

Shareholder Sustainability Engagements in AGMs

Anne Lafarre

Christoph Van der Elst

Draft version May 2022

Do not circulate or distribute without the authors' consent

1. Introduction

“CalPERS withholding votes for two Berkshire directors over climate change” were the headlines of CNBC before the AGM of 29 April 2022 of the US multinational holding company Berkshire Hathaway.¹ It followed the launch of four shareholder proposals of which not less than three were specifically aiming at sustainability issues. The first proposal was launched by a number of institutional investors requesting Berkshire Hathaway to “an annual assessment addressing how the Company manages physical and transitional climate-related risks and opportunities”, the second issued by a representative of a shareholders’ association promoting environmental and corporate responsibility for an individual shareholder to “report, at reasonable cost and omitting proprietary information, addressing if and how it intends to measure, disclose, and reduce the GHG emissions associated with its underwriting, insuring, and investment activities, in alignment with the Paris Agreement’s 1.5°C goal, requiring net zero emissions”, and the third proposal pitched by the same shareholders’ association for a Trust and a College also pitching for a “report to shareholders on the outcomes of their diversity, equity, and inclusion efforts by publishing quantitative data on workforce composition, and recruitment, retention, and promotion rates of employees by gender, race, and ethnicity”. All three shareholder proposals received approximately 26% support, remarkably high when considering that three board members, rejecting the proposals, hold more than 35% of the total votes and more than likely the majority of the attending votes. The voting of the proposals preceded over four hours of questioning the chairman, Warren Buffett and the vice chairman of the board of directors, Charles Munger.² The course of affairs at Berkshire’s general meeting perfectly illustrates two important shareholder engagement techniques to bring about change in a company: launching shareholder proposals and

¹ See <https://www.cnbc.com/2022/04/29/berkshire-hathaways-annual-meeting-is-here-what-to-expect-from-warren-buffett-and-charlie-munger.html>, accessed at 6 May 2022.

² The AGM 2022 of Berkshire Hathaway can be seen at CNBC: <https://www.cnbc.com/brklive22/>, accessed at 13 May 2022.

questioning the board. While the former received considerable attention over the last years, the latter has not, despite being an important shareholder tool. This paper is the first to empirically assess the impact of shareholders questioning the board of directors on corporate sustainability matters. We use the Dutch situation as a case study to investigate shareholder questions, related answers, and their effects. Following a provision in the Dutch Corporate Governance Code, virtually all Dutch companies disclose detailed minutes of the general meetings, providing a unique possibility to study shareholder activism during these meetings using text analysis techniques.

Our results show that different types of shareholders increasingly use their question right for shareholder engagement related to sustainability matters. Most questions are asked by shareholder associations, but also retail shareholders, institutional investors and social activists use this shareholder tool. Using topic modeling, we find nine topics of sustainability questions that were asked during a sample of Dutch annual general meetings ('AGMs') over a 2015-2021 period, including human rights in Global Value Chains (GVCs), resource use, and emission reduction. Using various Refinitiv ESG scores as the dependent variables in panel data regression models, we find some strong indications that shareholder questions have a positive impact on corporate sustainability conduct.

The remainder of this paper is organized as follows. Section 2 discusses related literature and introduces the methodology. Section 3 provides qualitative insights in the natural language processing (NLP) techniques and findings. Section 4 uses the findings of the third section to assess the effects of shareholder questions in a quantitative framework. Section 5 concludes the study.

2. Related Literature

Our work relates to several strands of the literature, including papers that explore the role and functioning of the AGM and how shareholders vote; the interactions of shareholders with portfolio companies, and a broad range of studies related to corporate sustainability (or ESG) and corporate sustainability engagement.

The ownership of publicly traded companies has changed significantly in recent decades. Institutional investors became the most important class of shareholders in many companies. Therefore, it is no surprise that the engagements of this type of shareholders with their portfolio companies is studied intensively. There are, however, a number of other shareholder types that are often overlooked. These shareholders include for instance retail investors, social activists, and shareholder associations. Particularly about the latter category there are not many studies, whereas they may play an important role in shareholder stewardship. Following collective action theory it can be difficult and costly for a small individual shareholder to influence corporate behavior. Economic theory suggests that small shareholder engagement can suffer from rational apathy and free-rider problems (Easterbrook and Fischel 1991). In Europe, shareholder associations – that are often organized as registered non-profit organizations and funded by their membership fees (Strätling 2012) – overcome collective action problems through advocating the collective interests of their (institutional) members and private investors and use voice on their behalf (e.g. Hopt, 2011; on German shareholder associations: Strätling, 2012).

Approximately four decades ago, shareholder activism took off as a natural spin-off of corporate control contests, resulting in the adoption of anti-takeover provisions (Denes et al., 2017). However, some shareholders were long before that era actively influencing the behavior of their portfolio companies (Wells, 2021). Following the work of Albert Hirschman that has often been applied to shareholder choices and actions in company law, institutional investors

have generally two ways for influencing decision-making within a company and steering it in the direction of sustainability: voice and (the threat of) exit (Hirschman, 1970). Shareholders can either motivate the corporate management to establish change directly, or vote with their feet and leave the company, impacting corporate management conduct indirectly. The first option, voice, has become a powerful tool for those shareholders who are able to engage in long-term coordinated actions to influence companies on sustainability matters (Dimson et al., 2021). Some authors have shown that voice is a more effective tool for establishing change than exit (for instance, Broccardo et al., 2020). Whereas the effects of voice are direct, exit may have an indirect influence on sustainable corporate decision-making via its negative effect on stock pricing, although this effect is rather limited (Broccardo et al., 2020). The major disadvantage of using exit as a tool to establish change is the loss of shareholder voice rights to influence the company's sustainability conduct directly. Therefore, scholars generally agree that in many situations, voice as a direct strategy is the preferred one to foster corporate change, including stimulating corporate sustainability (Pacces, 2021).

Shareholders have different formal and informal voice tools that they can use to monitor and enhance the corporate sustainability conduct of companies. These include formal shareholder rights like voting rights and shareholder proposal rights (Grewal et al., 2016; Lee and Lounsbury 2011), question rights (Lafarre and Van der Elst, 2020), but also private engagement behind the scenes (McCahery et al., 2016; Barko et al., 2021). Many scholars have described shareholder (hedge fund) activism in the US context, through activism campaigns and proxy contests, including its effects (for instance, Gillan and Starks, 2007; Brav et al., 2008).

Especially in the US, launching a shareholder proposal is relatively easy and does not require large financial investments of a shareholder in the portfolio company: a minimum market value of \$2,000 was sufficient, although recently Rule 14a-8 has significantly amended

making it harder for small shareholders making use of the shareholder proposal mechanism (Cox and Thomas, 2021). Between 2005 and 2018, the US S&P 1500 companies received every year between 450 and 630 shareholder proposals, of which about 20-30% are related to sustainability issues (Kastiel and Nili, 2021). The study of Papadopoulos covering the entire US market found that regularly more than 1,000 proposals were filed, the large bulk being governance proposals, in 2017 overtaken by environmental and governance proposals (Papadopoulos, 2019). Especially shareholders of S&P 500 companies are active ‘filers’: between 73% and 84% of all proposals are filed in these companies. Papadopoulos (2019) finds that a significant number of proposals gained more than 50% support, especially those that strengthen shareholder rights. In contrast, in Europe, shareholder proposals are not often used for corporate sustainability purposes, also due to high ownership thresholds and other legal requirements in many jurisdictions (Lafarre and Van der Elst, 2019, also see Reuters, 2022).

In the past, particularly corporate sustainability shareholder proposals received low support rates (Proffitt and Spicer, 2006) and, due to their non-binding nature, have been regarded as weak tools for establishing corporate change (Levit and Malenko, 2011; Semenova, 2021). More recent studies, however, show increased support by institutional investors (Gerber et al., 2021; Quinson, 2021) for corporate sustainability proposals, also driven by their domicile (Bauer et al., 2022), and positive effects on corporate sustainability, signaling their importance (Lee and Lounsbury, 2011; Bauer et al., 2015; Grewal et al., 2016). Grewal et al. (2016) find CSR-related shareholder proposals that are financially material have an impact on the issue at stake, even when these proposals do not receive majority support. Bauer et al. (2015) even conclude that also withdrawn proposals can be successful as corporate managers enter into private negotiations with the sponsors of these proposals, which is also confirmed by Dyck et al. (2019). Although there is evidence that some institutional investors are increasingly (co-)filing climate-related shareholder proposals at individual companies (see

for instance several of the flagged Climate Action 100+ proposals, and the blocked climate shareholder proposal from MN Services by TotalEnergies at the 2022 AGM (Reuters, 2022), most investors will evaluate and respond to CSR proposals by others (Gordon, 2021).

In addition to using voting rights and shareholder proposals, in many jurisdictions, (larger) (institutional) shareholders can engage with companies “behind the scenes”. Evidence shows that engagement behind the scenes is preferred by a large majority of the institutional investors, and many of these investors hold an informal meeting with the corporate management of their investee companies at least once a year (McCahery et al., 2016). Also systemic and anecdotal evidence from other jurisdictions shows that this engagement technique is frequently used for corporate sustainability purposes and highlights its effectiveness (Dimson et al., 2015; Barko et al., 2021).

While institutional investors, hedge funds and major shareholders have the (financial) resources to actively participate behind the scenes and use shareholder proposals and proxy battles, shareholder types such as private shareholders and shareholder associations often do not have this opportunity. These shareholders, however, can use the shareholder question right as an alternative shareholder tool for shareholder engagement: the simple approach of raising questions to the board, especially during the general meeting of shareholders (e.g., ShareAction 2016).³

Details of shareholder proposals are readily available, but information on the type and quantity of shareholder questions is very scarce. However, it is clear from webcasts that shareholders of companies in these jurisdictions often do raise questions at the meeting. The 2020 US Berkshire Hathaway AGM, which was broadcast online, showed that Warren Buffett,

³ For instance, ShareAction indicates in its 2016 Annual Review that it “has supported 102 different people to ask 121 questions at 84 AGMs. And the movement keeps growing” in 2016 (p.24).

the company's legendary CEO and chairman of the board, received over 2500 remarks and questions as soon as he opened the 'virtual' floor for questions.

In some jurisdictions, the Q&A session is considered the most important part of the meeting, at least in terms of the amount of time spent on it. Especially in Italy and the Netherlands, but also in France and Denmark, a long list of questions is addressed during the meeting and many shareholders take the floor to challenge the board with their questions. It is not uncommon to find in the minutes of the meetings over 100 questions raised by shareholders, as occurred in the 2020 meeting of the French company TotalEnergies (Van der Elst, 2022). A similar picture emerges from a number of Dutch meetings (Lafarre and Van der Elst, 2019). This trend has resulted in further coordination guidelines to structure the process of the meeting, including the limitation of the speaking time of the shareholders or the number of questions that each shareholder can raise or the eligibility requirements a shareholder must fulfil to be allowed to take the floor.⁴

Different types of shareholders make use of their question rights. According to the study of engagement in Denmark (Birkmose and Sorensen, 2022) and the Netherlands (Lafarre and Van der Elst, 2019), questions are raised by individual shareholders and shareholder associations, as well as by lobby groups that strive to corporate sustainability goals. Particularly, these different types of shareholders ask a wide variety of questions (Lafarre and Van der Elst, 2019) which are often company-specific and technical or rather general and only loosely related to the company's business affairs (Van der Elst, 2022).

Finally, for the sake of completeness, it should be noted that there are also a number of jurisdiction specific instruments of shareholder engagement that we did not address in this

⁴ See for an example, the rules of UniCredit, 'One Bank, One Team, One UniCredit' <www.unicreditgroup.eu/content/dam/unicreditgroup-eu/documents/en/governance/shareholders-meetings/meeting-regulations/Regulations%20Governing%20General%20Meetings.pdf>, accessed 22 March 2022.

section. One example is the slate voting system in Italy. This system encourages large shareholders to put forward a list of candidates for the board of directors and the statutory auditors, and smaller activist shareholders also can make use of this instrument.

3. Analysis of Corporate Sustainability Questions

In this section, we apply natural language processing (NLP) techniques to the questions in the sample. Simply put, NLP is the application of computational techniques to the analysis of natural language, including text data. NLP allows us to analyze and understand the natural language data in the questions and answers in our research sample using quantitative methods. This section continues as follows. In the next section, we provide information about our research sample of questions and answers and briefly explain how we pre-process these data. Afterwards, in section 3.2, we use the Latent Dirichlet Allocation (LDA) topic modeling algorithm to model the topics of the questions. Finally, we explore the sentiment of the questions and answers in our sample in section 3.3.

3.1. Sample Information and Preprocessing

It is common practice of Dutch companies to disclose the AGM minutes on the corporate websites. In this way companies comply with Principle 4.1.10 of the Dutch Corporate Governance Code (DCGC) 2016. We gathered an unbalanced sample of 230 AGM meeting minutes of Dutch large cap and midcap companies over the 2015-2021 period. From these meeting minutes, we filtered all questions and related answers that are related to corporate sustainability. Following Sjøfjell (2019), we defined sustainability as environmental sustainability (ensuring the long-term stability and resilience of the ecosystems that support human life, including matters like climate change, circularity, biodiversity, etc.) and social sustainability (facilitating the respect and promotion of human rights and other basic social

rights, including matters like fundamental labour rights, diversity, grievance mechanisms, etc.). In addition, there are sustainability questions that are overarching in nature, for example about the SDGs or non-financial information disclosure. From the 230 meeting documents, we found 1,047 corporate sustainability questions and 952 related answers.⁵ As some of the meeting documents were in Dutch, we translated all questions into English. Table 1 shows the sample information, including the average number of corporate sustainability questions per year and the shareholder types that asked these questions. The average number of corporate sustainability questions has increased from around 4 in 2015-2018 to over 6 in 2021.

Table 1. Sample information

Year	# Companies	# CS Questions	# Answers
2015	30	128 (4.27)	120 (4.00)
2016	29	117 (4.03)	105 (3.62)
2017	29	114 (3.93)	113 (3.90)
2018	31	118 (3.81)	103 (3.23)
2019	36	170 (4.72)	150 (4.17)
2020	39	189 (4.85)	171 (4.39)
2021	34	211 (6.21)	190 (5.59)
Shareholder types		Number of questions in sample	
Institutional investors		126	12.03%
Retail shareholders		99	9.46%
VBDO		733	70.01%
VEB		48	4.58%
NGOs		18	1.72%
Other		6	0.57%
Unknown		17	1.62%

Note to Table: the table shows the number of companies in the sample and the number of corporate sustainability questions and answers per year. The average number of questions and answers per AGM per year is in brackets.

Table 1 shows that over 70 per cent of the questions in our sample stems from VBDO, which is a Dutch shareholder association of sustainable development.⁶ In contrast to other shareholder tools like engagement behind the scenes, retail shareholders and institutional investors use the question right about as equally often for sustainability matters.

⁵ Some questions were not answered, whereas the answers to some other questions were bundled.

⁶ VBDO describes itself and its mission as follows: “The VBDO is convinced that a more sustainable and responsible capital market leads to a healthier and more just world. As an independent association, we are a passionate driver, motivator and knowledge leader for responsible investment and have been anchoring sustainability in companies since 1995. VBDO helps organizations from a standpoint of respect and expertise in making choices that look beyond financial gain, but also consider social, environmental and governance aspects.” See <https://www.vbdo.nl/en/about-vbdo/> (accessed May, 2022).

Next, to further analyze the sustainability questions as a means for shareholder engagement, the questions were preprocessed following standard practice in natural language processing (NLP) including the removal of stop words, punctuation white spaces, the conversion of upper to lower case, and the application of stemming using Porter’s method. We also removed the years, the company names, and the names of the speakers that were either representing a shareholder or a company (being a board member). Note that the names of (private) shareholders were kept. Table 2 shows the descriptive statistics for the corpus of sustainability questions.

Table 2. Corpus of Corporate Sustainability Questions

Sample	Raw	Pre-processed
Total	66,815	39,439
Mean	63.82	37.67
Median	54	31
SD	46.47	28.10

Note to Table: the table shows the total number of tokens of all 1,047 questions, and the mean, median and standard deviation of the tokens per question.

The most frequent words in the preprocessed corpus of corporate sustainability questions are: “annual”, “compani”, “develop”, “doe”, “like”, “polici”, “report”, “sustain”, “target”, and “vbdo”. The most frequent bigrams (consisting of terms with two words) are displayed in Table 3.

Table 3. Most Frequent Bigrams

Bigram	Frequency
annual report	199
associ investor	63
climat chang	149
devel goal	72
goal sdgs	33
human right	112
investor sustain	64
like know	38
live wage	164
provid insight	39
suppli chain	86
sustain develop	144
vbdo compliment	44
vbdo like	68
work condit	53

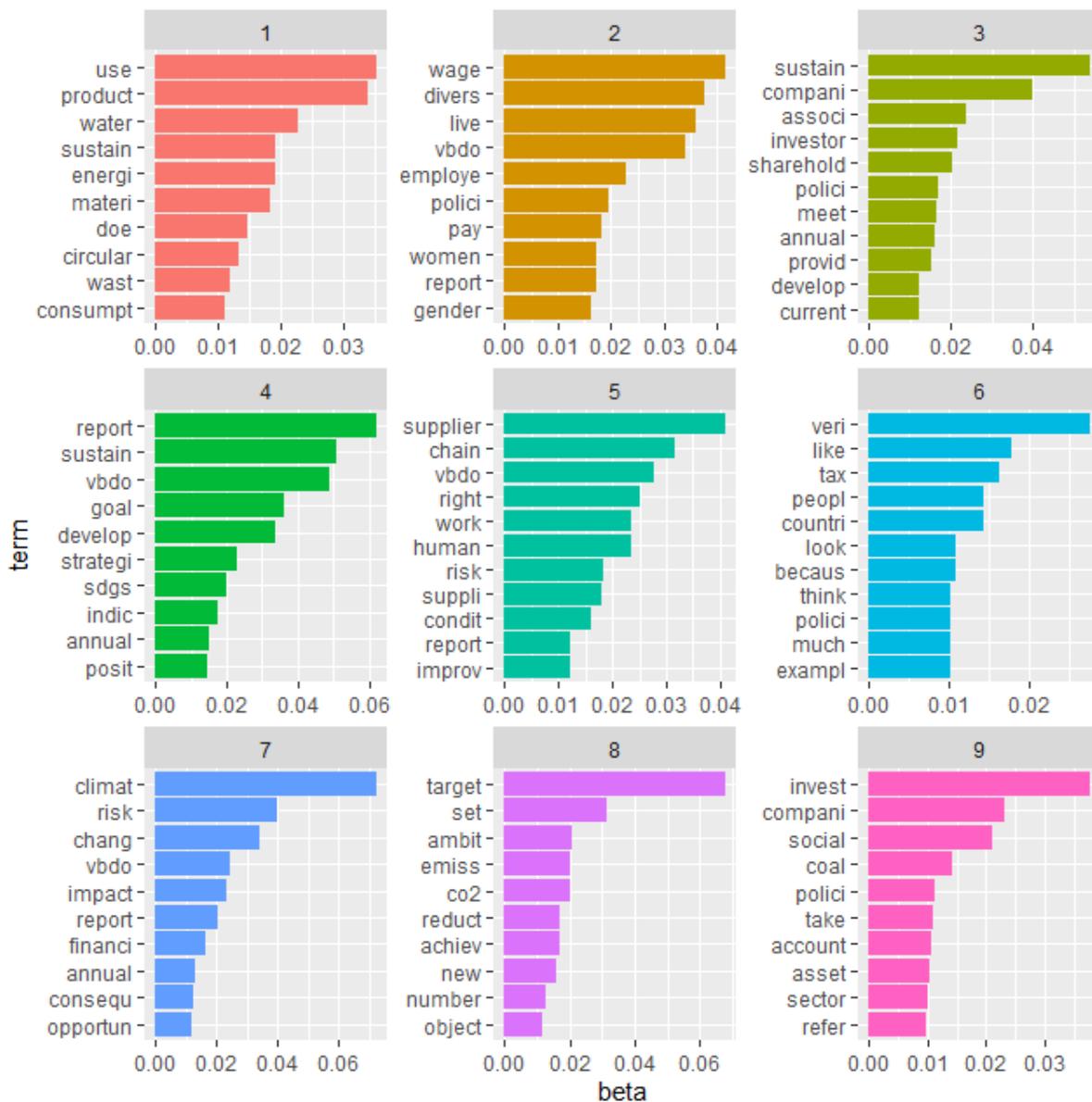
Note to Table: the table shows the 15 most frequent bigrams of the pre-processed corpus of corporate sustainability questions (sparse factor of less than 0.97).

3.2. Topic Modeling

In this section, we apply topic modeling to the sample of 1,047 corporate sustainability questions. Simply put, topic modeling is the process of finding a collection of topics fitted to a set of documents, which are the questions in our case. For, this we use the Latent Dirichlet Allocation (LDA) topic modeling algorithm from the `topicmodels` package in R that uses a document-term matrix as its input. Topic modeling can be understood as a method for unsupervised classification of documents that finds some natural groups of items (topics). LDA is a widely-used topic modeling method that uses the feature that every document (in our case, every question) is made up of various words, and each topic also has various words belonging to it. The aim of using the LDA algorithm in our research is to find topics a question belongs to, based on the words in it. Every question in our dataset is considered to be a mixture of topics. For instance, in case we only have two topics in our model, we could say that question 1 is for 80% topic 1 and 20% topic 2. In addition, both topics are a mixture of words. For example, the most common words in the topic ‘emissions’ might be ‘carbon’, ‘Paris’, ‘reduction’, while the topic ‘human rights’ may made up of words such as ‘supply’, ‘chain’, ‘wage’, etc. LDA estimates both the mixture of words that is associated with each topic and the mixture of topics that describes each question. Hence, to summarize, using LDA in our research, we thus can i) discover the hidden themes in the collection of questions, and ii) classify the questions into the different topics. Figure 1 shows the results of the LDA model with Gibbs sampling.⁷

⁷ The Gibbs Sampling is a Monte Carlo Markov Chain method that iteratively draws an instance from the distribution of each variable, conditional on the current values of the other variables in order to estimate complex joint distributions.

Figure 1. Topic Modeling



Note to Figure: figure 1 shows the nine topics⁸ that were retrieved from the questions with the 10 most frequent words per topic. The Beta measures the frequency of the displayed words. The LDA algorithm was used with Gibbs sampling for fitting (R code: alpha = 1, seed = 10005, thin = 1).

From Figure 1, we can derive the nine topics of the sustainability questions. Some topics are clearly related to a sustainability category. Particularly, we can describe the first topic as ‘resource use’, topic 2 as ‘rights at work’, topic 5 as ‘Global Value Chains (GVCs)’, topic 7 as ‘climate change risks’, and topic 8 as ‘emissions’. Topic 3 and 4 seem to refer to general

⁸ Figure A.1. in the Appendix shows that 9 topics is the optimal number of topics for our topic modeling algorithm.

sustainability matters like the SDGs, whereas topic 6 seems to refer to disclosure or transparency with keywords as ‘tax’, ‘countri’ and ‘veri’. Finally, topic 9 seems to be a leftover category. We summarize these findings in the table below:

Table 4. Topics

Topic LDA	Common material topic
1	Resource use
2	Rights at work
3	General sustainability
4	General sustainability
5	GVCs and human rights
6	Transparency
7	Climate change risks
8	Emissions
9	Residual category

The next step is to determine which questions belong to which topics. The γ in the LDA model provide us with the per-document-per-topic probabilities. The results are summarized in Table 5 below:

Table 5. per-document-per-topic probabilities

Topic LDA	Common material topic	Mean	SD	Median	Max
1	Resource use	0.10	0.11	0.06	0.69
2	Rights at work	0.12	0.15	0.06	0.82
3	General sustainability	0.10	0.10	0.07	0.55
4	General sustainability	0.13	0.12	0.09	0.74
5	GVCs and human rights	0.12	0.14	0.07	0.77
6	Transparency	0.11	0.11	0.07	0.83
7	Climate change risks	0.11	0.12	0.06	0.74
8	Emissions	0.11	0.10	0.07	0.82
9	Residual category	0.10	0.11	0.06	0.85

Table 5 shows that, on average, the questions belong for 10-13 per cent to the nine topics, with a standard deviation of about 10-15 per cent. The median shows that a large part of the questions only are related for a small extent to one or more of these topics with about 6-9 per cent. This may be explained by the fact that in the LDA model, words can belong to more than one topic. The ‘max’ column, however, shows that several questions clearly belong to a particular topic. To illustrate, for instance, the question that belongs for 82 per cent to topic 8 about ‘emissions’ is the question in the 2021 AGM of NN asked by institutional investor PPMG:

“The Chair moves to a question from PGGM also on behalf of a number of Eumedion participants: ‘NN has a target to reduce direct CO₂-emissions by 3% per FTE per annum. In contrast to the net zero carbon ambition for the proprietary investment portfolio, there is no long-term target for the reduction of direct emissions although NN is considering setting a science-based target for this in the future. Will you also set a science-based target for Scope 3 emissions and does NN have a 2050 net zero ambition for this scope as well?’”⁹

The question with the 77 per cent score on the topic ‘GVCs and human rights’ was asked during the Wolters Kluwer 2020 AGM by VBDO:

“The chairman continues and reads VBDO's second question. VBDO compliments Wolters Kluwer for adding sustainability-related questions to its due diligence questionnaire this year. VBDO notes that it has not been able to find any information about the implementation and results of both risk management and due diligence investigations into Wolters Kluwer's suppliers in Wolters Kluwer's public reporting. VBDO asks whether Wolters Kluwer is willing to map its supply chain in order to create an overview of the risks (low/medium/high) and vulnerable groups with regard to working conditions in its supply chain. In addition, VBDO asks whether Wolters Kluwer is willing to communicate with its stakeholders about strategies to prevent and mitigate risks to poor working conditions in the supply chain, related to specific regions or vulnerable groups.”¹⁰

Next, for each question, we determine the topic describes it the most. For 954 of the 1,047 questions this is one of the nine topics: for 79 questions, two topics have equal probabilities, for five questions this is three topics, for eight questions this is four topics, and one question

⁹ Note that this quotation displays the original data, not the pre-processed question.

¹⁰ Note that this quotation displays the original data, not the pre-processed question.

even has five topics that have an equal probability.¹¹ For these 93 questions that have equal probabilities for at least two topics, we manually define the best-fitting topic category.

Table 6. Questions per topic

Topic LDA	Common material topic	Number of questions	Mean	Max
1	Resource use	108	0.35	0.69
2	Rights at work	180	0.40	0.82
3	General sustainability	98	0.33	0.55
4	General sustainability	134	0.38	0.74
5	GVCs and human rights	131	0.42	0.77
6	Transparency	94	0.38	0.83
7	Climate change risks	110	0.40	0.74
8	Emissions	92	0.34	0.82
9	Residual category	100	0.36	0.85
<i>Total</i>		1,047	0.38	0.85

Before we use this categorization of questions based on the topic modeling outcomes using the LDA algorithm in the next section (section 4) to estimate the engagement effects, we first conduct a sentiment analysis on the corporate sustainability questions and answers in our sample in section 3.3 below.

3.3. Sentiment Analysis

In this section we conduct sentiment analysis on the corporate sustainability questions and the answers of the board members. Sentiment analysis usually is conducted with a lexicon. The `tidytext` package in R provides three sentiment lexicons: `bing`, `afinn`, and `nrc`. The `bing` lexicon categorizes words in a binary fashion, using positive and negative categories. The `afinn` lexicon assigns words with a score that runs between -5 and 5, with negative scores indicating negative sentiment and positive scores indicating positive sentiment (there is no zero score). The `nrc` lexicon has words in ten classes and allows for eight basic emotions in addition to the two sentiments positive and negative (namely: anger, anticipation, disgust, fear, joy, sadness, surprise, and trust). Using these three sentiment lexicons, we assess the sentiment of the

¹¹ This is the question: “Finally, he asks for further information on the waste flows in France.” This question clearly relates the first topic, ‘resource use’. However, the question does not contain a lot of information for the LDA model to use.

questions and answers using the raw corpus. The results for the questions (that consist of several words) are displayed in Table 7.

Table 7. Sentiment Scores

Lexicon	Mean	Median	SD	Min	Max
<i>Questions</i>					
Bing	1.88	1	2.72	-8	18
Afinn	3.24	3	5.01	-17	34
Nrc	3.43	3	3.36	-9	19
<i>Answers</i>					
Bing	3.27	2	3.99	-8	18
Afinn	5.63	4	6.85	-17	34
Nrc	5.50	4	5.17	-9	19
<i>Correlations – questions</i>					
Lexicon	bing	Afinn	nrc		
Bing	1				
Afinn	0.77	1			
nrc	0.48	0.55	1		
<i>Correlations – answers</i>					
Lexicon	bing	Afinn	nrc		
bing	1				
afinn	0.80	1			
nrc	0.63	0.64	1		

Note to Table: the table shows the sentiment scores for the questions and answers in the sample using the bing, afinn and nrc lexicons. The table also shows the Pearson correlations between the sentiment scores measured by the three different lexicons.

Table 7 shows that on average, all three lexicons assign positive sentiment scores to the corporate sustainability questions. The answers of board members are on average more positive than the questions. The afinn lexicon shows the highest standard deviation for the questions and answers. The Pearson correlations show that there is high correlation between the bing and afinn lexicon, and a lower correlation between these two lexicons and the nrc lexicon. In the Appendix we show examples of the questions and answers that received the most negative sentiment scores by the lexicons. It seems that particularly for the answers, the nrc lexicon best describes the sentiment.

Next, we use the findings of the topic modeling (section 3.2) and these sentiment analyses to study the effects of the corporate sustainability questions in an empirical setting in the next section.

4. Engagement effects

In this section we use the findings from the NLP analyses to assess the effects of the corporate sustainability questions and answers on the CS performance of the companies in our sample. For this, we use the ESG scores provided in the Refinitiv ESG database (previously Asset4). The Refinitiv ESG scores is based on ten partial scores also including environmental and social sustainability measures.¹² These scores are all based on a numerical scale ranging from 100 (good performance) to 0 (poor performance). The score is based collected information from publicly available information sources, including information provided by companies, but also from media and news, stock exchange filings, and NGO websites.¹³ From the information about the Refinitiv ESG scores,¹⁴ we can derive that topic 1 from our LDA model (see Table 4 for an overview of the topics) can be matched with the Refinitiv resource use score, topic 2 can be matched with the workforce score and the human rights score,¹⁵ topic 5 with the human rights score, topic 7 can be matched with the environmental innovation score, and topics 7 and 8 can both be matched with the emission reduction score. Table 8 provides and overview:

Table 8. Topics linked to Refinitiv ESG scores

Topic LDA	Common material topic	Refinitiv ESG score
1	Resource use	Refinitiv ESG resource use score
2	Rights at work	Refinitiv ESG workforce score, Refinitiv ESG human rights score
3	General sustainability	Refinitiv ESG score
4	General sustainability	Refinitiv ESG score
5	GVCs and human rights	Refinitiv ESG human rights score
6	Transparency	Refinitiv ESG score
7	Climate change risks	Refinitiv ESG innovation score, Refinitiv ESG emission reduction score
8	Emissions	Refinitiv ESG emission reduction score
9	Residual category	Refinitiv ESG score

¹² The following measures are included: ‘Resource Use Score’, ‘Emissions Score’, ‘Environmental Innovation Score’, ‘Workforce score’, ‘Human Rights score’, ‘Community Score’ and ‘Product Responsibility Score’.

¹³ Refinitiv 2021. <https://thesource.refinitiv.com/thesource/getfile/index/eb47860e-d865-4e3a-af4a-c67fb9e4221a-share-1>. Also see Billio, M., Costola, M., Hristova, I., Latino, C., & Pelizzon, L. (2021). Inside the ESG ratings: (Dis)agreement and performance. *Corporate Social Responsibility and Environmental Management*, 28(5), 1426-1445. <https://doi.org/10.1002/csr.2177>

¹⁴ Table A.3 in the appendix for an explanation of the different scores.

¹⁵ Because the Refinitiv ESG human rights score also includes components related to fundamental labour standards. In addition, Figure 1 shows that topic 2 also includes concepts like ‘living wage’, which is often used in the context of fundamental labour standards and human rights.

We collect the Refinitiv ESG scores (including overall ESG score, but also the resource use, emission reduction, workforce, human rights, and environmental innovation scores) for the companies in our sample. In addition, to control for company size (Lee and Lounsbury, 2011; Liang and Renneboog, 2017; Semenova, 2021, Barko et al., 2021) and financial performance (Semenova, 2021, Barko et al., 2021) we include the company's market capitalization and ROA (%) from the Refinitiv database. We also control for the ownership structure of the company (Dam and Scholtens, 2012) using a measure of free float (%), Refinitiv). Table 9 shows the descriptive statistics for our sample AGMs. Note that every AGM is one observation.¹⁶

Table 9. Descriptive Statistics

Variable	N	Mean	p50	SD	Min	Max
esg	178	67.23	68.51	13.74	17.77	92.86
resource	180	75.16	79.53	20.38	3.35	99.58
emissions	180	69.11	73.80	22.82	0.00	99.49
workforce	185	75.34	77.75	16.60	23.97	99.27
human rights	180	69.65	78.99	26.86	0.00	97.56
env inn	180	53.31	58.19	31.34	0	98.91
totalQ	193	4.53	4	2.32	1	14
q topic1	193	0.46	0	0.77	0	4
q topic2	193	0.75	1	0.82	0	4
q topic3	193	0.42	0	0.70	0	4
q topic4	193	0.60	0	0.72	0	3
q topic5	193	0.57	0	0.81	0	6
q topic6	193	0.44	0	0.86	0	4
q topic7	193	0.46	0	0.74	0	4
q topic8	193	0.37	0	0.67	0	3
q topic9	193	0.46	0	0.88	0	5
q afinn	190	11.55	8	14.24	-16	82
q bing	190	7.71	6	7.83	-6	45
q nrc	190	13.08	9	11.97	-2	52
a afinn	191	19.79	12	23.07	-7	118
a bing	191	12.27	8	13.42	-9	81
a nrc	191	19.76	15	17.87	-2	81
logMarketCap	193	22.51	22.35	1.46	19.33	26.38
ROA	193	3.30	3.49	5.84	-22.53	21.00
freefloat	193	84.48	90.96	18.17	33.34	100.00

Note to Table: the Table shows the ESG variables, questions and answer information from section 3 of this research, and the control variables for the observations (AGMs) in our sample. The Pearson correlations between the variables can be found in Table A.4 in the Appendix.

¹⁶ One may note that the total number of AGMs (193) is not the same as in section 3. This is due to the fact that not for all companies Refinitiv information was available. We removed these companies *ex ante* from the analysis in this section. In addition, the total number of observations differs for the questions and the available Refinitiv ESG scores: this is due to the fact that for a number of companies the Refinitiv ESG scores were not available yet for the year 2021. Cut-off point for data collection: March 2022.

Table 10 (below) provides the results of the panel data models with the ESG score as the dependent variable. The table shows that there are some indications that the number of corporate sustainability questions that are asked by shareholders in the AGM has a positive effect on the ESG scores of companies in most models. More specifically, one extra corporate sustainability question seems to increase the investee's ESG score by around 0.67-0.88 on a scale of 0-100. Note that the sentiment scores of the questions (presented by the variables 'q_afinn', 'q_bing', and 'q_nrc') and the answers (presented by the variables 'a_afinn', 'a_bing', 'a_nrc') that were based on the sentiment analysis as outlined in section 3.3 of this research do not provide any significant effects on the Refinitiv ESG scores of the companies in our sample. This may signal that the tone of voice during the general meeting has no impact on the effects of the shareholder corporate sustainability questions on corporate sustainable conduct.

Next, Table 11 (below) provides the panel data regression models with the different Refinitiv ESG score components that we linked to our topic categories in Table 8. Table 11 shows us that the questions in the topics related to human rights (topic 2 on 'rights at work' and topic 5 on 'human rights and GVCs') have a significantly positive effect on the human right scores of the companies in our sample: particularly, the coefficient suggests that one question in these topic categories would increase the human rights score of the investee' company with 4 to 5 on a scale of 0-100. We also see significantly positive effects of the questions related to emissions (topics 7 and 8) on the emission reduction score (with a coefficient of around 3). The questions in the climate risks question topic (topic 7) also seem to have a positive impact on the environmental innovation score (with a coefficient that is larger than 5). In contrast, the effect of questions in the first topic category related to resource use (topic 1) does not impact the resource use score.

Table 10. Panel data models with overall ESG scores

	(1) esg	(2) Esg	(3) esg	(4) esg	(5) esg	(6) esg	(7) esg	(8) esg
totalQ	0.85** (0.37)	0.75** (0.35)	0.68* (0.35)	0.56 (0.35)	0.87** (0.38)	0.72* (0.38)	0.88** (0.39)	0.73* (0.39)
logMarketCap	-2.10 (2.75)	1.21 (1.73)	-2.26 (2.80)	0.98 (1.83)	-1.95 (2.92)	1.13 (1.84)	-1.95 (2.85)	1.14 (1.83)
ROA	0.24 (0.30)	0.17 (0.29)	0.23 (0.30)	0.16 (0.29)	0.22 (0.32)	0.16 (0.30)	0.23 (0.31)	0.16 (0.29)
freefloat	0.38* (0.20)	0.30*** (0.10)	0.41* (0.21)	0.31*** (0.11)	0.38* (0.23)	0.31*** (0.12)	0.38* (0.22)	0.31*** (0.12)
q_nrc			0.13* (0.08)	0.10 (0.08)				
a_nrc			-0.04 (0.05)	-0.02 (0.05)				
q_bing					0.05 (0.15)	0.04 (0.14)		
a_bing					-0.03 (0.07)	-0.00 (0.07)		
q_afinn							0.02 (0.05)	0.02 (0.05)
a_afinn							-0.02 (0.04)	-0.00 (0.03)
Company FE	Yes		Yes		Yes		Yes	
Year FE	Yes		Yes		Yes		Yes	
Industry FE		Yes		Yes		Yes		Yes
_cons	78.07 (52.26)	4.46 (35.81)	78.83 (52.29)	8.76 (37.22)	73.94 (54.75)	5.51 (37.57)	74.33 (53.63)	5.26 (37.29)
N	178	178	175	175	175	175	175	175
adj. R ²	0.084		0.088		0.071		0.071	

Note to Table: the reported panel data models are estimated using fixed effects or random effects with industry fixed effects models. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All variables from the Refinitiv database are estimated *after* the AGM took place. Standard errors are robust and reported in parentheses. Standard errors clustered at the company-level and industry-level provided similar results (not reported).

Table 11. Panel data models with ESG component scores

	(1) resource use	(2) resource use	(3) human rights	(4) human rights	(5) emissions	(6) emissions	(7) env inn	(8) env inn
q_topic1	-1.40 (1.35)	-1.40 (1.35)						
q_topic_humanrights			4.81** (2.00)	4.20** (1.82)				
q_topic_emissions					2.98*** (0.98)	2.94*** (1.03)		
q_topic7							5.67* (2.82)	6.25** (2.85)
logmarketcap	4.53** (1.97)	4.53** (1.97)	-14.75** (7.02)	-2.09 (3.51)	-1.50 (4.01)	1.41 (3.22)	3.40 (5.06)	-0.48 (2.21)
roa	-0.16 (0.22)	-0.16 (0.22)	0.76 (0.75)	0.24 (0.72)	-0.01 (0.34)	-0.00 (0.39)	-0.01 (0.27)	-0.51 (0.34)
freefloat	0.40*** (0.15)	0.40*** (0.15)	0.05 (0.40)	0.07 (0.18)	0.41 (0.30)	0.25 (0.19)	-0.07 (0.40)	0.45*** (0.16)
Company FE	Yes		Yes		Yes		Yes	
Year FE	Yes		Yes		Yes		Yes	
Industry FE		Yes		Yes		Yes		Yes
_cons	-60.95 (45.26)	-60.95 (45.26)	389.13** (145.66)	116.10 (77.83)	65.99 (90.36)	-1.34 (70.01)	-20.30 (120.25)	9.30 (54.41)
N	180	180	180	180	180	180	180	180
adj. R ²			0.106		0.110		0.048	

Note to Table: the reported panel data models are estimated using fixed effects or random effects with industry fixed effects models. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Standard errors are robust and reported in parentheses. All variables from the Refinitiv database are estimated *after* the AGM took place. The variable ‘q_topic_humanrights’ is the sum of ‘q_topic2’ and ‘q_topic5’. The variable ‘q_topic_emissions’ is the sum of ‘q_topic7’ and ‘q_topic8’. Note that the estimated effect of questions belonging to topic 2 (‘q_topic2’) on the workforce score was not statistically significant (not reported). Standard errors clustered at the company-level and industry-level provided similar results (not reported).

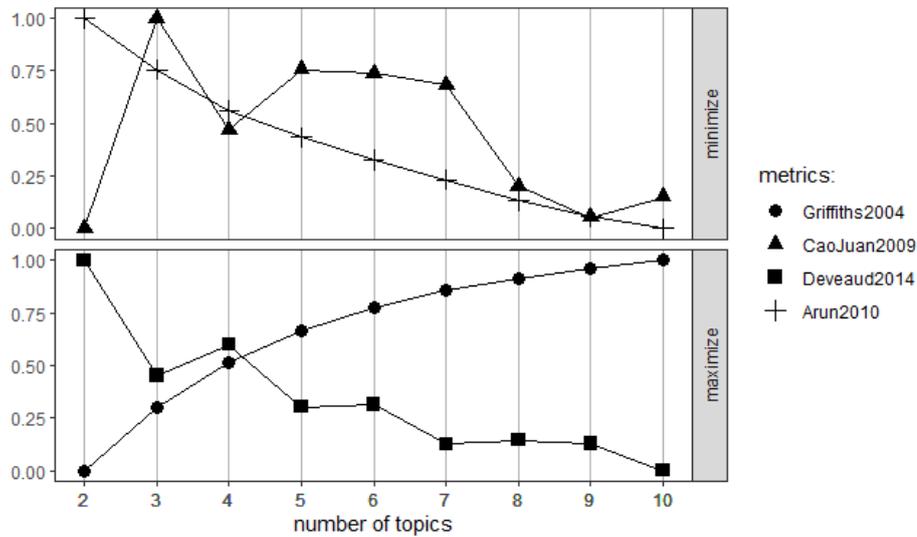
5. Concluding Remarks

There is a growing body of literature on shareholder sustainability engagement and its effects. Most scholars analyze the publicly available data on shareholder voting and shareholder proposals, but there is also growing evidence on the effects of shareholder engagement behind the scenes. One important shareholder tool, however, has been overlooked in this large strand of literature: shareholder questions. Whereas institutional investors, hedge funds, and large (activist) shareholders have the (financial) means to actively use shareholder proposals and proxy fights, and engage behind the scenes, shareholder types like retail shareholders and shareholder associations oftentimes do not have this opportunity in many jurisdictions as ownership thresholds and other (legal) requirements set for using such shareholder tools can create high barriers. These shareholder types use the low-cost shareholder question tool to steer the corporate sustainability policies of their investee' companies. In this paper, that is the first to empirically assess the impact of shareholders questioning the board of directors on corporate sustainability matters, we use the Dutch situation as a case study to investigate the content and effects of shareholder sustainability questions using natural language processing (NLP) techniques over a period of 2015-2021. Our results show that different types of shareholders increasingly use their question right for shareholder engagement related to sustainability matters. Most questions are asked by shareholder associations, but also retail investors, institutional investors and social activists use this shareholder tool. We find nine sustainability topics that were addressed by shareholders during the Dutch general meetings, including human rights matters, but also resource use, and emission reduction. Using various Refinitiv ESG scores as the dependent variables in fixed and random effects panel data regression models, we find some strong indications that shareholder questions have a positive impact on corporate sustainability conduct. Particularly, we find statistically significant effects of questions from shareholders related to human rights matters, environmental innovation, and

the reduction of emissions on related Refinitiv ESG scores, providing at least some indications that – in addition to shareholder tools like shareholder proposals that are well-documented in the current literature – also the shareholder question tool that is used by a wide variety of shareholder types can positively impact corporate sustainability conduct.

Appendix

Figure A.1: topic modeling (LDA)



Note to figure: the figure uses the metrics from Arun et al. (2010), Cao et al. (2009), Deveaud et al. (2014) and Griffiths et al. (2004) to determine the optimal number of topics for our LDA algorithm. These metrics are based on finding extreme values (minimization Arun et al. (2020) and Cao et al. (2009) versus maximization Deveaud et al. (2014) and Griffiths et al. (2004)). As the Deveaud metric is decreasing, it is not informative for our topic model. Because the CaoJuan metric shows the most variance, we select 9 topics (2 topics would be too general for the context of our research).

Table A.2: Questions and answers with most negative sentiment scores

Questions with most negative sentiment scores		
AGM and shareholder	Sentiment scores	Question text
Ahold 2016, Greenpeace	-8, bing lexicon -12, affinn lexicon 3, nrc lexicon	Mr X of Greenpeace would like to ask a question about the plight of bees and pollinators. As the President knows, at the beginning of this year there was a UN committee of scientists on biodiversity and ecosystem services. They concluded that 13 pollinators are doing very badly worldwide. Forty percent (40%) of invertebrates are threatened with extinction. This concerns honeybees, wild bees, beetles, butterflies and a range of other animals. Science also knows that there are two main causes for the lousy situation of pollinators. These are, one: lack of flowers, a lack of biodiversity in the landscape, and two: harmful pesticides including neonicotinoids. This topic is of course very relevant for Ahold as a food company. Pollinators are one of the mainstays of agriculture. Greenpeace notes with regret that many pesticides are also used in Ahold's supply chain that are very harmful to pollinators and Greenpeace wants to ask Ahold to formulate an action plan to ensure that Ahold contributes more to sustainable agriculture, really starts working on a reduction of those pesticides that are harmful to bees. Ahold says it is the largest seller of organic products in the Netherlands. He thinks this is the case, but that is only five percent (5%) of Ahold's turnover. Greenpeace thinks that the other ninety-five (95%) of Ahold's turnover can still be improved a lot and Greenpeace wants to ask Ahold to draw up an action plan for this.
Sligro 2021, VBDO	-8, bing lexicon -10, affinn lexicon 3, nrc lexicon	Climate change and its physical effects create material risks for businesses, including disruption to the production chain as a result of extreme weather and health risks for employees from heat and illness stress (Climate Change 101 for business leaders, Deloitte, 2021). In 2020, Sligro committed to look at whether greater insight could be given in scenario analyses to the physical effects of climate change on specific product groups. We have not seen any scenario analyses on the physical effects of climate change for Sligro's highest-risk product groups. Nor are risks (if there are any) presented in the risk management section of the annual report. Why has Sligro still not published any information and can the company provide insight into the risks in the main product groups in 2021?
ASML 2021, VBDO	-6, bing lexicon -17, affinn lexicon -3, nrc lexicon	Recent events, such as the extreme cold in Texas, the fire at Renesas in Japan, the Covid outbreak or the Suez channel blockage showed the vulnerability of the global logistics network. It also re-emphasized the increasing risk that climate disruption and other sustainability-related disasters pose to global industries and their supply chains. VBDO would therefore like to compliment ASML on publishing its first Task Force on Climate-related Financial Disclosures (TCFD) report in 2020, in which it reports on the risks of the physical effects of climate change. In this report, ASML states their expectation that climate change will not severely impact ASML, as neither ASML nor its first-tier suppliers operate in high-risk areas. However, VBDO expects ASML's suppliers beyond the first tier to be exposed to significant risks from climate change. For example, sourcing of key materials, such as tin, has been established as significantly exposed to physical climate change risks. Does ASML have a roadmap to expand its risk assessment beyond tier 1 suppliers, thereby future proofing its risk management and preventing future supply chain disruptions?
Ahold 2018, NGO	-3, bing lexicon -12, affinn lexicon -9, nrc lexicon	Smoking is therefore something that young people start with and hardly anyone starts smoking after the age of twenty-five. The tobacco industry therefore focuses mainly on young people to entice them to start smoking. This means that a part of the youth will suffer irreparable damage in the long run. As is known, there are twenty thousand (20,000) deaths per year, people who die prematurely because of smoking. What does Ahold Delhaize have to do with this? That's the next thing. Albert Heijn displays tobacco products in its stores very emphatically and pontifically and of course they also sell smoking products. From the latest figures from the industry, I understand that a lot is also earned from this or that at least a lot of turnover is generated with it. Ahold Delhaize thus contributes to enticing young people to start smoking. For that reason, a number of retail chains have decided in recent years to stop selling tobacco products. We as Stichting Rookpreventie Jeugd therefore actually ask Ahold to do the

		<p>following, namely to immediately stop visibly presenting and displaying tobacco as something you can buy in the shops and in the long term to stop selling tobacco products and to accept that the loss of profit and turnover is an acceptable price to ensure that the youth is not tempted to stupid behavior. I think this also fits in with what Mr Boer said about the contribution that Ahold wants to make to value creation in the long term. Thank you.</p>
Answers with most negative sentiment scores		
a.s.r. 2019	<p>-7, bing lexicon -13, affinn lexicon -18, nrc lexicon</p>	<p>Mr X addresses the second question concerning the insurance portfolio. In this morning's Volkskrant there happened to be a large article on this subject, in which a.s.r. was also mentioned. First of all, a.s.r. has a fairly clear picture of the larger climate risks of the portfolio. These are twofold; the increased weather damage (such as storm, hail, etc.) and flooding. a.s.r. actively informs the customer of the risks with regard to weather damage and helps the customer to take preventive measures. With the increased data on weather development, this is becoming easier and easier and the customer can be warned in advance if, for example, hail is on the way. Prevention helps prevent damage and keep premiums low. The biggest climate risks on the damage side are flooding. This is a difficult and complicated problem, about which discussions are being held between the government and the sector. In cooperation with the government, part of the risk could be insurable under certain conditions. One of the conditions could be, for example, that all residents of the Netherlands contribute a small part of the insurance premium to bear the damage in the areas where the risk of flooding is greater. a.s.r. actively participates in the debate on this and how a.s.r. can contribute. Without measures, rising climate-related claims costs could lead to 15 to 30% higher premiums in the coming decades. Mr Figeet addresses the investment-related questions. a.s.r. has endorsed in the Spitsbergen ambition that a.s.r. is working on formulating science-based targets in order to further strengthen the objectives of a.s.r. and also to be able to meet the objective of the Paris Agreement. This will be made public by 2020 at the latest. A.s.r. is currently further measuring the carbon footprint of its investment portfolio. On the fixed income side, this is 100% mapped out. The equity portfolio has also been fully mapped out. It takes a little more time to zoom in on the investments in funds, about a quarter of which has been mapped. Furthermore, a.s.r. is mainly engaged in analysing the carbon footprint of the mortgages that are provided and the real estate portfolio. The first images show that of the segments that are measured, the carbon footprint of a.s.r.'s portfolios has decreased by 30 to 40% in recent years and on credits and shares a.s.r. about 30% is below a comparable benchmark portfolio. It is expected that in 2020 a.s.r. will be able to set more concrete hard targets in line with the plans that have been announced and expressed for this purpose. a.s.r. is also participating, together with a number of pension funds and universities, in Ortec's project to map the impact of the climate scenario on investments in the form of an Asset Liability Management study. a.s.r. emerges from this study to be fairly resilient and unruly and the portfolio is considered in European investments in large companies. Small businesses and emerging market investments are particularly vulnerable to negativeGeneral Meeting of Shareholders 22 May 2019 Minutes 8 climate scenarios. This is gradually becoming an increasingly important part of asset allocation. For the time being, it is a backtest that is carried out for verification and completion. It is expected that in the coming years the climate scenarios will really play a prominent role in the investment policy of a.s.r. Furthermore, specific for the real estate portfolio, it is indicated that geographical analysis is used to try to map out sensitivities and risks of, for example, floods or water scenarios, water damage, for the investments. It is expected that at some point in the annual report a.s.r. will be able to provide an explanation of the development of the portfolio under various climate risks in line with the TCFD guidelines.</p>
Heineken 2019	<p>-1, bing lexicon -21, affinn lexicon 1, nrc lexicon</p>	<p>Your question on human rights policy focuses mainly on the question of who is responsible. In our company, the managing directors of each company are responsible not only for the P&L, but also for the way in which the P&L is realized. So the human rights policy also lies with those same managers. We give confidence, but that does not mean that we have to check it. We would like to have diversity, but then of course you also</p>

		<p>have to accept that there are not all people who think in the same direction as the people in Western Europe and who govern from the same book. We also have people from Malaysia, Singapore, Mexico, Brazil and Nigeria who are also at the helm of companies and who have a different historical background and who have a different cultural baggage and I dare even say, who have different norms and values. We must be open to these differences, but that does not alter the fact that Heineken is a Dutch company, a European company, and that we set the tone. That is what we must strive for. I want to put it in that context. Were the risks to the fire promoter policy unknown? No. Didn't we have enough attention? Yes, I have already admitted that. We did not look at it very carefully. We have delegated too much of that. Your question focuses on the negative image of fire promoters. We have also asked ourselves whether we might as well stop. But that is not so easy, because if you are going to tell that in Vietnam, Singapore or Nigeria, they will say 'ho ho, that's my job!'. You need to see both sides. Fire promoters have acquired a negative image and we need to change that. But fire promoters sell. We sell brands. It is boys and girls, men and women who sell our brand worldwide. We have our own sellers and outsourced sellers. The problem lies in outsourcing. We have too little control over this and we have not made it clear enough what the good and what the bad practices are. That is the path we are now on. That's what our code is about. But in the meantime we have to keep selling beer. We can't stop selling beer. You only see the bad image of brand promoters, but it is also the nice boys and girls who serve you a beer in the Holland Heineken House during the Olympic Games. That is also brand promotion. It is selling a brand with passion. We must not give that up, but we must eliminate all kinds of practices that have led to the negative images. I will be very blunt; you can't pay girls in short skirts to sell more beer to drunk men. We have removed those practices. Were they the majority? No, it was a minority, but that minority shouldn't be there either. We admit that.</p>
TKH 2015	<p>-3, bing lexicon -6, afinn lexicon -5, nrc lexicon</p>	<p>Mr De Lange answered the question on tax policy. TKH does not report the tax payments per country and does not intend to do so in the near future. In the annual accounts there is, however, a specification of the tax burden in the various countries in note no. 32. This overview shows that on balance there is a small million euros extra tax burden compared to the tax rate that applies in the Netherlands. On balance, TKH pays a bit more tax abroad than in the Netherlands. Mr De Lange estimates that the underlying idea of the question lies with companies pursuing an aggressive tax policy. That is not the case at TKH. If there are large material deviations between what TKH pays in tax in different countries compared to the Netherlands, this will of course be explained. Mr De Lange undertakes to see whether the information that is now being published on tax policy can be extended, but he believes that all the necessary information in this regard is included in the annual report and the annual accounts.</p>

Table A.3: Refinitiv ESG scores information

Variable	Explanation¹⁷
Refinitiv ESG score	The ESG score measures the company's ESG performance based on verifiable reported data in the public domain.
Refinitiv ESG resource use score	The resource use score reflects a company's performance and capacity to reduce the use of materials, energy or water, and to find more eco-efficient solutions by improving supply chain management.
Refinitiv ESG emission reduction score	The emission reduction score measures a company's commitment and effectiveness towards reducing environmental emissions in its production and operational processes.
Refinitiv ESG workforce score	The workforce score measures a company's effectiveness in terms of providing job satisfaction, a healthy and safe workplace, maintaining diversity and equal opportunities, and development opportunities for its workforce.
Refinitiv ESG human rights score	The human rights score measures a company's effectiveness in terms of respecting fundamental human rights conventions.
Refinitiv ESG innovation score	The innovation score reflects a company's capacity to reduce the environmental costs and burdens for its customers, thereby creating new market opportunities through new environmental technologies and processes, or eco-designed products.

¹⁷ Retrieved from: https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf

Table A.4: Pearson correlations

	esg	resource	human_rights	emissions	env_inn	logMarketCap	ROA	freefloat
esg	1							
resource	0.65	1						
human_rights	0.59	0.28	1					
emissions	0.66	0.62	0.25	1				
env_inn	0.35	0.06	0.22	0.03	1			
logMarketCap	0.47	0.43	0.35	0.28	0.01	1		
ROA	0.26	0.19	0.16	0.13	-0.22	0.42	1	
freefloat	0.45	0.44	0.17	0.19	0.36	0.14	0.23	1

References

Arun, R., Suresh, V., Veni Madhavan, C.E. and Narasimha Murthy, M.N. (2010). On finding the natural number of topics with latent dirichlet allocation: Some observations. In Advances in Knowledge Discovery and Data Mining. PAKDD 2010. In: *Lecture Notes in Computer Science*, Volume 6118. Zaki, M.J., Yu, J.X., Ravindran, B. and Pudi, V. (eds.). Springer: Berlin/Heidelberg, Germany.

Barko, T., Cremers, M. and Renneboog, L. (2021). Shareholder Engagement on Environmental, Social, and Governance Performance. *Journal of Business Ethics* (2021).

Bauer, R., Moers, F., and Viehs, M. (2015). Who Withdraws Shareholder Proposals and Does It Matter? An Analysis of Sponsor Identity and Pay Practices. *Corporate Governance* 23, 472–488.

Bauer, R., Derwall, J. and Tissen, C. (2022). Legal Origins and Institutional Investors' Support for Corporate Social Responsibility. Available at SSRN: <https://ssrn.com/abstract=4096769>.

Birkmose, H. and Sorensen, K. (2022). Shareholder Democracy in Denmark: Contrasting Law on the Books and Law in Practice. In H. Kaur, H., Xi, C., Van der Elst, C. and Lafarre, A. (eds.) *Shareholder Engagement and Voting*, Cambridge University Press: UK., forthcoming.

Brav, A., Jiang, W., Partnoy, F. and Thomas, R. (2008). Hedge Fund Activism, Corporate Governance, and Firm Performance. *The Journal of Finance* 63, 1729–1775.

Broccardo, E., Hart, O., and Zingales, L. (2020). Exit vs. Voice. ECGI-Finance Working Paper No. 694/2020.

Calluzzo, P. and Dudley, E. (2019). The Real Effects of Proxy Advisors on the Firm. *48 Financial Management* 917.

Cao, J., Xia, T., Li, J., Zhang, Y. and Tang, S. (2009). A density-based method for adaptive LDA model selection. *Neurocomputing* 72, 1775–1781.

Cox, J. and Thomas, R., The SEC's Shareholder Proposal Rule: Creating A Corporate Public Square, *Columbia Business Law Review* 2021, 3, 1147-1198.

Dam, L., and Scholtens, B. (2012). Does ownership type matter for corporate social responsibility? *Corporate Governance: An International Review*, 20, 233–252.

Denes, M.R., Karpoff, J.M. and McWilliams, V.B. (2017). Thirty years of shareholder activism: A survey of empirical Research. *Journal of Corporate Finance* 44. 405-424.

Deveaud, R., SanJuan, E., Bellot, P. (2014). Accurate and effective latent concept modeling for ad hoc information retrieval. *Document Numérique, Lavoisier*, 61-84.

Dimson, E., Karakas, O. and Li, X. (2015). Active ownership. *Review of Financial Studies*, 28, 3225–3268.

Dimson, E., Karakas, O. and Li, X. (2021). Coordinated Engagements. European Corporate Governance Institute – Finance Working Paper No. 721/2021.

Dyck, A., Lins, K., Roth, L., and Wagner, H. (2019). Do institutional investors drive corporate social responsibility? International evidence. *Journal of Financial Economics* 131, 693–714.

Easterbrook, F.H., and Fischel, D.R. (1991). *The Economic Structure of Corporate Law*. Cambridge, Massachusetts: Harvard University Press.

Gerber, M.S., Norman, G. and Toms, S. (2021). ESG in 2021 So Far: An Update. Harvard Law School Forum on Corporate Governance 18 September 2021.

Gillan, S.L. and Starks, L.T. (2007). The Evolution of Shareholder Activism in the US, 19 *Journal of Applied Corporate Finance* 55.

Goodman, J., Louche, C., Van Cranenburgh, K. and Arenas, D. (2014). Social shareholder engagement: The dynamics of voice and exit. *Journal of Business Ethics*, 125, 193–210.

Gordon, J.N. (2021). Systematic Stewardship. ECGI Law Working Paper No. 566/2021.

Grewal, J., Serafeim, G. and Yoon, A. (2016). Shareholder activism on sustainability issues. SSRN working paper. Harvard Business School.

Griffths, T.L.; Steyvers, M. Finding scientific topics. *Proc. Natl. Acad. Sci. USA* 2004, 101 (Suppl. 1), 5228–5235.

Hirschman, A.O. (1970) *Exit, Voice and Loyalty*. Cambridge, MA: Harvard University Press.

Hopt, Klaus J. (2011). *Comparative Corporate Governance: The State of the Art and International Regulation*. *American Journal of Comparative Law*, 59.

Kastiel, K. and Nili, Y. (2021), *The Giant Shadow of Corporate Gadflies*. *Southern California Law Review* 94, 569-636.

Lafarre, A.J.F. and Van der Elst, C.F. (2019). *Corporate Sustainability and Shareholder Activism in the Netherlands*. In: *The Cambridge Handbook of Corporate Law, Corporate Governance and Sustainability*, Sjøfjell, B., & Bruner, C. (eds.). Cambridge, UK: Cambridge University Press. p. 260-275.

Lee, M.-D. and Lounsbury, M. (2011). *Domesticating radical rant and rage: An exploration of the consequences of environmental shareholder resolutions on corporate environmental performance*. *Business and Society* 50, 155–188.

Levit, D. and Malenko, N. (2011). *Nonbinding voting for shareholder proposals*. *The Journal of Finance* 66(5), 1579–1614.

Liang, H. & Renneboog, L. (2017) *On the Foundations of Corporate Social Responsibility*. *Journal of Finance*, 72(2), 853-910.

McCahery, J.A., Sautner, Z. and Starks, L.T. (2016). *Behind the scenes: The corporate governance preferences of institutional investors*. *The Journal of Finance* 71(6), 2905-2932.

Nili, Y. and Kastiel, K. (2021). *The Giant Shadow of Corporate Gadflies* 94 *Southern California Law Review*, 569-636.

Paccès, A.M. (2021). *Will the EU Taxonomy Regulation Foster a Sustainable Corporate Governance?* *Sustainability* 13(21), 12316.

Papadopoulos, K. (2019). *The Long View: The Role of Shareholder Proposals in Shaping U.S. Corporate Governance (2000-2018)*, <https://corpgov.law.harvard.edu/2019/02/06/the-long-view-the-role-of-shareholder-proposals-in-shaping-u-s-corporate-governance-2000-2018/> (last accessed 13 May 2022).

Proffitt, W. T. and Spicer, A. (2006). *Shaping the shareholder activism agenda: Institutional investors and global social issues*. *Strategic Organization* 4(2), 165–190.

Quinson, T. (2021). The World's Biggest Investors Get Louder About ESG. Bloomberg 9 June 2021.

Reuters (2022). TotalEnergies shareholders urge regulator to ensure climate resolution included at next AGM. Available at: <https://www.reuters.com/business/sustainable-business/totalenergies-shareholders-urge-regulator-ensure-climate-resolution-included-2022-05-05/>

Semenova, N. and Hassel, L.G. (2019). Private engagement by Nordic institutional investors on environmental, social, and governance risks in global companies. *Corporate Governance: An International Review* 27(2), 144-161.

Semenova, N. (2021). The Public Effect of Private Sustainability Reporting: Evidence from Incident-Based Engagement Strategy. *Journal of Business Ethics* (2021).

Sjåfjell, B. (2019). Responding to the grand challenge of our time. In Eftestøl-Wilhelmsson, E., Sankari, S, and Bask, A. (eds), *Sustainable and Efficient Transport: Incentives for Promoting a Green Transport Market*, Edward Elgar: UK.

Strätling, G. (2012). How to Overcome Shareholder Apathy in Corporate Governance – The Role of Investor Associations in Germany. *Annals of Public and Cooperative Economics*, 83(2): 143-157.

Van der Elst, C. (2022). Shareholder Engagement and Corporate Voting in Action: The Comparative Perspective. In H. Kaur, H., Xi, C., Van der Elst, C. and Lafarre, A. (eds.) *Shareholder Engagement and Voting*, Cambridge University Press: UK., forthcoming.

Wells, H. (2021) Shareholder Meetings and Freedom Rides, The Story of Peck v Greyhound, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3873430.