cash_taw	.11	.1	.003	.573	.038	.078	.144	1.916	7.69	274
profw	.094	.08	-.073	.414	.048	.08	.124	1.402	6.624	274
beta_rmr fw	1.005	.784	-.607	3.049	.463	.966	1.553	.209	2.641	309
beta_umd w	-.184	.851	-3.732	1.336	-.441	0	.294	-1.731	7.629	309
beta_hml w	.012	1.172	-2.508	4.44	-.618	0	.487	.974	5.509	309
beta_smb w	.678	.969	-1.472	3.402	0	.53	1.238	.55	3.269	309
bhar w	-.021	.313	-.56	1.212	-.158	-.094	.087	1.569	6.487	309
Panel B: Pairwise correlations										
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) esg_14	1.000									
(2) es_14	0.918*	1.000								
(3) cgs_14	0.629*	0.484*	1.000							
(4) esg_15	0.942*	0.852*	0.612*	1.000						
(5) es_15	0.897*	0.966*	0.500*	0.889*	1.000					
(6) cgs_15	0.543*	0.388*	0.734*	0.662*	0.417*	1.000				
(7) esg_16	0.885*	0.812*	0.624*	0.921*	0.833*	0.588*	1.000			
(8) es_16	0.862*	0.934*	0.489*	0.866*	0.952*	0.413*	0.887*	1.000		
(9) cgs_16	0.491*	0.356*	0.754*	0.532*	0.368*	0.828*	0.608*	0.382*	1.000	
(10) sizew	0.540*	0.548*	0.269*	0.495*	0.524*	0.263*	0.456*	0.494*	0.252*	1.000
(11) ltd_atw	0.036	0.065	-0.034	0.034	0.059	0.009	0.040	0.053	-0.003	0.285*
(12) dlc_atw	0.087	0.086	0.111	0.063	0.064	0.063	0.130*	0.113	0.112	-0.172*
(13) cash_taw	-0.250*	-0.245*	-0.103	-0.293*	-0.265*	-0.094	-0.320*	-0.285*	-0.067	-0.176*
(14) profw	-0.015	-0.066	-0.059	-0.044	-0.087	-0.081	-0.014	-0.075	-0.024	-0.248*
(15) beta_rmr fw	-0.001	-0.021	-0.022	0.030	-0.003	0.070	-0.031	-0.031	-0.010	-0.096
(16) beta_umd w	0.080	0.054	-0.024	0.030	0.021	-0.017	0.106	0.070	0.035	0.020
(17) beta_hml w	-0.124*	-0.129*	0.047	-0.127*	-0.127*	0.087	-0.094	-0.126*	0.118*	-0.006
(18) beta_smb w	-0.212*	-0.241*	-0.064	-0.162*	-0.216*	-0.004	-0.257*	-0.258*	-0.133*	-0.412*
(19) bhar w	-0.133*	-0.088	-0.062	-0.133*	-0.103	-0.012	-0.139*	-0.156*	0.017	0.046

TABLE 5 Fehler! Kein gültiges Resultat für Tabelle. – *Continued*

Variables	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) esg_14									
(2) es_14									
(3) cgs_14									
(4) esg_15									
(5) es_15									
(6) cgs_15									
(7) esg_16									
(8) es_16									
(9) cgs_16									
(10) sizew									
(11) ltd_atw	1.000								
(12) dlc_atw	-0.176*	1.000							
(13) cash_taw	-0.109	0.265*	1.000						
(14) profw	-0.009	0.273*	0.197*	1.000					
(15) beta_rmrw	-0.138*	0.017	0.072	0.021	1.000				
(16) beta_umd	-0.133*	0.130*	-0.036	0.272*	-0.055	1.000			
(17) beta_hmlw	-0.035	-0.143*	0.020	-0.204*	-0.060	0.224*	1.000		
(18) beta_smbw	-0.115	0.086	0.094	-0.052	0.570*	-0.318*	0.024	1.000	
(19) bharw	0.099	-0.210*	0.079	-0.200*	0.122*	-0.211*	0.249*	0.028	1.000

TABLE 6
Descriptive Statistics for DiD-Analysis

This table presents the descriptive statistics of ESG scores, explained, and explanatory variables for the DiD-regression for the period 2014 – 2018 for all firms (except financial firms) which are part of the UK ASSET4 universe as of 2014. Variables are defined in TABLE 1. Further note that tq2w denotes the Tobin's Q measure for the baseline analysis; tq1w an alternative used as a robustness test. Also, roa_netincw is the baseline ROA and roa_ebitw the robustness operating profitability measure. The prefix "lag" denotes the first lag of the respective variable. The suffix *w* shows winsorization at the 1% and 99% level. * in the correlation matrix denotes significance at the 0.01 level.

Panel A: Summary statistics										
Variables	Mean	St.Dev	min	max	p25	Median	p75	skewness	kurtosis	N
esg2014	71.628	22.934	3.31	96.37	55.68	80.125	90.575	-.918	2.858	1600
env2014	63.07	26.16	9.25	94.6	40.215	69.605	87.625	-.522	1.978	1600
soc2014	67.551	22.519	4.51	96.88	51.55	73.055	86.865	-.717	2.654	1600
es2014	65.31	22.71	8.145	95.295	48.222	69.265	85.213	-.579	2.311	1600
gov2014	80.382	14.155	3.53	97.15	75.28	84.805	90.035	-1.976	8.325	1600
tq1w	.588	.229	.079	1.297	.427	.582	.745	.33	3.447	1293
tq2w	.591	.228	.093	1.297	.434	.586	.745	.33	3.428	1293
sales_gw	.045	.164	-.516	.664	-.019	.039	.113	.181	7.027	1318
gmw	.425	.232	.016	.998	.242	.41	.582	.362	2.475	1321
zscorew	1.71	.992	-.699	4.904	1.077	1.608	2.241	.639	4.164	1292
s_cashw	.068	.078	-.1	.398	.024	.056	.095	1.377	6.722	1322
roew	.001	.012	-.057	.073	0	0	.001	1.679	25.205	1294
sales_pew	422.071	870.9	28.956	6647.93	121.75	194.388	366.201	5.575	37.355	1309
roa_netincw	.047	.101	-.422	.32	.017	.049	.092	-1.427	9.489	1323
roa_ebitw	.073	.109	-.392	.391	.035	.072	.126	-.873	7.67	1315
lagsizew	14.588	1.597	11.276	19.161	13.448	14.402	15.41	.644	3.204	1365
lagsales_gw	.037	.157	-.516	.664	-.024	.033	.106	-.023	6.851	1358
lagcapexpw	.044	.041	.001	.221	.015	.033	.059	1.776	6.889	1361
lagfabaw	.299	.25	.005	.892	.081	.232	.474	.738	2.414	1365
lagcash_taw	.109	.099	.004	.546	.041	.079	.138	1.991	7.801	1365
lagbleveragew	.489	.213	.041	1.14	.344	.488	.625	.261	3.238	1365
lagturnoverw	-3.179	.873	-8.051	-1.235	-3.488	-3.087	-2.712	-2.284	13.422	1307
lagroa_netincw	.047	.099	-.422	.32	.017	.05	.092	-1.346	9.239	1365
lagrdw	.015	.041	0	.244	0	0	.004	3.85	18.834	1361
lagadvertw	.174	.183	0	.723	0	.111	.288	.972	3.117	1361

TABLE 6 – Continued

Panel B: Pairwise correlations													
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) esg2014	1.000												

(2) env2014	0.861*	1.000												
(3) soc2014	0.852*	0.740*	1.000											
(4) es2014	0.918*	0.943*	0.922*	1.000										
(5) gov2014	0.629*	0.433*	0.474*	0.484*	1.000									
(6) tq1w	0.150*	0.161*	0.195*	0.189*	0.066	1.000								
(7) tq2w	0.154*	0.161*	0.196*	0.190*	0.069	0.998*	1.000							
(8) sales_gw	-0.047	-0.056	-0.063	-0.063	-0.074*	-0.067	-0.071	1.000						
(9) gmw	-0.194*	-0.229*	-0.193*	-0.227*	-0.144*	-0.147*	-0.142*	0.128*	1.000					
(10) acrec_sw	-0.047	-0.053	-0.060	-0.060	0.033	-0.014	-0.015	-0.045	0.101*	1.000				
(11) zscorew	0.048	0.027	-0.009	0.011	0.032	-0.143*	-0.148*	0.104*	-0.152*	-0.161*	1.000			
(12) s_cashw	-0.044	-0.045	-0.111*	-0.081*	-0.053	-0.093*	-0.093*	0.141*	0.364*	-0.070	0.444*	1.000		
(13) roew	0.116*	0.115*	0.098*	0.114*	-0.001	-0.045	-0.040	0.065	0.014	-0.040	0.077*	0.094*	1.000	
(14) sales_pew	0.009	0.009	-0.002	0.004	0.043	-0.107*	-0.108*	0.042	-0.002	-0.036	0.022	-0.005	0.161*	
(15) roa_netincw	0.048	0.019	-0.024	-0.001	-0.024	-0.069	-0.066	0.169*	0.216*	-0.108*	0.484*	0.558*	0.293*	
(16) roa_ebitw	0.031	-0.001	-0.025	-0.013	-0.038	-0.022	-0.018	0.164*	0.238*	-0.125*	0.501*	0.611*	0.266*	
(17) lagsizew	0.529*	0.486*	0.514*	0.534*	0.281*	0.157*	0.166*	-0.030	-0.075*	-0.061	-0.290*	-0.211*	0.175*	
(18) lagsales_gw	-0.022	-0.043	-0.060	-0.054	-0.059	-0.090*	-0.093*	0.348*	0.102*	-0.100*	0.171*	0.173*	0.090*	
(19) lagcapexpw	-0.043	-0.009	-0.026	-0.018	-0.042	-0.027	-0.018	-0.142*	0.111*	-0.163*	-0.071	0.010	-0.001	
(20) lagfabaw	-0.015	-0.017	0.083*	0.032	0.035	-0.038	-0.029	-0.091*	0.032	-0.273*	-0.244*	-0.190*	0.001	
(21) lagcash_taw	-0.228*	-0.205*	-0.201*	-0.218*	-0.112*	0.003	0.002	-0.013	0.140*	-0.015	0.121*	0.274*	-0.023	
(22) lagbleveragew	0.090*	0.089*	0.128*	0.115*	0.034	0.867*	0.862*	-0.031	-0.114*	-0.020	-0.025	-0.026	0.022	
(23) lagturnoverw	0.122*	0.109*	0.084*	0.104*	0.107*	-0.057	-0.062	0.007	0.024	0.048	0.014	0.010	-0.019	
(24) lagroa_netincw	0.049	0.007	-0.039	-0.015	-0.042	-0.028	-0.025	0.137*	0.212*	-0.065	0.432*	0.481*	0.093*	
(25) lagrdw	-0.011	0.026	-0.068	-0.019	-0.030	-0.098*	-0.102*	0.080*	0.322*	0.189*	-0.033	0.391*	-0.011	
(26) lagadvertisingw	-0.149*	-0.146*	-0.146*	-0.156*	-0.173*	-0.131*	-0.135*	0.132*	0.596*	0.094*	0.129*	0.329*	-0.020	

TABLE 6 – *Continued*

Variables	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
(1) esg2014													
(2) env2014													
(3) soc2014													
(4) es2014													
(5) gov2014													
(6) tq1w													
(7) tq2w													
(8) sales_gw													
(9) gmw													
(10) acrec_sw													
(11) zscorew													
(12) s_cashw													
(13) roew													
(14) sales_pew	1.000												
(15) roa_netincw	-0.016	1.000											
(16) roa_ebitw	-0.003	0.946*	1.000										
(17) lagsizew	0.278*	-0.100*	-0.130*	1.000									
(18) lagsales_gw	0.023	0.172*	0.194*	-0.009	1.000								
(19) lagcapexpw	0.137*	-0.065	-0.029	0.049	-0.114*	1.000							
(20) lagfabaw	0.141*	-0.151*	-0.118*	0.193*	-0.117*	0.602*	1.000						
(21) lagcash_taw	0.005	0.119*	0.137*	-0.193*	-0.037	0.018	-0.192*	1.000					
(22) lagbleveragew	-0.126*	0.126*	0.149*	0.070*	-0.073*	-0.102*	-0.133*	0.048	1.000				
(23) lagturnoverw	-0.009	-0.014	-0.027	0.064	0.027	-0.065	-0.108*	0.036	-0.026	1.000			
(24) lagroa_netincw	-0.021	0.522*	0.533*	-0.079*	0.223*	-0.073*	-0.151*	0.059	-0.006	-0.035	1.000		
(25) lagrdw	-0.059	0.045	0.032	-0.075*	0.085*	-0.152*	-0.243*	0.212*	-0.123*	0.042	0.060	1.000	
(26) lagadvertisingw	-0.152*	0.166*	0.167*	-0.226*	0.063	-0.052	-0.230*	0.235*	-0.065	0.011	0.175*	0.438*	1.000

TABLE 7

Pre-Trend Assumption Graphs For All Dependent Variables of the DiD-Models (Winsorization at 1% and 99% level) based on mean values of the tertiles.

Panel A: DiD-Models with ESG Scores

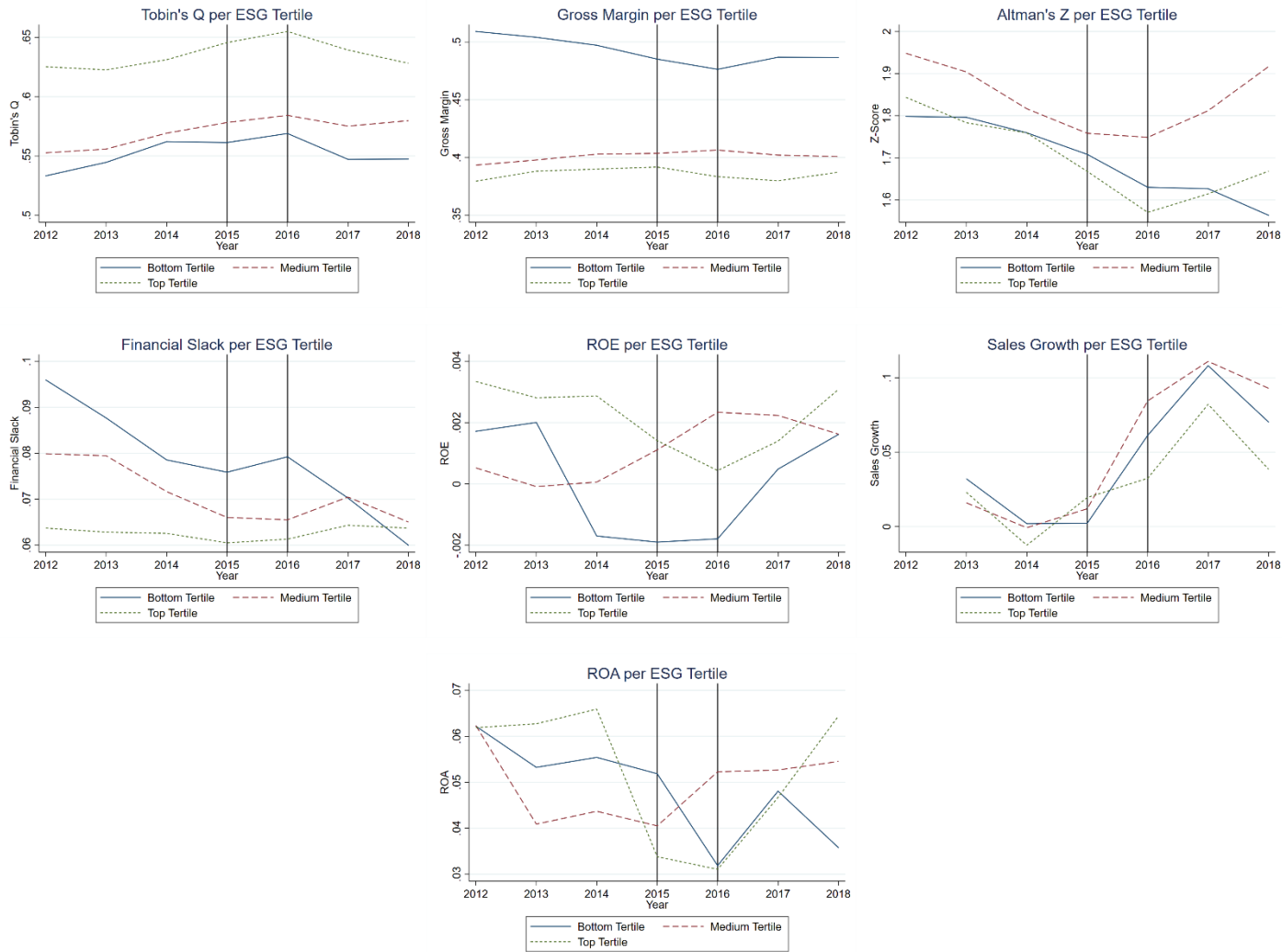


TABLE 7 – Continued

Panel B: DiD-Models with ES Scores

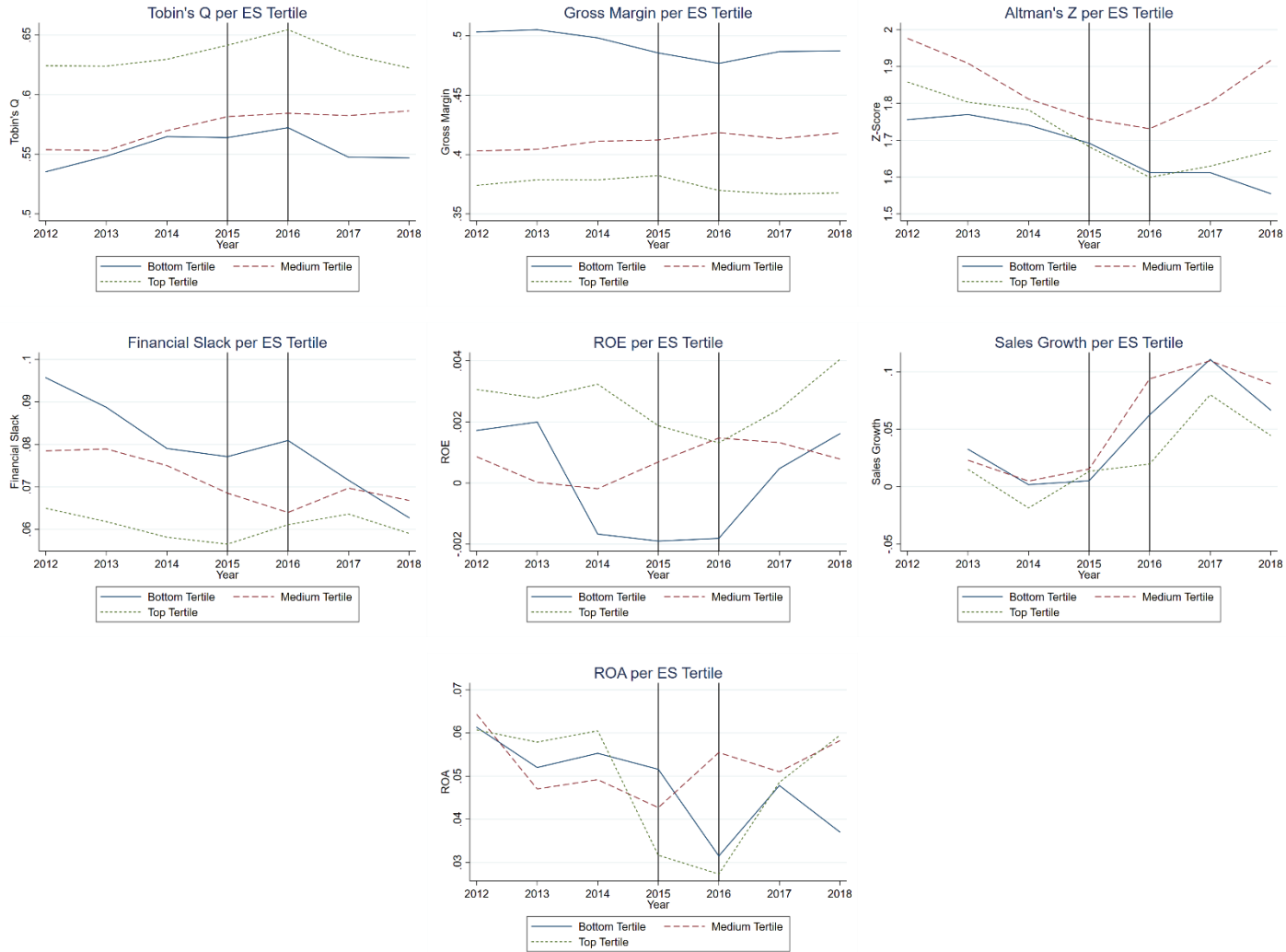


TABLE 7 – Continued

Panel C: DiD-Models with Governance Scores

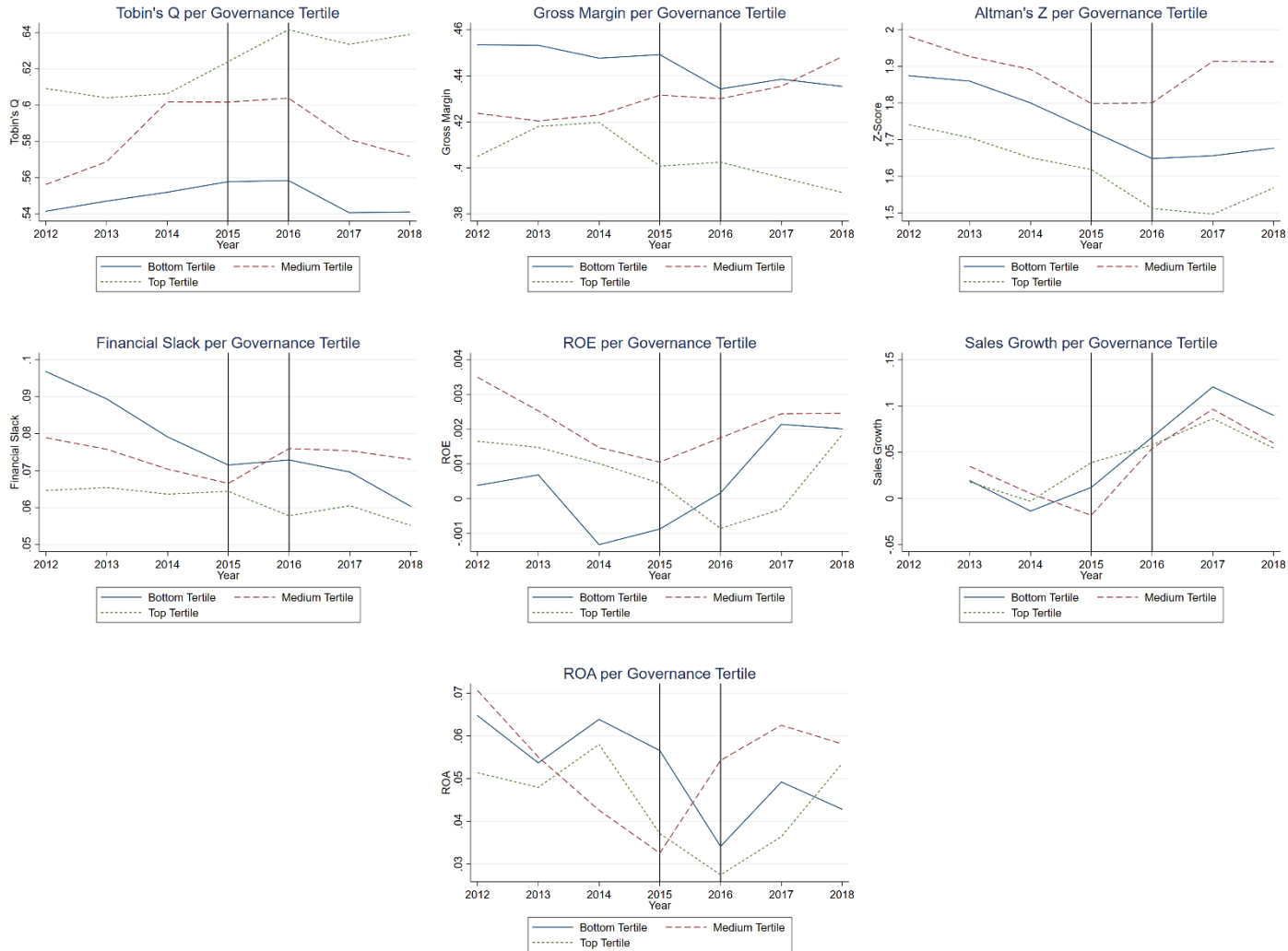


TABLE 8
Shock-Period Returns and Dummies for ESG Tertiles

Heteroskedasticity-consistent standard errors are presented in parentheses. The suffix q3 denotes the top, and q2 the medium tertile. ***, **, * indicate the estimated coefficient is significantly different from zero at the 0.01, 0.05, and 0.1 level respectively.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	bharw	bharw	bharw	bharw	bharw	bharw
esg_t3	-0.0681 (-1.56)			-0.1119* (-1.94)		
esg_t2	-0.0497 (-1.21)			-0.0762 (-1.61)		
es_t3		-0.0473 (-1.08)			-0.0701 (-1.24)	
es_t2		-0.0609 (-1.47)			-0.0805* (-1.70)	
gov_t3			-0.0654* (-1.74)			-0.0900** (-2.06)
gov_t2			-0.0121 (-0.31)			-0.0235 (-0.54)
sizew				0.0125 (0.71)	0.0031 (0.18)	0.0042 (0.28)
profw				-0.3079 (-1.16)	-0.3438 (-1.27)	-0.3586 (-1.30)
ltd_atw				0.1556 (1.24)	0.1681 (1.34)	0.1749 (1.44)
dlc_atw				-0.0850 (-0.53)	-0.1033 (-0.63)	-0.0722 (-0.44)
cash_taw				0.2556 (0.80)	0.2548 (0.79)	0.2887 (0.88)
beta_rmrw	0.0807*** (2.69)	0.0800*** (2.66)	0.0782*** (2.70)	0.0621* (1.80)	0.0637* (1.83)	0.0588* (1.74)
beta_umd	-0.1006*** (-2.91)	-0.1031*** (-3.01)	-0.1009*** (-2.99)	-0.0808** (-2.04)	-0.0841** (-2.15)	-0.0783** (-2.01)
beta_hmlw	0.0735*** (4.02)	0.0737*** (4.12)	0.0765*** (4.15)	0.0593*** (2.91)	0.0589*** (2.97)	0.0619*** (3.03)
beta_smbw	-0.0525* (-1.93)	-0.0511* (-1.86)	-0.0470* (-1.82)	-0.0430 (-1.35)	-0.0467 (-1.46)	-0.0393 (-1.25)
Constant	0.0223 (0.30)	0.0172 (0.22)	0.0294 (0.39)	-0.0897 (-0.35)	0.0385 (0.16)	0.0240 (0.11)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	308	308	308	267	267	267
R-squared	0.328	0.326	0.328	0.360	0.357	0.360

TABLE 9
Shock-Period Returns and Continuous ESG Scores as of 2015

This table presents regression estimates of shock-period returns (March to September 2016) on continuous ESG, ES, and Governance scores as of 2015 and control variables. Heteroskedasticity-consistent standard errors are presented in parentheses. ***, **, * indicate the estimated coefficient is significantly different from zero at the 0.01, 0.05, and 0.1 level respectively.

VARIABLES	(1) bharw	(2) bharw	(3) bharw	(4) bharw	(5) bharw	(6) bharw
esg_15	-0.0017 (-1.55)			-0.0024* (-1.85)		
es_15		-0.0017* (-1.77)			-0.0021* (-1.73)	
gov_15			-0.0011 (-0.94)			-0.0020 (-1.54)
sizew				0.0101 (0.63)	0.0081 (0.48)	-0.0004 (-0.02)
profw				-0.2737 (-1.03)	-0.3191 (-1.16)	-0.3346 (-1.21)
ltd_atw				0.1593 (1.28)	0.1678 (1.35)	0.1833 (1.48)
dlc_atw				-0.0798 (-0.49)	-0.0820 (-0.50)	-0.0914 (-0.55)
cash_taw				0.1926 (0.60)	0.2188 (0.68)	0.2717 (0.82)
beta_rmrfw	0.0801*** (2.63)	0.0802*** (2.64)	0.0744** (2.52)	0.0638* (1.85)	0.0638* (1.86)	0.0594* (1.72)
beta_umdw	-0.1088*** (-2.91)	-0.1093*** (-2.92)	-0.1079*** (-2.91)	-0.0847** (-2.17)	-0.0836** (-2.13)	-0.0820** (-2.11)
beta_hmlw	0.0746*** (3.96)	0.0742*** (3.97)	0.0786*** (4.19)	0.0569*** (2.82)	0.0573*** (2.86)	0.0609*** (3.05)
beta_smbw	-0.0555** (-2.00)	-0.0577** (-2.06)	-0.0477* (-1.76)	-0.0443 (-1.39)	-0.0465 (-1.48)	-0.0423 (-1.33)
Constant	0.1224 (1.28)	0.1073 (1.22)	0.1014 (0.91)	0.0637 (0.30)	0.0516 (0.23)	0.2039 (0.92)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	297	297	297	266	266	266
R-squared	0.332	0.333	0.326	0.362	0.360	0.357

TABLE 10
Shock-Period Returns and Continuous ESG Scores as of 2016

This table presents regression estimates of shock-period returns (March to September 2016) on continuous ESG, ES, and Governance scores as of 2016 and control variables. Heteroskedasticity-consistent standard errors are presented in parentheses. ***, **, * indicate the estimated coefficient is significantly different from zero at the 0.01, 0.05, and 0.1 level respectively.

VARIABLES	(1) bharw	(2) bharw	(3) bharw	(4) bharw	(5) bharw	(6) bharw
esg_16	-0.0028** (-2.02)			-0.0026* (-1.67)		
es_16		-0.0029** (-2.52)			-0.0031** (-2.29)	
gov_16			-0.0020 (-1.57)			-0.0015 (-1.01)
sizew				-0.0002 (-0.01)	0.0041 (0.25)	-0.0086 (-0.60)
profw				-0.3970 (-1.57)	-0.4210 (-1.65)	-0.4478* (-1.74)
ltd_atw				0.1765 (1.43)	0.1659 (1.35)	0.1870 (1.53)
dlc_atw				-0.1010 (-0.63)	-0.0955 (-0.60)	-0.1343 (-0.82)
cash_taw				0.2253 (0.69)	0.2214 (0.68)	0.3139 (0.93)
beta_rmrfw	0.0840*** (2.77)	0.0857*** (2.85)	0.0777*** (2.65)	0.0727** (2.12)	0.0750** (2.22)	0.0684** (2.03)
beta_umd	-0.1182*** (-3.16)	-0.1201*** (-3.21)	-0.1180*** (-3.18)	-0.0918** (-2.40)	-0.0942** (-2.44)	-0.0899** (-2.36)
beta_hmlw	0.0786*** (4.15)	0.0774*** (4.14)	0.0837*** (4.39)	0.0698*** (3.55)	0.0682*** (3.49)	0.0721*** (3.65)
beta_smbw	-0.0723** (-2.56)	-0.0743*** (-2.63)	-0.0621** (-2.30)	-0.0661** (-2.08)	-0.0673** (-2.13)	-0.0632** (-1.99)
	(1.56)	(1.57)	(1.11)	(0.97)	(0.70)	(1.13)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	283	283	283	257	257	257
R-squared	0.375	0.378	0.366	0.397	0.402	0.391

TABLE 11
Real Performance and CSR Surrounding the Brexit Referendum – ESG Scores as of 2015

This table presents regression outputs for real performance of UK firms surrounding the Brexit Referendum with ESG Scores as of 2015 included in the interaction terms. Real performance is captured on three levels: firm value (model (1)), operating performance (models (2) to (5)), and financial health (models (6) and (7)). Standard errors clustered at firm level are reported in parentheses. ***, **, * indicate the estimated coefficient is significantly different from zero at the 0.01, 0.05, and 0.1 level respectively.

Panel A: Effects of Composite ESG Scores as of 2015							
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	gmw	sales_gw	roa_netincw	roew	s_cashw	zscorew	tq2w
ibresg_15	0.0002 (0.34)	-0.0003 (-0.35)	0.0002 (0.36)	-0.0000 (-0.26)	-0.0000 (-0.12)	0.0005 (0.36)	-0.0000 (-0.02)
ipostesg_15	-0.0002 (-0.44)	-0.0011 (-1.46)	-0.0000 (-0.01)	-0.0001 (-1.31)	0.0000 (0.05)	0.0011 (0.77)	-0.0004 (-1.08)
lagsizew	-0.0272* (-1.77)	-0.0980*** (-2.91)	-0.0684*** (-4.81)	-0.0006 (-0.30)	-0.0453*** (-5.22)	-0.1267* (-1.71)	-0.0002 (-0.01)
lagcapexpw	0.0588 (0.45)	-1.7087*** (-5.72)	-0.2598** (-2.01)	-0.0194 (-1.12)	-0.0962 (-1.05)	-1.7263*** (-2.70)	0.3084** (2.03)
lagfabaw	0.0388 (0.49)	0.1414 (0.84)	0.0097 (0.12)	0.0046 (0.25)	-0.0711* (-1.66)	0.5447 (1.60)	0.0332 (0.37)
lagcash_taw	0.0539 (0.92)	-0.1420 (-0.86)	0.0984 (1.65)	0.0114 (1.35)	-0.0041 (-0.09)	0.2911 (0.71)	0.0421 (0.51)
lagbleveragew	-0.0410 (-0.74)	0.0823 (0.83)	0.1140** (2.44)	0.0027 (0.25)	-0.0472 (-1.63)	-0.2035 (-1.10)	0.3039*** (5.62)
lagrdw	-0.7873 (-1.42)	-0.4527 (-0.54)	-0.0040 (-0.02)	0.0332 (1.55)	-0.0838 (-0.32)	0.3695 (0.25)	-0.1958 (-0.59)
lagadvertisingw	0.0824 (0.75)	0.3521*** (2.87)	0.0040 (0.05)	-0.0077 (-1.06)	-0.0223 (-0.66)	-0.1206 (-0.48)	-0.0081 (-0.14)
turnoverw				-0.0029* (-1.73)			-0.0031 (-0.26)
lagroa_netincw	0.0664 (1.40)	0.0839 (0.83)		-0.0020 (-0.35)	0.0494** (2.23)	0.5673*** (2.91)	-0.0805 (-1.44)
lagsales_gw	0.0723*** (3.07)		0.0440* (1.66)	0.0054 (1.16)	0.0324** (2.41)	0.2701*** (3.22)	0.0008 (0.03)
Constant	0.8076*** (3.56)	1.3775*** (2.65)	0.9918*** (4.68)	-0.0027 (-0.09)	0.7770*** (6.01)	3.5949*** (3.24)	0.4183 (1.44)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,310	1,313	1,309	1,256	1,308	1,278	1,255
R-squared	0.047	0.162	0.097	0.036	0.088	0.124	0.116
Firms included	283	284	283	274	283	278	274

TABLE 11 – *Continued*

Panel B: Effects of Composite ES Scores as of 2015							
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	gmw	sales gw	roa netincw	roew	s cashw	zscorew	tq2w
ibres_15	0.0001 (0.27)	-0.0004 (-0.63)	0.0001 (0.42)	-0.0000 (-0.08)	0.0001 (0.48)	0.0011 (0.84)	0.0001 (0.21)
ipostes_15	-0.0001 (-0.15)	-0.0006 (-0.90)	0.0001 (0.40)	-0.0001 (-1.13)	0.0002 (1.05)	0.0020 (1.40)	-0.0003 (-0.78)
lagsizew	-0.0271* (-1.74)	-0.0985*** (-2.90)	-0.0681*** (-4.74)	-0.0008 (-0.38)	-0.0448*** (-5.21)	-0.1228* (-1.67)	-0.0010 (-0.05)
lagcapexpw	0.0633 (0.48)	-1.6990*** (-5.64)	-0.2575** (-1.99)	-0.0186 (-1.09)	-0.0958 (-1.05)	-1.7259*** (-2.72)	0.3112** (2.05)
lagfabaw	0.0413 (0.52)	0.1518 (0.90)	0.0115 (0.14)	0.0052 (0.28)	-0.0671 (-1.58)	0.5619* (1.68)	0.0355 (0.39)
lagcash_taw	0.0507 (0.86)	-0.1545 (-0.93)	0.0954 (1.62)	0.0101 (1.32)	-0.0081 (-0.18)	0.2634 (0.65)	0.0373 (0.45)
lagbleveragew	-0.0419 (-0.75)	0.0799 (0.80)	0.1132** (2.42)	0.0025 (0.23)	-0.0487* (-1.67)	-0.2136 (-1.16)	0.3032*** (5.62)
lagrdw	-0.8107 (-1.42)	-0.5088 (-0.59)	-0.0169 (-0.06)	0.0265 (1.36)	-0.0916 (-0.34)	0.3305 (0.23)	-0.2246 (-0.67)
lagadvertisingw	0.0827 (0.74)	0.3531*** (2.87)	0.0049 (0.06)	-0.0074 (-1.02)	-0.0204 (-0.61)	-0.1115 (-0.45)	-0.0063 (-0.11)
turnoverw				-0.0029* (-1.72)			-0.0030 (-0.26)
lagroa_netincw	0.0653 (1.36)	0.0813 (0.80)		-0.0019 (-0.34)	0.0488** (2.20)	0.5630*** (2.93)	-0.0794 (-1.42)
lagsales_gw	0.0733*** (3.05)		0.0443* (1.66)	0.0056 (1.21)	0.0326** (2.43)	0.2695*** (3.21)	0.0018 (0.07)
Constant	0.8067*** (3.53)	1.3843*** (2.64)	0.9864*** (4.63)	-0.0003 (-0.01)	0.7698*** (6.00)	3.5400*** (3.21)	0.4292 (1.45)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,310	1,313	1,309	1,256	1,308	1,278	1,255
R-squared	0.045	0.159	0.097	0.032	0.090	0.128	0.115
Firms included	283	284	283	274	283	278	274

TABLE 11 – *Continued*

Panel C: Effects of Governance ESG Scores as of 2015							
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	gmw	sales gw	roa netincw	roew	s cashw	zscorew	tq2w
ibrgov_15	0.0002 (0.37)	0.0005 (0.65)	0.0002 (0.52)	-0.0001 (-1.20)	-0.0002 (-0.55)	0.0007 (0.46)	-0.0002 (-0.59)
ipostgov_15	0.0002 (0.44)	-0.0006 (-0.76)	0.0001 (0.16)	-0.0001 (-0.99)	-0.0003 (-1.20)	-0.0001 (-0.07)	-0.0004 (-0.96)
lagsizew	-0.0263 (-1.62)	-0.0990*** (-2.93)	-0.0681*** (-4.68)	-0.0008 (-0.42)	-0.0463*** (-5.31)	-0.1261* (-1.71)	-0.0019 (-0.10)
lagcapexpw	0.0737 (0.53)	-1.7247*** (-5.63)	-0.2555** (-1.99)	-0.0199 (-1.10)	-0.1078 (-1.16)	-1.7478*** (-2.69)	0.2996* (1.95)
lagfabaw	0.0455 (0.59)	0.1511 (0.88)	0.0094 (0.11)	0.0050 (0.26)	-0.0756* (-1.84)	0.5209 (1.52)	0.0304 (0.34)
lagcash_taw	0.0466 (0.80)	-0.1705 (-1.03)	0.0963 (1.65)	0.0090 (1.21)	-0.0021 (-0.05)	0.3259 (0.79)	0.0325 (0.39)
lagbleveragew	-0.0433 (-0.78)	0.0752 (0.75)	0.1136** (2.43)	0.0023 (0.21)	-0.0462 (-1.61)	-0.1955 (-1.07)	0.3025*** (5.57)
lagrdw	-0.8192 (-1.45)	-0.4812 (-0.56)	-0.0074 (-0.03)	0.0238 (1.30)	-0.0699 (-0.27)	0.5187 (0.36)	-0.2210 (-0.67)
lagadvertisingw	0.0829 (0.75)	0.3628*** (2.83)	0.0040 (0.05)	-0.0074 (-1.03)	-0.0228 (-0.69)	-0.1270 (-0.51)	-0.0068 (-0.12)
turnoverw				-0.0030* (-1.75)			-0.0036 (-0.30)
lagroa_netincw	0.0637 (1.35)	0.0840 (0.83)		-0.0025 (-0.43)	0.0504** (2.27)	0.5720*** (2.93)	-0.0819 (-1.45)
lagsales_gw	0.0739*** (3.00)		0.0445* (1.66)	0.0058 (1.22)	0.0324** (2.44)	0.2668*** (3.16)	0.0033 (0.13)
Constant	0.7940*** (3.32)	1.3951*** (2.67)	0.9880*** (4.56)	0.0012 (0.04)	0.7930*** (6.09)	3.5860*** (3.24)	0.4446 (1.48)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,310	1,313	1,309	1,256	1,308	1,278	1,255
R-squared	0.045	0.159	0.097	0.031	0.090	0.123	0.115
Firms included	283	284	283	274	283	278	274

TABLE 12
Real Performance and CSR Surrounding the Brexit Referendum – ESG Scores as of 2016

This table presents regression outputs for real performance of UK firms surrounding the Brexit Referendum with ESG Scores as of 2016 included in the interaction terms. Real performance is captured on three levels: firm value (model (1)), operating performance (models (2) to (5)), and financial health (models (6) and (7)). Standard errors clustered at firm level are reported in parentheses. ***, **, * indicate the estimated coefficient is significantly different from zero at the 0.01, 0.05, and 0.1 level respectively.

Panel A: Effects of Composite ESG Scores as of 2016							
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	gmw	sales_gw	roa_netincw	roew	s_cashw	zscorew	tq2w
ibresg_16	0.0005 (1.05)	0.0002 (0.23)	0.0006 (1.47)	-0.0000 (-0.18)	-0.0001 (-0.48)	0.0012 (0.98)	-0.0003 (-0.96)
ipostesg_16	0.0001 (0.17)	-0.0010 (-1.10)	0.0001 (0.28)	-0.0001 (-1.39)	-0.0001 (-0.56)	0.0020 (1.16)	-0.0006 (-1.53)
lagsizew	-0.0274* (-1.81)	-0.0969*** (-2.90)	-0.0690*** (-4.90)	-0.0005 (-0.26)	-0.0452*** (-5.23)	-0.1301* (-1.75)	0.0008 (0.04)
lagcapexpw	0.0612 (0.47)	-1.7014*** (-5.68)	-0.2614** (-2.02)	-0.0182 (-1.05)	-0.0965 (-1.06)	-1.7424*** (-2.74)	0.3172** (2.07)
lagfabaw	0.0425 (0.52)	0.1414 (0.84)	0.0119 (0.14)	0.0039 (0.21)	-0.0740* (-1.75)	0.5619* (1.69)	0.0271 (0.30)
lagcash_taw	0.0466 (0.79)	-0.1541 (-0.91)	0.0956 (1.65)	0.0108 (1.33)	-0.0017 (-0.04)	0.2770 (0.67)	0.0442 (0.53)
lagbleveragew	-0.0434 (-0.78)	0.0790 (0.79)	0.1121** (2.41)	0.0025 (0.23)	-0.0464 (-1.63)	-0.2058 (-1.13)	0.3041*** (5.65)
lagrdw	-0.8110 (-1.43)	-0.4498 (-0.53)	-0.0068 (-0.03)	0.0353 (1.57)	-0.0719 (-0.27)	0.2758 (0.19)	-0.1774 (-0.54)
lagadvertisingw	0.0866 (0.80)	0.3520*** (2.87)	0.0072 (0.10)	-0.0083 (-1.11)	-0.0242 (-0.71)	-0.1028 (-0.42)	-0.0143 (-0.25)
turnoverw				-0.0029* (-1.69)			-0.0032 (-0.27)
lagroa_netincw	0.0677 (1.41)	0.0896 (0.87)		-0.0013 (-0.24)	0.0498** (2.25)	0.5632*** (2.92)	-0.0799 (-1.43)
lagsales_gw	0.0726*** (3.04)		0.0439 (1.63)	0.0054 (1.17)	0.0320** (2.40)	0.2712*** (3.22)	0.0009 (0.04)
Constant	0.8103*** (3.66)	1.3634*** (2.64)	0.9996*** (4.77)	-0.0033 (-0.11)	0.7757*** (6.04)	3.6407*** (3.28)	0.4045 (1.40)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,310	1,313	1,309	1,256	1,308	1,278	1,255
R-squared	0.048	0.161	0.100	0.036	0.089	0.126	0.117
Firms included	283	284	283	274	283	278	274

TABLE 12 – *Continued*

Panel B: Effects of Composite ES Scores as of 2016							
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	gmw	sales_gw	roa_netincw	roew	s_cashw	zscorew	tq2w
ibres_16	0.0002 (0.52)	-0.0005 (-0.82)	0.0002 (0.49)	-0.0000 (-0.23)	-0.0000 (-0.12)	0.0011 (0.94)	-0.0001 (-0.22)
ipostes_16	-0.0000 (-0.02)	-0.0007 (-0.98)	0.0001 (0.25)	-0.0001 (-1.25)	0.0001 (0.37)	0.0019 (1.25)	-0.0003 (-0.89)
lagsizew	-0.0272* (-1.79)	-0.0974*** (-2.90)	-0.0685*** (-4.84)	-0.0007 (-0.33)	-0.0452*** (-5.22)	-0.1269* (-1.72)	-0.0005 (-0.03)
lagcapexpw	0.0637 (0.48)	-1.6915*** (-5.63)	-0.2591** (-2.00)	-0.0176 (-1.03)	-0.0968 (-1.06)	-1.7510*** (-2.76)	0.3173** (2.08)
lagfabaw	0.0418 (0.52)	0.1510 (0.89)	0.0108 (0.13)	0.0050 (0.27)	-0.0698* (-1.66)	0.5559* (1.65)	0.0338 (0.38)
lagcash_taw	0.0488 (0.83)	-0.1544 (-0.92)	0.0960 (1.62)	0.0100 (1.31)	-0.0052 (-0.12)	0.2734 (0.67)	0.0367 (0.44)
lagbleveragew	-0.0424 (-0.75)	0.0798 (0.80)	0.1133** (2.42)	0.0024 (0.22)	-0.0477 (-1.65)	-0.2096 (-1.15)	0.3030*** (5.62)
lagrdw	-0.8138 (-1.43)	-0.4969 (-0.58)	-0.0161 (-0.06)	0.0278 (1.40)	-0.0863 (-0.32)	0.3214 (0.22)	-0.2182 (-0.66)
lagadvertisingw	0.0833 (0.76)	0.3507*** (2.83)	0.0046 (0.06)	-0.0077 (-1.06)	-0.0217 (-0.64)	-0.1083 (-0.44)	-0.0090 (-0.16)
turnoverw				-0.0029* (-1.71)			-0.0033 (-0.27)
lagroa_netincw	0.0660 (1.39)	0.0783 (0.77)		-0.0020 (-0.36)	0.0489** (2.20)	0.5692*** (2.92)	-0.0811 (-1.45)
lagsales_gw	0.0731*** (3.07)		0.0444* (1.67)	0.0055 (1.19)	0.0326** (2.43)	0.2721*** (3.23)	0.0014 (0.06)
Constant	0.8075*** (3.62)	1.3683*** (2.64)	0.9924*** (4.72)	-0.0015 (-0.05)	0.7757*** (6.02)	3.5992*** (3.25)	0.4222 (1.44)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,310	1,313	1,309	1,256	1,308	1,278	1,255
R-squared	0.045	0.159	0.097	0.032	0.089	0.126	0.115
Firms included	283	284	283	274	283	278	274

TABLE 12 – *Continued*

Panel C: Effects of Governance Scores as of 2016							
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	gmw	sales_gw	roa_netincw	roew	s_cashw	zscorew	tq2w
ibrgov_16	0.0005 (1.15)	0.0009 (1.62)	0.0004 (1.26)	-0.0000 (-0.99)	-0.0003 (-1.00)	0.0005 (0.44)	-0.0004 (-1.14)
ipostgov_16	0.0005 (1.57)	0.0001 (0.09)	0.0001 (0.35)	-0.0000 (-0.34)	-0.0003* (-1.68)	0.0001 (0.03)	-0.0006 (-1.13)
lagsizew	-0.0257* (-1.68)	-0.0967*** (-2.88)	-0.0682*** (-4.74)	-0.0007 (-0.34)	-0.0463*** (-5.37)	-0.1257* (-1.70)	-0.0019 (-0.10)
lagcapexpw	0.0776 (0.58)	-1.6952*** (-5.58)	-0.2557** (-1.99)	-0.0181 (-1.02)	-0.1059 (-1.15)	-1.7409*** (-2.71)	0.3064** (2.03)
lagfabaw	0.0476 (0.62)	0.1579 (0.92)	0.0078 (0.09)	0.0061 (0.32)	-0.0751* (-1.85)	0.5216 (1.54)	0.0298 (0.32)
lagcash_taw	0.0430 (0.73)	-0.1774 (-1.07)	0.0935 (1.61)	0.0086 (1.17)	-0.0010 (-0.02)	0.3244 (0.79)	0.0334 (0.40)
lagbleveragew	-0.0431 (-0.78)	0.0741 (0.74)	0.1130** (2.42)	0.0020 (0.18)	-0.0467 (-1.63)	-0.1952 (-1.06)	0.3018*** (5.58)
lagrdw	-0.8497 (-1.46)	-0.5433 (-0.62)	-0.0186 (-0.07)	0.0233 (1.21)	-0.0571 (-0.22)	0.4850 (0.34)	-0.2063 (-0.63)
lagadvertisingw	0.0876 (0.80)	0.3648*** (2.87)	0.0059 (0.08)	-0.0075 (-1.04)	-0.0257 (-0.78)	-0.1275 (-0.51)	-0.0116 (-0.21)
turnoverw				-0.0030* (-1.75)			-0.0037 (-0.31)
lagroa_netincw	0.0649 (1.41)	0.0856 (0.84)		-0.0027 (-0.47)	0.0497** (2.24)	0.5728*** (2.93)	-0.0830 (-1.47)
lagsales_gw	0.0737*** (3.02)		0.0448* (1.67)	0.0058 (1.22)	0.0325** (2.45)	0.2661*** (3.15)	0.0035 (0.14)
Constant	0.7841*** (3.50)	1.3598*** (2.62)	0.9895*** (4.62)	-0.0014 (-0.04)	0.7923*** (6.16)	3.5806*** (3.23)	0.4439 (1.49)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,310	1,313	1,309	1,256	1,308	1,278	1,255
R-squared	0.048	0.159	0.098	0.029	0.092	0.123	0.116
Firms included	283	284	283	274	283	278	274

Propensity Score Matching in Stata

```
1  ***Stata Commands for Propensity Score Matching
2
3  *Installation of psmatch2
4  ssc install psmatch2
5
6  *First step: estimation of logit regression with dummy variable for treatment/control group as dependent and covariates as independent variables
7  logit desgl4 lnmcap icb_group
8
9  *Prediction of propensity scores
10 predict pscore, pr
11
12 *Distribution of propensity scores across treatment and control group before matching
13 graph tw kdensity pscore if desgl4==0 || kdensity pscore if desgl4==1
14
15 *PSM nearest-neighbour with one neighbour and replacement (default), caliper of 0.01, and common support
16 psmatch2 desgl4, p(pscore) neighbor(1) caliper(0.01) common
17
18 *Test if matching was successful: difference in covariates between groups should be insignificant and bias should be below 5%
19 ptest lnmcap icb_group, treated(_treated) summary both
20
21 *Distribution of propensity scores across treatment and control group after matching -> should be similar
22 sum _weight
23 gen match=_nl
24 replace match=_id if match==.
25 duplicates tag match, gen(dup)
26 twoway (kdensity _pscore if _treated==1) (kdensity _pscore if _treated==0 & dup>0, lpattern(dash)), legend( label( 1 "treated") label( 2 "control" ) ) xtitle("propensity score")
27
28
```


Estimation of Factor Loading

```
29 use 190805_cross-sec_data_ff-factors, clear
30
31 preserve
32
33 gen time=_n
34
35
36
37 ***Step 1: Calculate returns
38
39 foreach var of varlist bmg0440ml284 bmg196f11004 bmg4593f1389 bmg5361w1047 ca8936621066 ch0198251305 de000tuag000 de000tuag265 es01775:
40     gen `var'lr=ln(`var'[_n]/`var'[_n-1])
41 }
42
43 ***Step 2: For firms without any stock prices reported: replace missing value with 0
44 *this is done to ensure that the loop for estimating the loadings is not interrupted
45
46 foreach var of varlist gb00053526781r gb00b459sm731r gb00bf50ps231r gb00bkj9qy331r gb00blnn31441r gb00bw9hgs541r gb00byphd1511r gb00by:
47     replace `var'=0 if `var'==.
48 }
49
50
51 ***Step 2: Transform actual returns into excess returns
52
53 foreach var of varlist bmg0440ml284lr bmg196f11004lr bmg4593f1389lr bmg5361w1047lr ca8936621066lr ch0198251305lr de000tuag000lr de000tu:
54     replace `var'=`var'-rf
55 }
56
57 tempname betas
58 postfile `betas' beta_c beta_rmf beta_umd beta_hml beta_smb using "\\cfs\users\oh31\Documents\01_dissertation\d_returns_cross_sec\DATA"
59 foreach y of varlist bmg0440ml284lr bmg196f11004lr bmg4593f1389lr bmg5361w1047lr ca8936621066lr ch0198251305lr de000tuag000lr de000tuag:
60     regress `y' rmf umd hml smb
61     scalar beta_c=_b[_cons]
62     scalar beta_rmf=_b[rmf]
63     scalar beta_umd=_b[umd]
64     scalar beta_hml=_b[hml]
65     scalar beta_smb=_b[smb]
66     post `betas' (beta_c) (beta_rmf) (beta_umd) (beta_hml) (beta_smb)
67 }
68 postclose `betas'
69
70 drop smb hml umd rf rm rmf
71 xpose, clear varname // Transpose data to cross sectional
72
73 restore
74
```