A. Appendix

A.1 Materiality Guidance of the Sustainability Accounting Standards Board (SASB)

The SASB was one of the first to develop guidance on the materiality of ESG investments. It is an independent (non-profit) standards-setting organisation, which strives to enhance capital markets efficiency by developing guidance for the disclosure of material ESG information.[1] In general, SASB considers four crucial aspects in its standards- setting process: First, it takes on the perspective of an investor; second, it bases its guidance on evidence from research; third, it considers market aspects; and last, it focuses on materiality.

By March 2018, guidance from the SASB covers 79 industries across 11 sectors. The standardssetting process of SASB includes evidence-based research, quantitative data analysis, a public comment period, and the inclusion of various stakeholder groups. The Sector Advisory Groups are such stakeholders that comprise volunteering industry experts and advise the SASB in different stages of the standards development process. In addition, Industry Working Groups comment on the guidance developed by SASB in a later stage of the standards development process.

SASB explicitly focuses on a shareholder perspective and thus differs fundamentally from other standards-setting organisations. For instance, the Global Reporting Initiative (GRI) develops sustainability reporting standards that follow a much broader, multistakeholder approach, which is rooted in the public interest.[2] The GRI also expresses this in its mission statement, which is "to empower decisions that create social, environmental and economic benefits for everyone."

The guidance on materiality by SASB determines whether a firm's performance on a given ESG topic has an influence on firm value and thus potentially affects investors' decisions. If information about ESG issues potentially affects an investor's investment (or voting) decision, it is likely to be material according to the SASB. More specifically, the SASB follows the definition of material information by the US Supreme Court. According to this definition, material information represents "a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the 'total mix' of information made available."[3]

Khan et al. (2016) provide a detailed explanation of SASB's standards development process and the guidance on materiality. Extensive information is also available via the SASB website (www.sasb.org). Therefore, we refrain from presenting every detail once again and invite the interested reader to consult the relevant sources. Nevertheless, we make use of the guidance on materiality provided by SASB.[4]

1 More information on SASB via: www.sasb.org.
2 More information on GRI via: www.globalreporting.org.
3 TSC Industries v. Northway, 426, US 438, 449 (1976). Available via: https://supreme.justia.com/cases/federal/us/426/438/case.html
4 The SASB kindly provided the materiality data under an academic license agreement.

A.2. Yearly Sample Distribution

Table A.1: Number of Observations per Industry and Year

Year	# of Industries	# of Observations
2005	23	374
2006	25	403
2007	25	434
2008	26	473
2009	27	508
2010	27	536
2011	27	542
2012	27	542
2013	27	542
2014	27	540
2015	27	541
2016	27	539
Total		5,974

A.3 Overview of the TR ESG Score Recalculation Procedure

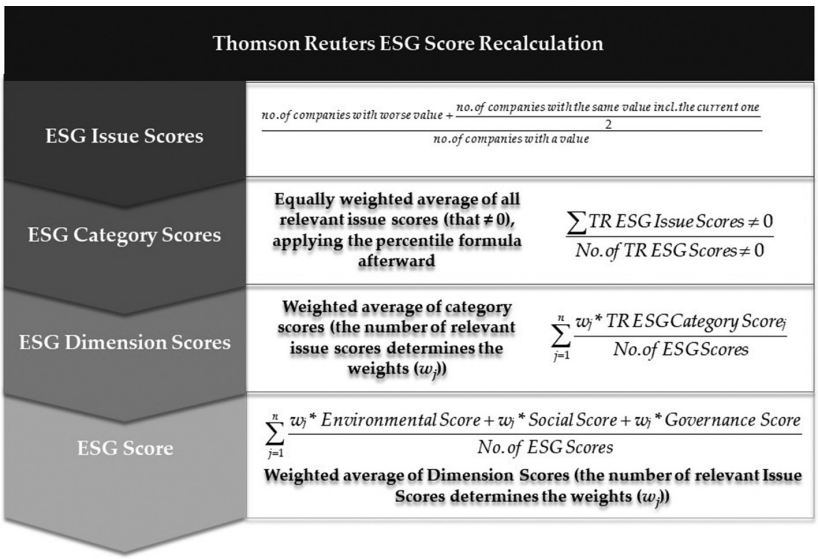

Figure A.1: Step-by-Step Calculation of TR ESG Scores

A.4 Derivation of the Modified Accruals Quality Model (AQM)

The modified accruals quality model (AQM) consists of three parts. First, it measures normal accruals by relating total current accruals (TCA) to operating cash flows ($CFO_{j,t-1}$/$CFO_{j,t}$/$CFO_{j,t+1}$). Second, it measures abnormal accruals by two variables from the modified Jones model (Dechow et al., 1995; Jones, 1991; McNichols, 2002): change in revenue (DREV) and Property, Plant, and Equipment (PPE). Third, it includes prior-year ROA to control for the effect of performance on abnormal accruals (Kim et al., 2012; Kothari et al., 2005).

The modified AQM looks as follows:[5]

$$\frac{TCA_{j,t}}{A_{j,t-1}} = \alpha_0 + \beta_1 \frac{CFO_{j,t-1}}{A_{j,t-2}} + \beta_2 \frac{CFO_{j,t}}{A_{j,t-1}} + \beta_3 \frac{CFO_{j,t+1}}{A_{j,t}} + \beta_4 \frac{DREV_{j,t}}{A_{j,t-1}} + \beta_5 \frac{PPE_{j,t}}{A_{j,t-1}}$$

$$+\beta_6 ROA_{j,t-1} + \varepsilon_{j,t} \qquad \text{(A.1)}$$

where:

$TCA_{j,t}$ is firm j 's total current accruals, calculated as $DCA_{j,t} - DCL_{j,t} - DCash_{j,t} +$

$DSTDEBT_{j,t}$

$A_{j,t}$ is a firm j 's total assets in year t

$DCA_{j,t}$ is firm j 's change in current assets between the last (t–1) and the current (t) year

$DCL_{j,t}$ is firm j 's change in current liabilities between the last (t–1) and the current

(t) year

$DCash_{j,t}$ is firm j 's change in cash between the last (t–1) and the current (t) year

$DSTDEBT_{j,t}$ is firm j 's change in debt in current liabilities between the last (t–1) and the current (t) year

$CFO_{j,t-1}$ is firm j 's operating cash flow in year t–1

$CFO_{j,t}$ is firm j 's operating cash flow in year t

$CFOj, t + 1$ is firm j 's operating cash flow in year t+1

$DREV_{j,t}$ is firm j 's change in revenue between the last (t–1) and the current (t) year

$PPE_{j,t}$ is firm j 's value of PPE in year t

$ROA_{j,t-1}$ is firm j 's industry-adjusted return on assets in year t–1

5 All variables are scaled by lagged total average assets, except for return on assets (ROA). By nature, ROA is already a scaled variable.

The main dependent variable of interest, year- and firm-specific accruals quality (AQ), is calculated by the absolute yearly value of firm j's residuals from the cross-sectional regressions of the modified AQM on industry-level including country fixed-effects (Kim et al., 2012; Kothari et al., 2005). Including country fixed-effects was necessary to account for differences in financial reporting and regulatory standards between the 24 European countries in which the sample firms of this study have their headquarter. The higher the absolute value of the residuals, the lower the accruals quality and the more likely that firm *j* is subject to earnings management.

A.5 Derivation of the Real Earnings Management (REM) Models

This sub-section describes three proxies for real earnings management (REM) initially proposed by Roychowdhury (2006): abnormal operating cash flow (ACFO), abnormal production cost (APROD), and abnormal discretionary expense (ADIEXP). Roychowdhury (2006) models abnormal operating cash flow (ACFO) by taking the residuals from regressing sales and change in sales on the actual operating cash flow:[6]

$$\frac{CFO_{j,t}}{A_{j,t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{j,t-1}} + \beta_1 \frac{S_{j,t}}{A_{j,t-1}} + \beta_2 \frac{DS_{j,t}}{A_{j,t-1}} + \varepsilon_t \tag{A.2}$$

where:

$CFO_{j,t}$ is a firm *j* 's operating cash flow in year t

$A_{j,t-1}$ is a firm *j* 's total assets in year t–1

$S_{j,t}$ is a firm *j* 's sales in year t

D$S_{j,t}$ is a firm *j* 's change in sales from year t–1 to year t

Abnormal production cost (APROD) was considered as another proxy for earnings management. Following Cohen et al. (2008), Kim et al. (2012), Roychowdhury (2006), and Zang (2012), this study defined production costs as the sum of cost of goods sold in year t (COGS$_t$) and change in inventory in year t (DINV$_t$). Abnormal production costs were estimated by running the following industry-year regression and taking the residuals from the model (ε_t) as the appropriate measure for abnormal production cost (APROD) (Roychowdhury, 2006).

$$\frac{PROD_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \beta_1 \frac{S_t}{A_{t-1}} + \beta_2 \frac{DS_t}{A_{t-1}} + \beta_3 \frac{S_{t-1}}{A_{t-1}} + \varepsilon_t \tag{A.3}$$

6 All variables are scaled by lagged total assets. In line with Roychowdhury (2006), the models include a scaled intercept ($\alpha_1(1/A_{j,t-1})$). This inclusion is necessary to avoid spurious correlation between the scaled dependent and independent variables due to variation in the scaling variable (i. e., total assets).

Finally, abnormal discretionary expense (ADIEXP) was considered as another proxy for earnings management. This study followed Cohen et al. (2008), Kim et al. (2012), Roychowdhury (2006), and Zang (2012) to calculate abnormal discretionary expense (ADIEXP) as follows (again, the residuals (ε_t) from the model measure ADIEXP):

$$\frac{DIEXP_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \beta_1 \frac{S_{t-1}}{A_{t-1}} + \varepsilon_t \tag{A.4}$$

A.6 Interpretation of the Accruals Quality Proxy

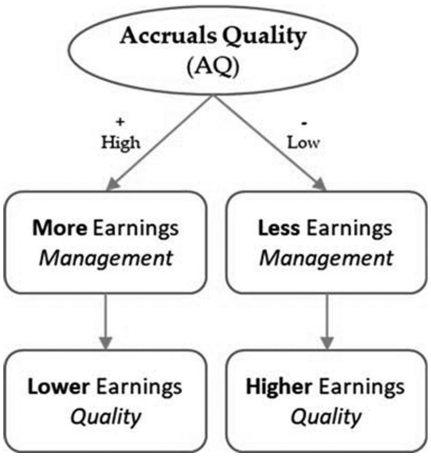

Figure A.2: Interpreting the Sign of Accruals Quality

A.7 Interpretation of the Real Earnings Management Proxies

Figure A.3: Interpreting the Sign of Real Earnings Management

Figure A.4: Interpreting the Sign of Real Earnings Management (2)

A.8 Additional Analyses using Positive and Negative AQ

Table A.2: Multiple Regression of Positive and Negative AQ on Material and Non-Material CSP

Independent Variables	(1) Positive AQ	(2) Positive AQ	(3) Negative AQ	(4) Negative AQ
Material CSP	–0.023 (–0.136)		0.050*** (3.59)	
Non-Material CSP		–0.024 (–1.27)		0.025 (1.41)
Control Variables				
COMBREM	0.099*** (7.90)	0.099*** (7.99)	0.031*** (2.96)	0.030*** (2.87)
WorkingCapital	0.181*** (7.53)	0.181*** (7.50)	0.027 (1.29)	0.027 (1.29)
RDActivities	0.573*** (5.35)	0.579*** (5.39)	–0.495*** (–3.58)	–0.482*** (–3.43)
CGScore	0.005 (0.36)	0.005 (0.36)	–0.009 (–0.70)	–0.008 (–0.65)
Age	–0.000*** (–4.37)	–0.000*** (–4.35)	0.000** (2.06)	0.000** (2.19)
PriceEarnings	–0.000 (–0.35)	–0.000 (–0.39)	–0.000 (–0.61)	–0.000 (–0.52)
MKTB	0.004*** (3.99)	0.004*** (3.95)	0.003** (2.40)	0.003** (2.34)
ROA	0.390*** (6.82)	0.391*** (6.84)	0.099 (1.80)	0.107 (1.94)
Leverage	0.022 (0.96)	0.022 (0.98)	–0.027 (–1.20)	–0.030 (–1.31)
EOIndicator	–0.022*** (–2.65)	–0.022*** (–2.68)	0.009 (1.55)	0.009 (1.49)
Country FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Constant	–0.105*** (–3.42)	–0.103*** (–3.37)	–0.228 (–1.87)	–0.229 (–1.88)
Observations	3462	3462	1886	1886
Adjusted R2	0.26	0.26	0.19	0.19

Table A.8 shows coefficients for the multiple regressions of Positive AQ and Negative AQ (=sub- samples) on Material CSP and Non-Material CSP. t statistics in parentheses. ** $p < 0.05$, *** $p < 0.01$. All specifications include country and industry fixed-effects. For variable descriptions, see Table 1