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Article

Determinants and Capital Market Consequences of Net Zero Targets

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Online-Appendix zu

„Determinants and Capital Market Consequences of Net Zero Targets”

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Appendix

Appendix 1: Sample selection process

Step	Exclusions	Observations
<i>Climate targets under focus:</i>		
	Priority	
<ul style="list-style-type: none"> • Net zero target with focus beyond 2020 • Carbon neutral target with focus beyond 2020 	1	180
<ul style="list-style-type: none"> • SBTi Business Ambition (1.5°C trajectory across all scopes) aligned target with focus beyond 2020 (Status: approved) 	2	6
		186
<i>Sample (1) for determinants of voluntary CSR disclosure analysis (Determinants model)</i>		
Total number of identified targets		186
Exclusion of observations due to missing information for certain variables	-17	
		169
<i>Sample (2.1) for investors' CSR awareness analysis (Event study)</i>		
Total number of identified targets		186
Exclusion of observations due to "non-isolated" content	-63	
Exclusion of observations due lack of available stock price history	-1	
		122
<i>Sample (2.2) for investors' CSR awareness analysis (Regression)</i>		
Total number of identified targets		186
Exclusion of observations due to "non-isolated" content	-63	
Exclusion of observations due lack of available stock price history	-1	
Exclusion of observation due to missing information for certain variables	-2	
Exclusion of observations due to due to two parallel target announcements	-1	
		119

Table notes: This table describes the sample selection process for both parts of analysis.

Appendix 2: Identifier of announcement indicators

Indicator	Categorization	Identifier
Timeframe	Long-term (2036 to 2050)	A year or a range of years within the defined timeframe is mentioned. For SBTi targets qualified as net zero targets without an exact target timeframe, a long-term net zero goal by 2050 is assumed.
	Medium-term (2026 to 2035)	A year or a range of years within the defined timeframe is mentioned.
	Short-term (up to 2025)	A year or a range of years within the defined timeframe is mentioned.
Scope coverage	Not applicable	-
	Part of scopes	This level of commitment applies if not all scopes of emissions are targeted. Potential keywords: own operations, company-wide
	All scopes (1,2,3)	It must either be explicitly stated that all scopes of emissions (i.e., 1,2,3) are covered by the target or it must be possible to draw a conclusion from the context. SBTi targets qualified as net zero targets are assumed to cover all scopes of emission in the long run. Potential keywords: value chain, supply chain
Interim targets	No	-
	Yes	An interim target is defined by a clearly specified amount of emissions which are to be reduced as well as by a concrete target date. Thereby, the actual level of ambition is irrelevant. (e.g., 50% of Scope 1 emissions by 2030)
Reporting process ¹	No	-
	Yes	It has to be stated that reporting / disclosure activities are planned. Thereby, the actual time schedule is irrelevant.
Third party involvement	No	-
	Yes	By context it should be possible to conclude the partnership with external parties as part of the climate strategy. These could, for example, support the target setting, validation, reporting, or realization process, respectively. Potential third parties are SBTi, TCFD, The Fashion Pact, etc..
Capital allocation	No	-
	Yes	It has to be stated that a certain amount of money will be used for implementing the climate strategy (or certain actions related to it). Thereby, the actual amount is irrelevant.
Climate government	No	-
	Board member	At least one C-suite executive is linked to the pledged climate target within the announcement. This can be done by an explicit assignment of responsibility, or a quoted statement of that person related to the goal.
	Sustainability related person	A person specialized on corporate sustainability / corporate social responsibility (e.g., chief sustainability officer (CSO)) or a sustainability steering committee is linked to the pledged climate target within the announcement. This

¹Although the SBTi Target Validation Protocol (SBTi 2020b, 54) describes in its validation criteria for targets to be approved an obligation of annual reporting it is assumed that an average investor does not know these details of the validation process.

		can be done by an explicit assignment of responsibility, or a quoted statement of that person related to the goal.
	CEO + Sustainability related person	In addition to the foregoing level of commitment the CEO of the company is linked to the pledged climate target within the announcement. This can be done by an explicit assignment of responsibility, or a quoted statement of that person related to the goal.
Past activities reference	No	-
	Yes	Foregoing climate protection achievements / targets need to be specified with numbers. Potential forms of achievements are steps towards a transition of 100% renewable energy or specified emission reductions. Thereby, the level of ambition is irrelevant.
Length	Word count < 300 (short)	The word count starts with the sub-headlines and ends before general information about the company or obligatory comments on forward looking announcements begin.
	300 < Word count < 400 (medium)	
	Word count > 400 (long)	
Headline conciseness	No	-
	Yes	The keywords “net zero” or “carbon neutral” have to be named within the main headline. For SBTi targets qualified as net zero targets the “Science Based Targets initiative” or “SBTi” has to be mentioned.

Table notes: This table describes the identifiers used to classify announcement indicators by their categories.

Appendix 3: Environmental Pillar Score - Score Range (Refinitiv)

Score range	Description	
0 to 25	First Quartile	Scores within this range indicates poor relative ESG performance and insufficient degree of transparency in reporting material ESG data publicly.
> 25 to 50	Second Quartile	Scores within this range indicates satisfactory relative ESG performance and moderate degree of transparency in reporting material ESG data publicly.
> 50 to 75	Third Quartile	Scores within this range indicates good relative ESG performance and above average degree of transparency in reporting material ESG data publicly.
> 75 to 100	Fourth Quartile	Score within this range indicates excellent relative ESG performance and high degree of transparency in reporting material ESG data publicly.

Table notes: This table presents the score ranges of Refinitiv's Environmental Pillar Score to compare companies' environmental performances.

Appendix 4: Summary of hypotheses and results

	Hypothesis:	Result:
Part 1	H1a: There is a significant relationship between country profile and net zero pledges.	confirmed
	H1b: There is a positive significant relationship between an industry’s environmental impact and net zero pledges.	confirmed
	H1c: There is a positive significant relationship between firm size and net zero pledges.	confirmed
	H1d: There is a significant relationship between leverage and net zero pledges.	rejected
	H1e: There is a significant relationship between profitability and net zero pledges.	rejected
	H1f: There is a positive significant relationship between innovation and net zero pledges.	confirmed
	H1g: There is a significant relationship between financial constraints and net zero pledges.	confirmed
	H1h: There is a positive significant relationship between board size and net zero targets.	confirmed
	H1i: There is a positive significant relationship between the proportion of non-executive board members and net zero pledges.	rejected
	H1j: There is a negative significant relationship between ownership concentration and net zero pledges.	rejected
	H1k: There is a positive significant relationship between governmental stockholdings and net zero pledges.	rejected
H1l: There is a positive significant relationship between the environmental score and net zero pledges.	confirmed	
Part 2	H2a: Investors are aware of net zero targets and react negatively upon their announcement.	confirmed
	H2b: Announcement characteristics, especially content characteristics related to the net zero targets, affect investors’ reactions significantly.	rejected

Table notes: This table presents all hypotheses tested as well as the corresponding results derived.

Appendix 5: Sample distribution per indicator (regression specification)

Dichotomous indicators								
	Scope coverage		Interim targets	Reporting process	Third party involvement	Capital allocation	Past activities reference	Headline conciseness
Part of	70 (58.82%)	No	51 (42.86%)	73 (61.34%)	24 (20.17%)	87 (73.11%)	39 (32.77%)	38 (31.93%)
All	49 (41.18%)	yes	68 (57.14%)	46 (38.66%)	95 (79.83%)	32 (26.89%)	80 (67.23%)	81 (68.07%)
Sum	119		119	119	119	119	119	119

Categorical indicators					
	Timeframe		Climate government		Length
Long-term	81 (68.07%)	No	5 (4.20%)	Short	7 (5.88%)
Medium-term	29 (24.37%)	C-suite executive	73 (61.34%)	medium	24 (20.17%)
Short-term	9 (7.56%)	Sust. rel. person	14 (11.76%)	Long	88 (73.95%)
		CEO + Sust. rel. person	27 (22.69%)		
Sum	119		119		119

Table notes: This table presents the distribution of the sample for the regression specification along the indicators included in the ESG score.

Appendix 6: Regression coefficients in multiple linear regression on indicator level

Dependent variable cumulative_abnormal_return	ESG score indicators Coef. / t-stat	Variable definition
time_2	-0.666 (-0.54)	Dummy variable for medium-term targets (reference: long-term)
time_3	-0.492 (-0.26)	Dummy variable for short-term targets (reference: long-term)
interim_targets_num	0.583 (0.66)	Dummy variable for establishment of interim targets (yes: 1; no: 0)
report_process_num	-0.038 (-0.04)	Dummy variable for establishment of a reporting process (yes: 1; no: 0)
scope_2	0.311 (0.34)	Dummy variable for coverage of all scopes (reference: part of scopes / not applicable)
third_party_num	-0.011 (-0.01)	Dummy variable for third-party involvement (yes: 1; no: 0)
cap_alloc_num	-0.265 (-0.25)	Dummy variable for capital allocation (yes: 1; no: 0)
gov_2	-1.430 (-0.68)	Dummy variable for government by C-suite executive (reference: no government)
gov_3	-2.351 (-0.97)	Dummy variable for government by sustainability related person (reference: no government)
gov_4	-1.450 (-0.67)	Dummy variable for government by CEO + Sust. related person (reference: no government)
past_act_num	-0.048 (-0.05)	Dummy variable for past activities reference (yes: 1; no: 0)
length_2	-0.231 (-0.12)	Dummy variable for medium announcement length (reference: short)
length_3	0.856 (0.49)	Dummy variable for long announcement length (reference: short)
ann_h	0.233 (0.21)	Dummy variable for headline conciseness (yes: 1; no: 0)
Constant	-0.312 (-0.13)	
N	119	
adjusted R ²	-0.092	

Table notes: This table shows the coefficients and t-statistics when including the ESG score indicators as variables in the multiple linear regression model estimating the cumulative abnormal return upon a net zero target announcement. Variable definitions are given accordingly. Chapter **Error! Reference source not found.** defines all ESG score indicators. The dependent variable of the model are winsorized at the 1st and 99th percentiles. The model is performed with robust standard errors. *, **, *** indicate statistical significance at the 10, 5, 1% level, respectively.

References

SBTi. 2020b. Target validation protocol. TWF-PRO-002 / version 2. Available at: <https://cutt.ly/sOF1JR9>. Accessed February 06, 2022.