

Which ESG Topics are (not) Relevant?

Evidence from Earnings Conference Calls and Analysts' Research Reports

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Abstract: We study which ESG topics are (not) incorporated by financial analysts in their research reports, and thus, are (not) further generated for investors to address their information needs. To identify ESG topics, we use computerized textual analyses, (1) by applying the FinBERT-ESG model (Huang et al. 2022) to identify E-S-G-related sentences and (2) by implementing LDA models to discover latent topics present in the three categories of E-S-G labeled sentences. In a sample of 90,204 analyst research reports and 7,344 preceding earnings conference calls of Euro STOXX 600 firms between 2010-2020, we document that analysts consider ESG-related topics in their ARR, and that the frequency of these topics increases over time. Furthermore, we find that which ESG topics are considered in the ARR depends on the industry the analyst is following. Next, we report topics that haven't been extensively discussed in the ECC but do not appear in analysts' reports, reflecting information that analysts decide not to generate further to the market. Our study provides important insights into the current regulatory efforts towards ESG disclosure regulation by informing about which ESG topics analysts address in their reports.

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1. Introduction

Which ESG topics comprise relevant information for capital market participants? Regulators currently struggle with the types of ESG disclosures that should be required in corporates' disclosures. Delivering insights from the perspective of financial analysts, we study which ESG topics are (not) relevant for analysts to consider in their research reports. We understand analysts acting as information provider – or information intermediary – serving investors with decision-relevant information (Huang, Lehav, Zang, and Zheng 2018). Their 'products' are the analysts research reports (ARRs) constituting “the culmination of their efforts” (Huang et al. 2018, 2833) and comprise value to investors (Bradley, Clarke, Lee, and Ornthalal 2014; Huang, Zang, and Zheng 2014; Huang et al. 2018). Therefore, we assume that analysts particularly consider those kinds of information in their ARR that are perceived as decision-relevant information for investors – at least from the perspective of analysts. Therefore, we first examine whether and (if so) which ESG topics are considered by analysts in their research reports ('relevant topics').

Since financial analysts usually issue their reports promptly after the earnings conference calls (ECCs), they have to identify which of the ESG topics (that have been discussed in the preceding ECC) constitute firms' substantive (“walk”) ESG disclosures or rather firms' symbolic (“talk”) ESG disclosures. Hence, we understand that ESG topics appearing in the ECC but are less/not further generated for investors in their ARR illustrate irrelevant information for investors – at least from the perspective of analysts. Following, in our second analysis, we study which ESG topics are discussed in the ECCs but are not considered in the ARR, and hence not generated to the market ('irrelevant topics').

Prior literature documents that ESG disclosures matter to financial analysts. For example, ESG disclosures indicating ESG strength are positively related to analyst coverage and negatively

associated with analyst forecast errors, revealing that financial analysts deem ESG disclosures relevant for their decision-making (Becchetti, Ciciretti, and Giovannelli 2013; Dhaliwal, Li, Tsang, and Yang 2011; Gao, Dong, Ni, and Fu 2016; García-Sánchez, Gómez-Miranda, David, and Rodríguez-Ariza 2019). In a recent study, Mittelbach-Hörmanseder, Hummel, and Rammerstorfer (2021) investigate the value-relevance of ‘topic-specific CSR disclosures’ mandated by the EU CSR Directive (Directive 2014/95/EU) and document that each topic is value-relevant but the individual topics vary depending on the stage of the regulatory setting. One of the drawbacks of these studies examining written ESG disclosures is that it is often difficult for outsiders, such as analysts, to discern firms’ actual performance from reporting discretion. Therefore, we follow other studies utilizing the ECC as a setting because it features real-time and spontaneous ESG-related information exchange between managers and financial analysts (Bochkay, Hales, and Serafeim 2021; Henry, Jiang, and Rozario 2021; Sautner, van Lent, Vilkov, and Zhang 2023; Hail, Kim, and Zhang 2021). For example, Hail et al. (2021) document that within the same ECC, managers talk more about climate-related issues than analysts do and that these narratives are more positive and certain compared to the discussions of current and future financial performance as well as financial analysts’ discussions on climate change in the respective ECC. They interpret their findings as managers using the ECC to greenwash their environmental performance. Our study complements this literature twofold: First, we expand the documented environmental-related discourse in ECCs by also considering social- and governmental-related topics and studying which (sub-)topics of these three categories seem to play a more relevant role. Second, we explore whether any ESG-related discourse is reflected in the corresponding ARR. By matching these both datasets, we are able to identify which (public) ESG-related topics are (not) generated further to investors.

Another stream of literature studies the role of financial analysts in this chain (Huang et al. 2014; Huang et al. 2018) These studies show that ARR provides incremental information to investors (Huang et al. 2014) and that analysts play an important role as information intermediaries (Huang et al. 2018). With regard to ESG disclosures, we know little about whether and which ESG topics are considered by analysts in their research reports and whether there is any cross-sectional variation. This study closes this research gap.

We address our two research questions using computerized textual analysis of quarterly ECC transcripts from the Refinitiv database for the Euro STOXX 600 firms between 2010-20 and all corresponding ARRs issued within a three-day window after the respective conference call (similar to Salzedo, Young, and El-Haj (2018)). Our final sample comprises 7,344 ECC transcripts and 90,204 ARRs. To identify ESG topics, we follow a two-step approach: First, we apply the FinBERT-ESG model conducted by Huang, Wang, and Yang (2023). This model identifies ESG-related sentences and classifies these sentences into environmental-, social-, or governmental-related topics for both types of documents. Then, in a second step, we use the Latent Dirichlet Allocation (LDA) model of Blei, Ng, and Jordan (2003) to discover latent topics present in the three categories (E-S-G) of sentences that have been identified by the FinBERT-ESG model.

Our data reveal that financial analysts consider ESG topics in their reports and the frequency of such topics increases over the years. Regarding our first research question (‘relevant topics’), environmental- as well as social-related topics are the most frequently mentioned (overarching) ones in the ARRs. More specifically, we find that which ESG topics are considered in the ARR depends on the industry the analyst is following. For example, within the environmental-related topics, the topic *power generation* is relevant for analysts following firms in the wholesale trade industry. Social-related topics that are frequently considered by analysts, following firms that operate in the wholesale trade, transportation & public utilities, and manufacturing industry, are,

for example, the *firm's employment strategy*. Overall, our findings hint to a need of industry specific ESG disclosures in Europe.

With regard to our second research question ('irrelevant topics'), we document several topics that are less frequently considered in ARR. For example, social-related topics referring to the *firms' strategy on safety, health, and wellbeing* as well as its interactions with *labor unions* seem analysts interpreting as less relevant for their clients. We document similar observations for governmental-related topics on the firm's *governance structure*. Such topics illustrate information that analysts do not perceive as a relevant information signal that s/he has to send to the market.

Lastly, we find that even if specific topics are discussed a lot in the conference call, this does not automatically show up in the corresponding reports. We find such gaps for several topics which indicates that analysts interpret such information as managers using the ECC to goodwash their ESG performance. Hence, the content of what has been discussed in the ECC is not per se a good proxy of which information will be further generated to the market.

Our study contributes to the broader literature on ESG disclosures: While prior literature investigates equity market responses to various types of written and spoken ESG disclosures documenting a positive relationship between ESG disclosures and firm value (Dhaliwal et al. 2011; Henry et al. 2021; Matsumura, Prakash, and Vera-Muñoz 2014; Mittelbach-Hörmanseder et al. 2021; Sautner et al. 2023), our study sheds light on one relevant mechanism behind this link, that is the content of the ARR that provides incremental information to investors (Huang et al. 2014). Doing so, we complement the study of Huang et al. (2014) who document that investors react to analyst report text more intensively when it places greater emphasis on nonfinancial topics by measuring ESG topics on a level that enables us to differentiate not only between E-S-G categories but also between the specific (sub-)topics of these categories that are identified by our LDA model.

Overall, our findings respond to calls for additional research to better understand the sources of analyst value (see e.g., Bradley et al. 2014; Bradshaw 2011; Ramnath, Rock, and Shane 2008).

Second, our study adds to the literature on studies analyzing the environmental-related discourse in earnings conference calls (e.g., Bochkay et al. 2021; Hail et al. 2021; Henry et al. 2021; Sautner et al. 2023) by also capturing the social- and governmental-related discourse to understand which of the three categories are more pronounced in these calls. Besides, our LDA model further provides more detailed insights into the specific topics that are an explaining factor for the distribution of the E-S-G-related topics.

Our study should be of interest to practitioners and regulators, given the growing attention to the topic of ESG disclosures. One of the challenges for ESG disclosure regulation is that it covers a wide range of issues and topics and reflects multiple stakeholder perspectives. The diversity of topics led concerns in determining what ESG topics investors (and others) would be most interested in ([ESMA, 2022](#)). Our findings provide insights into which ESG-related topics analysts consider in their decision making that may be interesting to those regulatory efforts.

2. Prior Literature and Research Questions

2.1 Relevance of written types of ESG disclosures

Prior literature on capital market reactions to ESG¹ disclosures predicts and reports mixed relationships. On the one hand, the ‘shareholder expense view’ predicts a negative effect of ESG activities on firm value (e.g., costs reallocation from shareholders to stakeholders), the ‘stakeholder maximization view’, on the other hand, posits a positive relationship because ESG activities considering the interests of different stakeholders increase the willingness to support the firms’ operations and

¹ Note that this literature review is not limited to studies using the term “ESG” but also comprises “CSR”- or “sustainability”-related studies in this field. While the term ESG is used interchangeably with “CSR” and “sustainability” in the literature (see e.g., Christensen, Hail, and Leuz 2021; Bochkay, Hales, and Serafeim 2021), we consistently use the term “ESG”.

are therefore also beneficial to shareholders in the long-term (Flammer 2013). Empirical studies reveal that capital market participants take more and more interest in firms' ESG behavior. For example, Ioannou and Serafeim (2017) show that in the early 1990s, analysts perceive ESG as agency cost and produce pessimistic recommendations for firms with high ESG ratings. However, the emergence of the stakeholder focus also shifts analysts' perceptions towards more optimistic recommendations of these firms.

This observation is consistent with the evidence provided by field studies examining the perceived relevance of ESG disclosures by interviewing or surveying analysts (Campbell and Slack 2011; Krasodomska and Cho 2017). These studies find that environmental information is deemed irrelevant for analysts due to its inherently multi-faceted and long-term nature. However, the authors of both studies admit that analysts' perceptions depend on the environmental risk perceptions of the entire supply chain (i.e., fund managers) that are associated with regulatory changes in this respect. Given the recent regulatory changes, the data used in these studies might not be representative these days.²

More recent empirical studies document that the issuance of a stand-alone ESG report and certain disclosures indicating ESG strength are positively related to analyst coverage and negatively associated with analyst forecast errors, revealing that financial analysts deem ESG disclosures relevant for their decision-making (Becchetti et al. 2013; Dhaliwal et al. 2011). Furthermore, some studies demonstrate that the materiality of ESG disclosures matters, highlighting that not all ESG topics are deemed relevant to capital market participants. For example, Khan, Serafeim, and

² Krasodomska and Cho (2017) conducted the interviews in 2013 while Campbell and Slack (2011) conducted interviews between 2004-2005.

Yoon (2016) show that firms with good ratings on material³ ESG issues have better future performance than those with poor ratings on the same issues. Serafeim and Yoon (2021) examine how stock prices react to different types of ESG news and document that investors' perceived relevance depends on whether the ESG news likely affect firms' fundamentals. Mittelbach-Hörmanseder et al. (2021) study the value-relevance of 'topic-specific CSR disclosures' mandated by the EU CSR Directive (Directive 2014/95/EU) and document that each topic is value-relevant, but the individual topics vary depending on the stage of the regulatory setting. For example, in the period before the announcement of the CSR Directive, they document a positive link between the share price and topics such as (1) social matters, (2) human rights, and (3) corruption and bribery while this link becomes negative in the period after the announcement.

One of the drawbacks of these studies examining written ESG disclosures is that it is often difficult for outsiders, such as analysts, to discern firms' actual performance from reporting discretion. Consistent with this concern, prior research has found that ESG performance scores have converged over time as it is easier for peers to imitate each other in terms of ESG disclosures rather than improving real ESG-related actions (Grewal and Serafeim 2020).

2.2 Relevance of 'spoken' ESG disclosures in ECCs

To overcome these drawbacks, several authors utilize the ECC as a setting because it features real-time and spontaneous ESG-related information exchange between managers and financial analysts (Bochkay et al. 2021; Hail et al. 2021; Henry et al. 2021; Sautner et al. 2023) For example, Sautner et al. (2023) argue that (in contrast to written reports such as annual reports, ESG reports, or press releases) within a conference call, managers are less likely engaged in greenwashing because analysts will act as a counterpoint by asking probing questions to challenge management. Assuming

³ Khan, Serafeim, and Yoon (2016) differentiate between material (immaterial) sustainability investments that potentially have (not) implications for future corporate performances.

that a conference call reflects both the demand side (e.g., financial analysts) and the supply side (management) for decision-relevant information, the authors use the transcripts of ECCs to construct a firm-level exposure to climate change. They document that firms' exposure to climate change is negatively correlated with firm valuations in years after 2011, indicating that investors deem potential climate-change-related risks relevant. Henry et al. (2021) provide further support that ESG topics gain more relevance in recent years because they document that the environmental discourse in ECCs increased substantially in recent years and that discourse is incrementally informative for firm valuation. Bochkay et al. (2021) similarly show that ESG disclosures within a conference call increase following the release of SASB standards, especially for firms with little or no ESG disclosures before and for firms operating in industries with more disagreement about relevant ESG topics.

While Sautner et al. (2023) argue that greenwashing during ECCs is unlikely to occur, Hail et al. (2021) argue that managers have incentives to over- or underdiscuss certain (ESG) topics while financial analysts would only ask questions if they deem issues to be material and value-relevant to the firm. Accordingly, they use analysts' questions about climate change as a proxy for firms' actual climate change activities and performance. They document that within the same ECC, managers talk more about climate-related issues than analysts do. Furthermore, these narratives are more positive and certain compared to the discussions of current and future financial performance as well as financial analysts' discussions on climate change. In fact, their results suggest that managers use the ECC to greenwash their environmental performance.

Overall, prior studies suggest that written ESG disclosures are often repetitive and, in many cases, are boilerplate and not tailored to the firm whereas managers use the spoken ESG disclosures to greenwash their performance. Thus, it remains unclear which ESG disclosures financial analysts

identify as firms' substantive ("walk") and which as rather firms' symbolic ("talk") ESG disclosures. As financial analysts act as information provider serving investors with decision-relevant information, it is a black box what kind of ESG topics analysts consider in their reports that they perceive as being decision-relevant information for their clients.

2.3 Financial analysts' interest in ESG disclosures

The role of financial analysts and especially their output, i.e., the ARR_s distributed to investors, has been the focus of the analyses of Huang et al. (2014) and Huang et al. (2018). For example, Huang et al. (2014) show that ARR_s provide incremental information to investors. Huang et al. (2018) provide more evidence on the role of financial analysts' research reports by showing that analysts play the information intermediary roles by (1) discussing topics in their reports that go beyond those discussed in ECCs ('information discovery role') and (2) clarifying and confirming firms' disclosures in conference calls ('information interpretation role').

In terms of ESG topics, Christensen, Hail, and Leuz (2021) conclude that financial analysts take more and more interest in firms' ESG reporting. Especially firms with better ESG performance gain greater analyst coverage and are negatively associated with analyst forecast errors (Dhaliwal et al. 2011; Gao et al. 2016; García-Sánchez et al. 2019). Following, prior archival studies deliver some evidence on the relevance of ESG information for analysts. What remains unclear is whether and (if so) which ESG topics financial analysts deem relevant in order to provide their clients with decision-relevant information. While prior literature demonstrates the (value-)relevance of certain ESG information that is distributed through different disclosure channels (especially if this information is material and initiated by firms with strong ESG performance), we know little about whether and which ESG topics are considered by analysts in their research reports. Shedding more light on this channel helps to better understand the drivers explaining market reactions documented in prior studies. Doing so, we complement the study of Huang et al. (2014) who document that

investors react to analyst report text more intensively when it places greater emphasis on nonfinancial topics⁴ and respond to calls for additional research to better understand the sources of analyst value (see e.g., Bradshaw 2011; Ramnath et al. 2008).

Overall, if ESG disclosures complement the information demand of financial analysts' clients (i.e., investors), we would assume that analysts address this demand by giving room to ESG topics in their research reports. Therefore, our first research question is:

RQ1: Do financial analysts consider ESG-related topics in their research reports and, if so, which ESG topics are these ('relevant topics')?

Financial analysts usually issue their reports promptly after the ECC. As prior studies report ESG-related topics in conference calls (e.g., Bochkay et al. 2021; Hail et al. 2021; Henry et al. 2021; Sautner et al. 2023), we understand that such ESG-related discussions within the ECC could either comprise relevant information to financial analysts or not. Therefore, we assume that ESG topics that are discussed in the ECC but do not appear in the corresponding analyst report do not constitute a type of information that the analyst perceives as a relevant information that s/he has to send to the market. Therefore, we ask:

RQ2: Which ESG topics are discussed in the ECCs but are not generated to the market ('irrelevant topics')?

⁴ Nonfinancial topics are measured as the percentage of sentences that "do not contain '\$' or '%'" (Huang, Zang, and Zheng 2014, 2169).

3. Data and Method

3.1 Sample Selection

We started our sample selection with all quarterly ECC transcripts from Refinitiv database for the Euro STOXX 600 firms between 2010-20 which yields 15,356 transcripts. We collect ECC transcripts to answer our second research question. If ESG topics are discussed in the ECC but do not appear in the corresponding analysts' research reports, we understand such topics as information that analysts do not perceive as a relevant topics for their clients (i.e., investors) that need be generated for the market ('irrelevant topics'). We deleted 4,266 duplicates and only kept the firm-years if the company has been a member of the stock index during the whole year (minus 944). We matched the transcripts with the accounting and financial data from Refinitiv Worldscope Fundamentals (minus 58) and removed 318 transcripts of companies not applying IFRS. After removing firm years with more than four transcripts per year (1,397) and transcripts containing less than five sentences, we end up with a preliminary final sample of 7,344 ECCs transcripts from 467 individual firms.

[Insert Table 1 about here]

Next, we collect all ARR issued within a three-day window after the respective conference call (similar to Salzedo et al. 2018). To our understanding, ESG topics are considered 'relevant' for the market if they appear in the ARR.⁵ From the initial 153,726 downloaded reports we extract the report date and title to identify and remove reports covering multiple stocks or whole markets (similar in Huang et al. 2014). Finally, we matched 90,204 ARRs to the ECCs. Over the entire sample

⁵ Note that our understanding of "relevance" is different from the notion of value-relevance (i.e., market reactions) and from the notion of decision-relevant. We acknowledge that ESG topics mentioned in ARR may not influence the analyst's decision making.

period, an average of approximately twelve ARR are issued in the three-day window after the ECCs.

We perform some common preprocessing steps. First, we remove symbols and html code as well as numeric values and all tables of the ARRs as we are interested in textual information. Second, we delete very frequently occurring words without important meaning for the thematic content known as stopwords like 'a', 'the', 'of' (Dyer, Lang, and Stice-Lawrence 2017) and accounting specific stopwords containing, e.g., various currencies (Loughran and McDonald 2011).

3.2 Identification of ESG Topics

To identify ESG topics, we follow a two-step approach: First, we use the FinBERT-ESG model conducted by Huang et al. (2023) that is fine-tuned on 2,000 manually annotated sentences from firms' ESG reports and annual reports. Huang et al. (2023) developed the FinBERT by training Google's BERT algorithm on financial texts including corporate filings, analyst reports, and ECC transcripts. The fine-tuning is based on 2000 labeled sentences from firm disclosure into four topics "environmental", "social", "governance", and "non-ESG". The authors used CSR reports and MD&A sections of 10-Ks of the smallest and the largest S&P 500 firms covering ten sectors. The former was used to classify the sentences for the three ESG categories (environmental, social, governance) whereas the latter served to label sentences not related to ESG topics (non-ESG).

We apply the FinBERT-ESG model to identify and label ESG-labeled sentences within the retrieved ECCs and ARRs. We adjust it to only considering sentences with more than five and less than 125 characters based on the average word and sentence length of English texts. Due to the application of a BERT model as a first step, we are confident in a relatively low likelihood of Type II errors (false negatives). We end up with 237,392 as E-S-G labeled sentences from ECCs and 564,422 labeled sentences from ARRs. When checking the ESG labeled sentences, we identify a high number of Type I errors (false positives), i.e., sentences that do not, in fact, indicate ESG-

related topics. To minimize the likelihood of Type I errors, we coded at least 350 labeled sentences per data type and category to determine the thresholds with a probability lower than 5 percent of Type I errors.⁶ Limiting our analysis to labeled sentences having an average score of equal or greater than the individual minimum score, we finally end up with 16,878 as E-S-G labeled sentences from ECCs and 37,821 labeled sentences from ARR.

Second, to gauge the information content of these as E-S-G labeled sentences, we use the Latent Dirichlet Allocation (LDA) model of Blei et al. (2003). LDA implements an unsupervised machine learning technique to discover latent topics present in the E-S-G labeled sentences by relying on the tendency of words to co-occur and cluster by topic (Anand, Bochkay, Chychyla, and Leone 2020).

To apply the LDA model, we further preprocess the data. We tokenize the sentences into unigrams, remove common and accounting stopwords and finally calculate a Term Frequency-Inverse Document Frequency matrix. To determine the number of topics per E-S-G category, we iterate through the LDA models with two to fifty topics for each category and examine in each case the respective perplexity scores, coherence scores, and map the inter-topic distances. Within the category of environmental-labeled and social-related sentences, we observe a relatively high (low) coherence (perplexity) score with four topics, indicating that four topics have the highest discriminant power. For the governmental-labeled sentences, we identify six latent topics. The plotted inter-topic distance maps make us further confident that the identified number of topics have the highest discriminant power. Table 3 lists the LDA topics, the topic labels, the label descriptions, and provides examples of the representative sentences.

⁶ The minimum scores are as follows: ECC environmental: 0.95, ECC social: 0.98, ECC governmental: 0.85, ARR environmental: 0.95, ARR social: 0.95, ARR governmental: 0.85.

4. Findings

To answer our two research questions, we provide the average frequency of labeled sentences across the three categories in our ECC and ARR data. In subsection 4.1., we provide an overview of the distribution of E-S-G topics in ECCs and ARRs. Subsection 4.2. shows the distribution across years and subsection 4.3. across industries.

4.1. Distribution of ESG sentences

Table 2 provides an overview of the average frequency of E-S-G-labeled sentences in the ECCs and ARRs. Environmental-labeled sentences occur most frequently per document in ECCs as well as in ARRs. The average count of environmental-labeled sentences in ECCs, however, is 3.40 sentences per document while they appear less often in ARRs (1.81 sentences per document) in total. The maximum (ECC: 67 sentences, ARR: 78 sentences) as well as the standard deviation (ECC: 4.39, ARR: 2.28) of environmental-related sentences are the highest within the labeled sentences, indicating some cross-sectional variation in the data.

[Insert Table 2 about here]

The four environmental-related topics identified by our LDA model are labelled as follows: (1) *Energy efficiency*, (2) *managing CO2 emissions*, (3) *investments in renewables*, and (4) *power generation*. Table 3 provides descriptions and representative sentences for each LDA topic. Table 4 presents the distribution of environmental-related topics. The environmental-labeled sentences are almost equally distributed over the four LDA topics in ARR reports while the distribution in the ECC transcripts slightly varies: *energy efficiency* with 23.14% (26.67%), *managing CO2 emissions* with 24.85% (22.69%), *investments in renewables* with 31.12% (26.50%), and *power gener-*

ation with 20.88% (24.13%). Hence, in the ECC transcripts, most sentences are assigned to *investments in renewables* (topic 3) while in the ARR reports most environmental-labeled sentences occur in *energy efficiency* (topic 1).

[Insert Table 3 about here]

[Insert Table 4 about here]

Social-labeled sentences are the second frequently mentioned sentences in both document types. On average, 2.27 social-labeled sentences occur in ECC transcripts while 1.73 sentences occur in ARRs. The distribution of social-labeled sentences in the ECC data is fairly left-censored, indicating that specific ECC transcripts have a high proportion of social-related topics. The standard-deviation in the ARRs is similar to the environmental-related sentences (2.24), pointing to cross-sectional variation in the data.

Table 3 lists the three social-related topics that are identified by our LDA model. These include (1) *Labor unions*, (2) *firms' impact on healthcare*, and (3) *employment* and (4) *firms' strategy on safety, health, and wellbeing*. Table 4 provides an overview of the distribution of E-S-G-related topics across both data types. For example, the topic *firms' strategy on safety, health, and wellbeing* (topic 4, i.e., information/assessment on how the firm establishes employees' safety and health with regard to working conditions/behaviors and whether/how it addresses customers' needs) is the most often discussed topic in the ECC data (30.21% of all social-labeled sentences deal with this topic). In contrast, the topic on the firm's *employment strategy* (topic 3; i.e., employment related information/assessment on full or parttime employment, information on employees' diversity with regard to age and gender, retirement and how to deal with early retirement as well as how to attract new employees) has the highest proportion of social-related topics within the ARRs.

Table 4 further provides the distribution of social-related topics. The labeled sentences in the ARR reports are rather equally distributed across the four topics whereas the ECC transcripts show a higher variety. In the ECC transcripts (ARR reports), the social-related sentences are distributed as follows: While the least frequently mentioned topic in both data types is *labor unions* (topic 1; ECC: 21.30%, ARR: 23.03%), the biggest gap between the proportion of ECCs vs ARRs is the topic *firms' impact on healthcare* (topic 4; ECC: 30.21%, ARR: 24.92%). This illustrates that this topic is rather irrelevant for analysts to consider in their reports although it has been intensively discussed in the preceding conference call. In contrast, analysts place more attention – with almost one third of the social-labeled sentences – to the *firm's employment (strategy)* in ARRs although it is not the most frequently discussed topic in the corresponding ECC.

Table 2 further shows that 1.32 governmental-labeled sentences occur per ECC transcript while 1.14 sentences occur per report. Overall, governmental-related topics occur less often than environmental- and social-related topics. Table 3 depicts and explains the six governmental-related topics that are identified by our LDA model, (1) *governance structure*, (2) *independence*, (3) *compliance*, (4) *risk (perception and management)*, (5) *conflict of interests*, and (6) *prevention management*. Table 4 presents the governmental-related topic distribution. In the ECC transcripts (ARR reports) the governmental-labeled sentences are assigned to the topics as follows: *governance structure* with 26.73% (9.78%), *independence* with 31.32% (14.26%), *compliance* with 7.38% (12.30%), *risk (perception and management)* with 11.19% (19.68%), *conflict of interests* with 18.90% (13.68%), and *prevention management* with 4.47% (30.30%).

Table 4 further reveals topics dealing with the *firm's prevention management* (topic 6; i.e., general statements on how the firm is organized to prevent the rise of conflict of interests) are the most frequently mentioned topics in the ARRs (30.30%) while these topics are negligible in the ECC data (4.47%). In contrast, the topic *governance structure* (topic 1, i.e., information/assessment

on the general firm's corporate governance) is more presented/discussed in the ECCs (26.73% of all governmental-labeled sentences) while the proportion of these topics in the ARR is only 9.78%.

Overall, the distribution of as E-S-G-labeled sentences reveal that financial analysts consider ESG topics in their reports, and thus, potentially seeking to address the information demand of their clients. Regarding our RQ1, environmental- as well as social-related topics are the most frequently mentioned ones in the ARR. With regard to governmental-related topics, topics that deal with the firm's *risk management* as well as the firm's *prevention management* take a higher proportion in the ARR than they do in the ECC, indicating that such topics play a more relevant role for analysts than topics that have a higher proportion in ECCs (e.g., *governance structure*).

4.2. Distribution of ESG topics across years

Environmental-related topics

Figure 1 compares the number of as environmental-labeled sentences in the ECC transcripts with the ARR data.⁷ Regarding the ECC transcripts, we observe an increase in average frequency since 2010 from 3.1 sentences to 4.86 sentences in 2020. Comparing our European data with the US setting, Henry et al. (2021), using a keyword-list for environmental-related topics, observe the first peak of the average count of environmental-related keywords in 2011 while such a peak can also be observed in 2012 in the European ECC transcripts. Furthermore, the second rise in the number of environmental-labeled sentences in the ECCs of the Euro STOXX firms in 2020 is somewhat similar to their US counterparts. In comparison, the average of number of environmental-labeled

⁷ We also controlled for the number of ECCs and ARRs per year and the average number of tokens which is a proxy for the length of the ECCs and ARRs. The results show that average text length of ECCs is decreasing over the years and, thus, the ratio of ESG-related to non-ESG-related words is even higher. ARRs show a slight increase in length over the years. Nevertheless, the mean length is lower than those of the ECCs.

sentences in the ARR data remain relatively stable across years until 2019. The maximum mean of environmental-labeled sentences has been reached in 2020 with 2.39 sentences per ARR.

Figure 2 shows that the proportion of the four environmental-related topics identified by our LDA model remains relatively stable across years in the ECC transcripts and in the ARR data. The peak of environmental-related topics in 2020 (Figure 1) in the ECCs can be explained by an increase of all topics while information on the firm's *employment strategy* (topic 3) experience a slightly stronger increase. The peak of environmental-related topics in 2020 (Figure 1) in the ARR data cannot be attributed to an increase of specific topics.

[Insert Figure 2 about here]

Social-related topics

Figure 1 further depicts the average counts of the social-labeled sentences in the ECC and ARR data. In the ECCs, the average number of mentions of these sentences increases from 2.05 sentences in 2010 up to 3.55 sentences in 2020. Overall, the average count of social-labeled sentences develops quite similar to environmental-labeled ones and experiences a similar peak in 2020. The average count of social-labeled sentences in the ARR data remains relatively stable until 2018 and then consistently increases from 2018 up to 2.03 sentences per ARR in 2020.

Figure 3 depicts that the proportion of the social-related topics somewhat varies across time when comparing the ECC and ARR data. For example, the topic *firms' strategy on safety, health, and wellbeing* (topic 4) has the highest proportion in the ECC (35%) of all social-related topics, analysts place relatively equal weight on all four social-related topics. The peak of social-related topics in 2020 (Figure 1) can be explained by an increase of the proportion of the *firms' strategy on safety, health, and wellbeing* (topic 4) in the ECCs and while almost all social-related topics experience an increase in the ARR data.

[Insert Figure 3 about here]

Governmental-related topics

Lastly, Figure 1 shows how the proportion of governmental-labeled sentences in ECC transcripts and in the ARRAs developed over the years. With regard to the ECC transcripts, the average count of governmental-labeled sentences is consistently lower than the mean of the other two categories. This category reaches the highest mean of 1.62 sentences per transcript in 2010. The following years are characterized by a continuous decrease in the average number of sentences until 2020 with a mean of 1.24 sentences per ECC transcript.

While governmental-related topics remain the least discussed topics in ECCs across time, we discover a slightly different picture for ARRAs: First, there is a steady increase over time from 1.13 sentences per ARR in 2010 until 1.31 sentences per ARR in 2020 observable. Even though the number of sentences in the ECC transcripts is meaningfully higher than in the ARRAs, governmental-labeled sentences occur, on average, more often in the ARRAs than in the ECCs – at least in 2020.

Figure 4 shows the variation of the proportion of governmental-related topics across time. Comparing both data types, there is an interesting variation in the proportion of these topics observable. For example, the topic *independence* (topic 2; reflects sentences about the information on how the firm achieves and maintains independent structures) has a high proportion in the ECCs but are almost not reflected in the ARRAs in the first years (7%) and increase in the years from 2017 until 2020 (30%). Information/assessments on the general firm's corporate governance (topic 1, *governance structure*) has a constant proportion in the ECCs (26.73% on average across time) across years while this topic is almost negligible in the ARRAs. In contrast, *prevention management* (topic 6; reflects general statements on how the firm is organized to prevent the rise of conflict of interests) are rather statements of analysts in their reports than topics that are mentioned in the

ECC. Overall, the data indicate that such topics play a more relevant role for financial analysts to consider in their reports than addressing such topics in the corresponding call.

[Insert Figure 4 about here]

Implications

While prior literature focuses on the proportion of environmental-related discourse in ECCs over the years (Bochkay et al. 2021; Henry et al. 2021; Sautner et al. 2023) our study complements these studies (1) by comparing the occurrence of environmental-related topics with social- and governmental-related topics to understand which of the three ESG categories are more pervasive and (2) by comparing the occurrence of these three ESG categories in the corresponding ARR across time. Our results document that environmental- and social related topics increase over the years in both data types while governmental-related topics experience only a slight increase. Furthermore, our findings reveal that environmental-related topics remain the topics that are most raised or/and discussed in the ECC. However, such a clear dominance cannot be observed in the corresponding ARRs as the proportions of environmental- and social-related topics are relatively equal over the years. Furthermore, the average count of E-S-G-labeled sentences per document experiences an increase in recent years, indicating that ESG topics represent information that is more often generated to the market than in earlier years. In 2020, for example, governmental-related topics occur, also in total, more often in the ARRs (1.31 sentences per report) than in the ECCs (1.24 per ECC transcript).

4.3. Distribution of ESG topics across industries

Environmental-related topics

Figure 5 compares the average counts of environmental-related topics in the ECC as well as in the ARR data across industries. The most intense discussion of environmental-related topics takes place in the wholesale trade industry with an average of 7.23 sentences, followed by the transportation & public utilities industry (5.28), and the mining industry (4.00). The frequency of these topics in these three industries is also reflected in the ARRs (including manufacturing industry). For example, in the wholesale trade industry, financial analysts give more room for environmental-related topics in their reports than in any other industry (the average frequency of environmental-related topics amounts to 2.45 sentences per report), followed by the manufacturing industry with 1.84 sentences on average. Finally, analysts following firms in the transportation & public utilities industry give also more room to environmental-related topics – compared to social- and governmental-related ones – with 1.78 sentences on average per report. In the remaining industries, financial analysts consider more social-related topics than environmental-related topics.

Figure 6 shows that the proportion of the four environmental-related topics identified by our LDA model varies meaningfully across industries in the ECC transcripts and in the ARR data. The topic *power generation* (topic 4, i.e., information/assessment on how firms seek to produce energy) has the highest proportion in the wholesale trade industry both in the ECCs (38%) and in the corresponding ARRs (51%). The relatively higher proportion in the ARRs indicates that analysts following firms in this industry consider this topic relevant to include in their reports. The topic *managing CO2 emission* (topic 2, i.e., information/assessment on how the firm manages its reductions in carbon emissions to comply with regulations) plays a more relevant role in the construction industry (ECC: 41%; ARR: 39%) and in the transportation & public utilities industry

(ECC: 38%; ARR: 35%) which is reflected as the highest proportion of environmental-related topics within these industries. The topic *investments in renewables* (topic 3, i.e., information/assessment on the firm's investment decisions in renewables) is the dominant topic in the finance, insurance, and real estate industry (ECC: 35%, ARR: 37%). For the retail trade industry, the topic *energy efficiency* (topic 1) is relatively often discussed in the ECC (33%) and considered by analysts (35%).

[Insert Figure 6 about here]

Social-related topics

Figure 5 further provides an overview of the average frequency of social-related topics in ECCs and ARRs across industries. Social-related discourse in the ECC seems to be most relevant in the service industry (2.99 sentences on average), followed by the retail trade industry (2.69), and the wholesale trade industry (2.34). While environmental-labeled sentences are more pronounced in the ECCs of firms operating in the three industries wholesale trade, transportation & public utilities, construction, mining, and manufacturing, social-labeled sentences dominate in the ECCs of firms of the industries services, retail trade and finance, insurance & real estate.

In comparison, the frequency of social-labeled sentences in ARRs are relatively equal to the environmental-labeled sentences in the industries finance, insurance & real estate, manufacturing, mining, and transportation & public utilities. Financial analysts use more social-related (than environmental- or governmental-related) sentences in their reports on firms that operate in industries such as retail trade or services.

Figure 7 shows the proportion of the three social-related topics identified by our LDA model across industries in the ECC and ARR data. Interestingly, the proportions of social-related topics in the wholesale trade industry in the ECC data differs from the ARR data: while the topic

on the *firms' strategy on safety, health, and wellbeing* (topic 4; i.e., the information on how the firm establishes employees' safety and health with regard to working conditions/behaviors and whether/how it addresses customers' needs) has the highest proportion in the ECC data (40%), only 20% of all social-related sentences refer to this topic, indicating that analysts do not really consider such topics as much ('irrelevant topic'). In contrast, analysts place more emphasis on firms' real *impact on healthcare* (topic 2; i.e., the assessment on firms' impact on workers' and consumers' healthcare as well as its impact on society at large) (34%) as well as firms' *employment strategy* (topic 3; i.e., employment related information/assessment on full or parttime employment, information on employees' diversity with regard to age and gender, retirement and how to deal with early retirement as well as how to attract new employees) (35%). According to our understanding of relevant topics, and referring to our both research questions, analysts following firms in the wholesale trade industry consider topics on *firms' strategy on safety, health, and wellbeing* as well as their interaction with *labor unions* (topic 1; i.e., information/assessment on firms' interactions/negotiations with (labor) unions) as less relevant while *firms' impact on healthcare* as well as their *employment strategies* reflect topics analysts consider as relevant to incorporate in their reports.

Further rather irrelevant topics are those that consider interactions/pressure with/from *labor unions* – at least analysts assume that these topics are not decision-relevant for their clients. For example, in the mining industry, the topic *labor unions* has the highest proportion of social-related sentences in the ECC transcripts (28%) while only 18% of all social-related sentences refer to this topic in the ARR. Similar distributions can be observed for the topic *firms' strategy on safety, health, and wellbeing* in the retail trade industry.

[Insert Figure 7 about here]

Governmental-related topics

Figure 5 further shows the average count of governmental-labeled sentences in the ECC and ARR across industries. Except for the construction industry, where governmental-related topics are almost equally mentioned than social-related topics in the ECCs on average per document, governmental-labeled sentences occur less often. The distribution of governmental-related sentences remains relatively stable across industries in both types of data.

Figure 8 shows how the proportion of the six governmental-related topics identified by our LDA model varies across industries in the ECC transcripts and in the ARR data. For example, the topic *governance structure* (topic 1; i.e., information/assessment on the general firm's corporate governance) constitutes a rather irrelevant topic for analysts: although it has a relatively high proportion in almost all industries in the ECCs, this topic is almost negligible in ARR data. The topic that deals with the *firm's independence* (topic 2; i.e., the information/assessment on how the firm achieves and maintains independent structures) is an often discussed topic in the ECCs but seem not be relevant for analysts' reports – except for analysts following firms in the industries transportation & public utilities and wholesale trade. Finally, the topic *prevention management* (topic 6) deals with general statements on how the firm is organized to prevent the rise of conflict of interests – and is a rather an analyst-specific topic because it does not actually show up in the ECC data.

Implications

Regarding our research questions, our findings show a variation of the proportion of E-S-G-related topics across industries. This implies that whether, and if so, which ESG topics are considered in the ARR depends on the industry the analyst is following. Furthermore, we document a gap between the proportion of these topics across both data types – at least in some industries. This indicates that if a topic is discussed a lot in the conference call, this does not automatically show up in

the analyst's report (e.g., the *firms' strategy on safety, health, and wellbeing* in the wholesale trade industry). This finding could be understood as analysts interpreting such information as managers using the ECC to goodwash their (here) social performance. We also observe the opposite, i.e., that specific topics have a high proportion in the analysts' reports although they were not as strongly discussed in the preceding conference call (e.g., the firm's employment strategy in the mining sector and wholesale trade industry). While the gaps between both data types are the strongest with regard to governmental-related topics, they are the smallest within environmental-related topics. For example, for some industries such as mining, manufacturing, construction, and finance, insurance, and real estate, the proportion of environmental-related topics are a good proxy for the content of the analyst's report. However, this does not hold for the remaining industries. Overall, environmental- and social-labeled sentences are relatively equally considered across industries in the ARR, indicating that analysts consider these topics as relevant information that they need to generate for the market. Topics that the analysts do not perceive as a relevant information/signal that s/he has to send to the market vary across industries - especially, within the social- and governmental-related topics.

5. Conclusion

We examine which ESG-related topics are (not) considered relevant by analysts. A relevant topic comprises an information that the analysts share with its clients, i.e., investors being the readers of analysts' research reports. To our understanding, irrelevant topics are public information (here measured via occurrence in the preceding conference call) that the analysts do not further generate to investors.

Doing so, we analyzed quarterly ECC transcripts from Refinitiv database for the Euro STOXX 600 firms between 2010-20 which yields 7,344 transcripts and their corresponding ARR which yields 90,204 documents. The main findings of our textual analyses are as follows: First, we

find that financial analysts consider ESG-related topics in their ARR, and that the frequency of these topics increases over time.

Second, environmental- and social-related topics are relatively equally mentioned in ARRs while governmental-related sentences are less often mentioned (on average per document).

Third, referring to our first research question, we find that which ESG topics are considered in the ARR depends on the industry the analyst is following. For example, within the environmental-related topics, the topic *power generation* (topic 4) is relevant for analysts following firms in the wholesale trade industry. Social-related topics that are frequently considered by analysts in their reports are, for example, the *firm's employment strategy* (topic 3) in the wholesale trade, transportation & public utilities, and manufacturing industry. Within the governmental-related topics, we find that *prevention management* is rather an analyst-specific topic that they usually mention in their reports. Overall, these findings hint to a need of industry specific ESG disclosures in Europe.

Fourth, referring to our second research question ('irrelevant topics'), e.g., social-related topics referring to the *firms' strategy on safety, health, and wellbeing* as well as its interactions with *labor unions* seem analysts interpreting as less relevant for their clients. We document similar observations for topics on the firm's *governance structure*.

Lastly, we find that even if specific topics are discussed a lot in the conference call, this does not automatically show up in the corresponding reports. We find such gaps for several topics which indicates that analysts interpret such information as managers using the ECC to goodwash their ESG performance. Hence, the content of what has been discussed in the ECC is not per se a good proxy of what will be further generated to the market.

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Tables

Table 1: Sample Selection

<i>Panel A: Sample Selection ECCs</i>		
Sample Selection Criteria	No. of obs.	No. of unique firms
Initial ECCs from EURO STOXX 600 firms between 2010-2020	15,356	725
Less firms that were no full-year member	944	0
Less duplicates	4,266	182
Less firms with missing Compustat data	58	1
Less firms that do not apply IFRS	318	9
ECC transcripts	9,770	533
Firm years (incl. more than 4 ECCs)	2,982	533
Less firm years with more than 4 ECCs per year	1,397	8
Preliminary final sample ECCs (firm quarters)	8,373	525
Less transcripts containing less than 5 sentences	1,029	49
Final sample ECCs (firm quarters)	7,344	476
<i>Panel B: Sample Selection ARRs</i>		
Initial ARRs issued within the 3-day window after the final ECCs (Preliminary final sample (firm quarters))	153,726	525
Less reports not directly related to preceding ECC	61,542	0
Less reports containing less than 5 sentences	1,980	49
Final sample ARRs (firm quarters)	90,204	476
<i>Notes:</i> This table presents the sample selection of ECCs which are issued quarterly and the corresponding ARRs, issued within a three-day window after the respective ECCs.		

Table 2: Overview E-S-G Sentences per Document

		# of documents	# of sentences	Mean	Std.Dev.	Min.	Pctl.25	Pctl.75	Max.
ECC	E	2,867	9,885	3.45	4.39	1	1	4	67
	S	2,682	6,097	2.27	2.18	1	1	3	28
	G	677	896	1.32	0.93	1	1	1	17
ARR	E	5,813	10,470	1.82	2.28	1	1	2	78
	S	11,741	19,978	1.73	2.24	1	1	2	51
	G	6,479	7,251	1.14	0.51	1	1	1	15

Notes: This table represents an overview of the average count of E-S-G labeled sentences (per document) identified by the FinBERT-ESG model (Huang et al. 2022) for both document types. The *# of documents* and the *# nr of sentences* refer to the documents/sentences that have been identified with E-S-G-related content by the FinBERT-ESG model.

Table 3: LDA Topics, Labels, Descriptions and Representative Sentences

Category	Topic Number	Topic Label	Topic Label Description	Topic Words (top 10 words)	Representative Sentences
Environmental	1	Energy efficiency	Information/assessment on the energy efficiency of the firm's operations and how the firm invests in renewable energies	energy, renewable, wind, system, grid, gas, environment, water, fuel, demand	<p>Endesa has embarked on a bold transition to a new energy model</p> <p>Our second set of beliefs relates to how the energy system will have to change in response to revolving demand</p> <p>Nordex will use Cumulocity IoT to autonomously manage clean energy wind farms based on sensor data</p> <p>In addition, the GTF engine is said to fulfil its promises in terms of operational readiness and fuel savings</p> <p>The company has significant energy and pulp assets, and has expressed an aspiration to grow in energy and biofuels</p>
	2	Managing CO2 emissions	Information/assessment on how the firm manages its reductions in carbon emissions to comply with regulations	carbon, emissions, co2, environmental, consumption, water, reduce, energy, electric, climate	<p>This year, we will reduce our European fleet carbon emission slightly from the previous year's level</p> <p>We are also systematically preparing the BMW Group to face changing mobility requirements and stricter CO2 regulations</p> <p>In Nuremburg, for example, we are using data analytics to optimize traffic, data traffic, and help fight climate change</p> <p>The company is committed to sustainable forestry practices to preserve forests and increase carbon sinks</p> <p>In fact, we're now taking the next step, announcing that SAP aims to be carbon neutral completely by 2025</p>
	3	Investments in renewables	Information/assessment on the firm's investment decisions in renewables	energy, renewable, generation, wind, gas, solar, nuclear, waste, capacity, renewables	<p>Manufacturing, increase of renewable energy sources and solar being introduced at some sites</p> <p>Now Bob already mentioned our investment in solar energy through Lightsource BP</p> <p>It plans to build solar cell facilities by ...</p> <p>To reach renewable energy likely includes investing in own wind and solar power production</p> <p>We also have a pipeline of more than 1,5 megawatts of wind and solar projects to deliver future growth</p>

	4	Power generation	Information/assessment on how firms seek to produce energy	renewable, products, diesel, oil, increased, carbon, renewables, energy, waste, heat	<p>Neste is the world leader renewable biodiesel producer and the key refining operation in the Baltic area</p> <p>It's an old building that we are refurbishing to produce heat pumps eventually</p> <p>We have these from Hamburg, these environmental solutions and also the oil and pumps and gas systems</p> <p>So they're only focused on power generation and heating</p>
Social	1	Labor unions	Information/assessment on firms' interactions/negotiations with (labor) unions	research, people, team, safety, product, risk, unions, labor, general, business	<p>We continue to believe that management and the unions can come to an agreement before yearend</p> <p>In Greece, talks with the unions are still in progress</p> <p>Labour unions have announced new strikes for this week</p> <p>Ryanair is still in negotiations with Italian labour unions</p> <p>This will be a welcome call for labour unions, which are likely to ask for much more in future</p> <p>(cid:) Restructuring of French operations still need to be approved by the unions</p> <p>Lufthansa mainline pilot and cabin crew unions are currently in negotiations over salary, productivity and pensions</p> <p>Filly, negotiations with unions over a new Collective Labour Agreement (CLA) are unresolved</p>
	2	Firms' impact on healthcare	Information/assessment on firms' impact on workers' and consumers' healthcare as well as its impact on society at large	healthcare, consumers, end, people, local, workers, food, countries, years	<p>And that has meant that we have implemented some global and local activities towards the society</p> <p>We think that the people we take care of will be better taken care of than gig workers or platform work</p> <p>Lots of work done for the World Food Program and some of the recent emergencies</p> <p>It's very positive for the workers, for the labor</p> <p>So to conclude, moving forward, our priorities of safety, rebuilding trust and delivering value growth remain unchanged</p> <p>Bureau Veritas conducts audits on food safety every other week (on average)</p>

3	Employment (strategy)	Employment related information/assessment on full or parttime employment, information on employees' diversity with regard to age and gender, retirement and how to deal with early retirement as well as how to attract new employees	people, employees, job, employs, countries, health, company, care, home, safety	<p>So, therefore, with the abolition of this waiting period we have better access to young, welllearning employees</p> <p>Parship Elite Group is headquartered in Hamburg, Germany, and has about fulltime employees</p> <p>The rest are expected to accept social plans, such as golden handshake or early retirement from employees over years old</p> <p>WomenMenOldYoungAverage age: yearsAverage gender: women</p> <p>k employees layoffs/early retirements (including k as a result of disposal of Ukraine and the JV Pioneer Santander) by</p> <p>The industry semiconductor part characterised by a high share of male employees</p>
4	Firms' strategy on safety, health, and wellbeing	Information/assessment on how the firm establishes employees' safety and health with regard to working conditions/behaviors and whether/how it addresses customers' needs	working, health, covered, people, work, market, customers, associate, care, measures	<p>Of course, our primary goal has been and remains to ensure the health and safety of all our employees and business partners</p> <p>We are committed to retaining the new ways of working established over the last 2 years</p> <p>And our priority has been to preserve the health and to facilitate the operations and activity</p> <p>We are working especially on health and safety to continue to increase and improve our performance</p> <p>The last strike at Canea begun in July over health and safety concerns</p> <p>Local brands across have also enhanced associate assistance programs to provide health and wellbeing support</p> <p>Increased stigma relating to air travel and higher demand for emotional wellbeing and health</p> <p>They need to do more inspiring and more convenient customer experience and be more customized to local needs</p> <p>We're spending a lot of time now, and getting much better at, understanding more scientifically our customer base</p>
Governmental	1 Governance structure	Information/assessment on the general firm's corporate governance	compliance, tag, monitored, organizational, regulations, respective, research, offices,	<p>We act locally with deep sector expertise and have a clear governance model</p> <p>TSB's conviction is that the quality assurance and the governance of the process was thorough and sound</p>

		instructions, adherence	<p>They employ functional corporate governance and pay for performance templates</p> <p>The company will succeed or fail on its future governance and engagement with labour</p> <p>There is an increased risk of corruption as the licences are vital to stay competitive</p> <p>in a newly established JV with a governance structure of joint control</p>
2	Independence	Information/assessment on how the firm achieves and maintains independent structures	<p>members, years, female, average, governance, independence, indicators, tenure, executive, committee</p> <p>We are proceeding in line with the terms of the consent decree, which include inspections by independent auditors</p> <p>I believe that the Board has never made a secret of the fact that it wanted to reparate the functions of Chair and CEO</p> <p>Average board tenure (years) Female board members () Board members independence ()</p> <p>Yes, of course it's backed by auditors on all sides, and we've provided this audit expert opinion to the Ministry</p> <p>I proposed to the Board of Directors to split to separate the function of Chairman and of CEO</p> <p>In terms of corporate governance, the last general meeting appointed three new members as independent directors</p>
3	Compliance	Information/assessment on how the firm organizes its compliance system	<p>business, member, approval, requires, specific, exception, compliance, including, operate, standard</p> <p>This is subject to strict compliance with the Helvea Group's internal rules governing own account trading by staff members</p> <p>And our internal business reviews will be focused on early identification of issues and will be action oriented as well</p> <p>Platou aims always to operate in compliance with appropriate business principles, including Business Standard No</p> <p>Any exception to this policy requires specific approval by a member of our Compliance Department</p> <p>This investigation will be supplemented by an external advisor assessment</p>
4		Information/assessment on the (potential) risks a	<p>disclaimer, conflicts, banks, policy, interest,</p> <p>Given its globally diverse scale, there is a risk of bribery and corruption issues</p>

Risk (perception and management)	firm faces and how it will manage the risks	policies, arrangements, management, conflict, organisational	<p>The question for the courts is whether these criticisms involved the willful intent of shore based managers</p> <p>Aareal Bank has good risk management skills and disciplined underwriting standards</p> <p>I mean, proactive management means taking timely corrective actions</p> <p>This involves fair and legal working circumstances, such as zero tolerance of corruption</p> <p>Erste Group Bank AG ensures with internal policies that conflicts of interest are managed in a fair manner</p>
5 Conflict of interests	Information/assessment on how the firm addresses conflicts of interests between shareholders and the entity	information, request, conduct, rules, management, internal, conflicts, interest, insider, secure, inter, handling	<p>The problem starts with adverse corporate governance which is oppositional to the economic interests of shareholders</p> <p>Information concerning the management of conflicts of interest and the internal rules of conduct are available on request</p> <p>In August, we relaunched our internal Fairplay code of conduct to strengthen our connection to integrity</p> <p>Our policy on managing actual or potential conflicts of interest can be found at: https://</p> <p>Erste Group Bank AG ensures with internal policies that conflicts of interest are managed in a fair manner</p>
6 Prevention management	General statements on how the firm is organized to <i>prevent</i> the rise of conflict of interests	avoid, prevent, duties, discharge, governance, conflict, integrity, interest, managing, compliance	<p>Our policy on managing actual or potential conflicts of interest in the United Kingdom can be found at: https://</p> <p>FIM is organised with procedures to prevent and avoid any conflict of interest</p> <p>The best possible care and integrity is used to avoid errors and/or misstatements</p> <p>, to prevent and avoid any conflict of interest in the discharge of its duties</p> <p>Details of these <>Chinese Walls<> are available on request from the head of compliance</p>

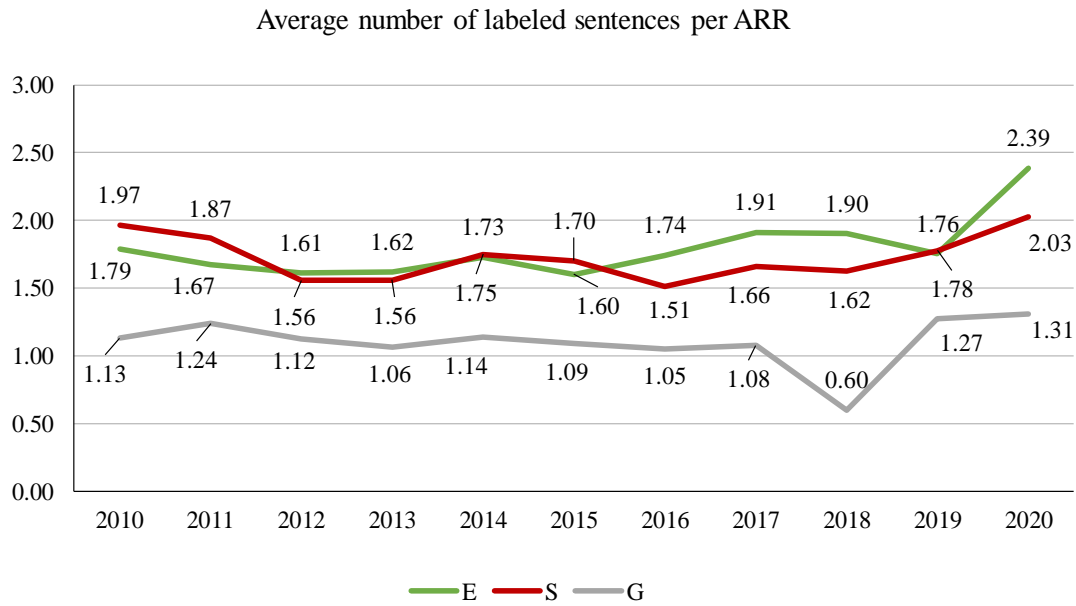
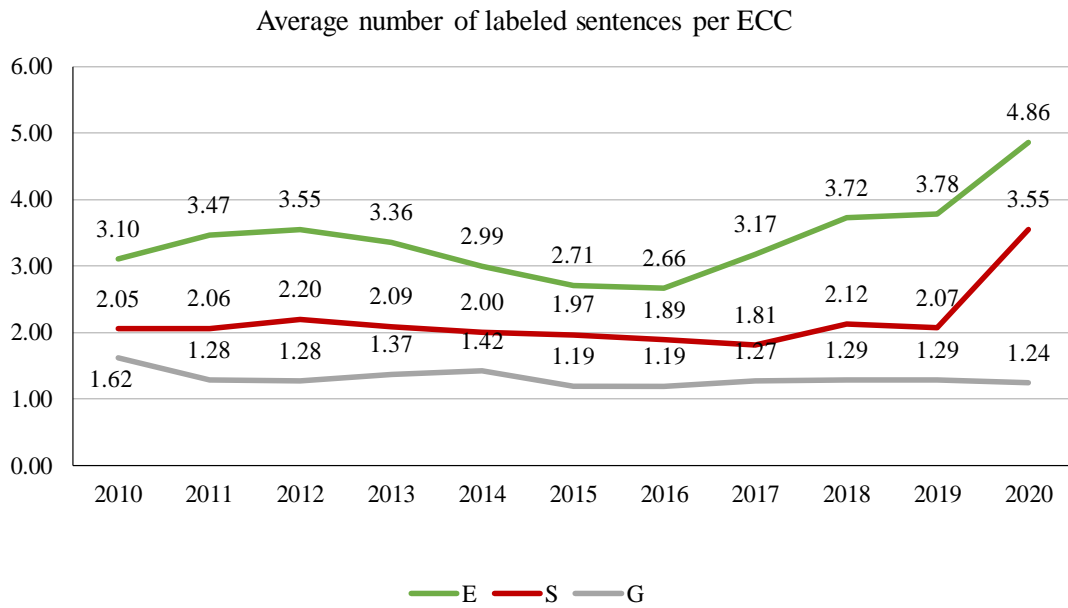
Table 4: Distribution of E-S-G related Topics

		#	%	#	%	#	%	#	%	#	%	#	%	Total
Topic		1		2		3		4						
E	ECC	2,286	23.14%	2,455	24.85%	3,074	31.12%	2,063	20.88%					9,878
	ARR	2,286	21.65%	2,396	22.69%	2,798	26.50%	2,548	24.13%					10,558
Topic		1		2		3		4						
S	ECC	1,298	21.30%	1,437	23.58%	1,519	24.92%	1,841	30.21%					6,095
	ARR	4,400	23.03%	4,665	24.41%	5,281	27.64%	4,762	24.92%					19,108
Topic		1		2		3		4		5		6		
G	ECC	239	26.73%	280	31.32%	66	7.38%	100	11.19%	169	18.90%	40	4.47%	894
	ARR	518	9.78%	755	14.26%	651	12.30%	1,042	19.68%	724	13.68%	1,604	30.30%	5,294

Notes: This table provides the distribution of E-S-G topics in absolute figures and percentages for both document types. The total number of sentences differs from the number reported in Table 2 because the LDA model did not assign all sentences to the topics.

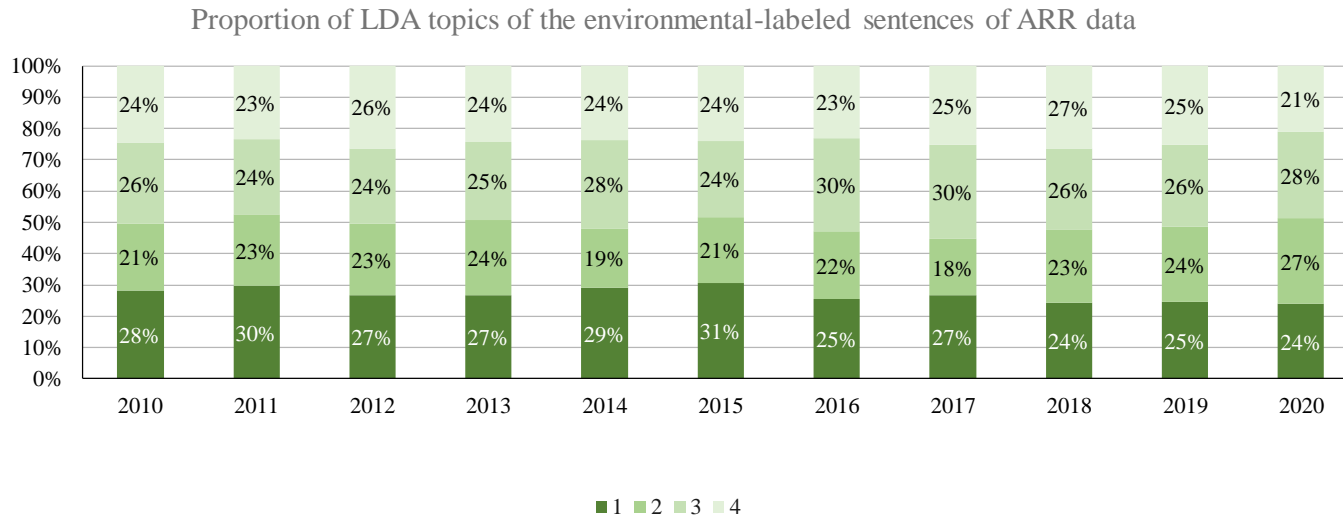
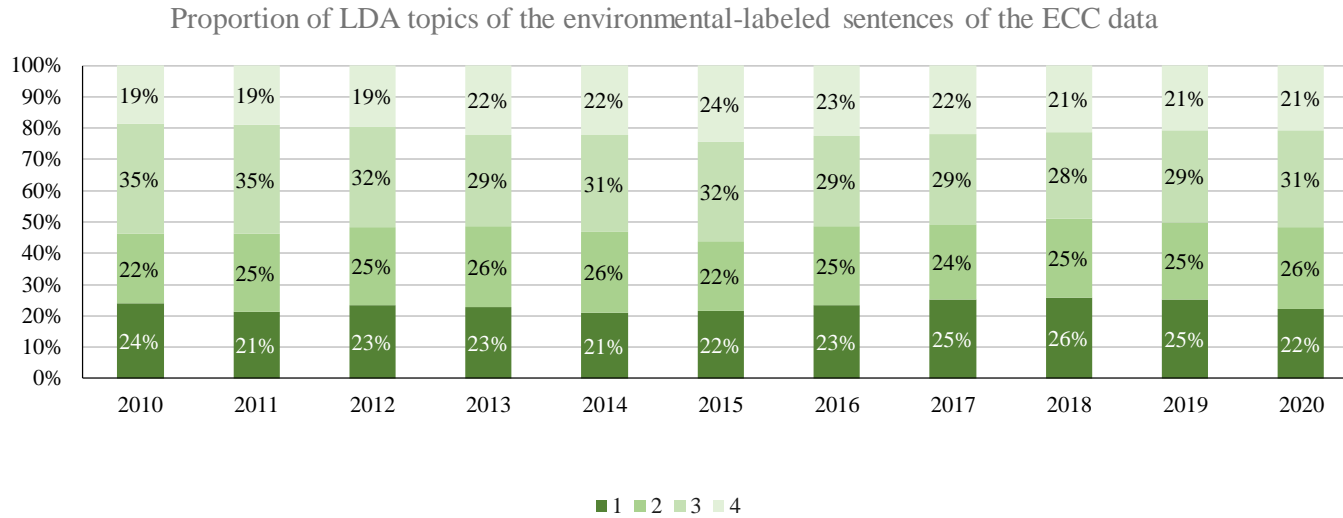
Figures

Figure 1: Average Number of E-S-G-labeled Sentences across Years



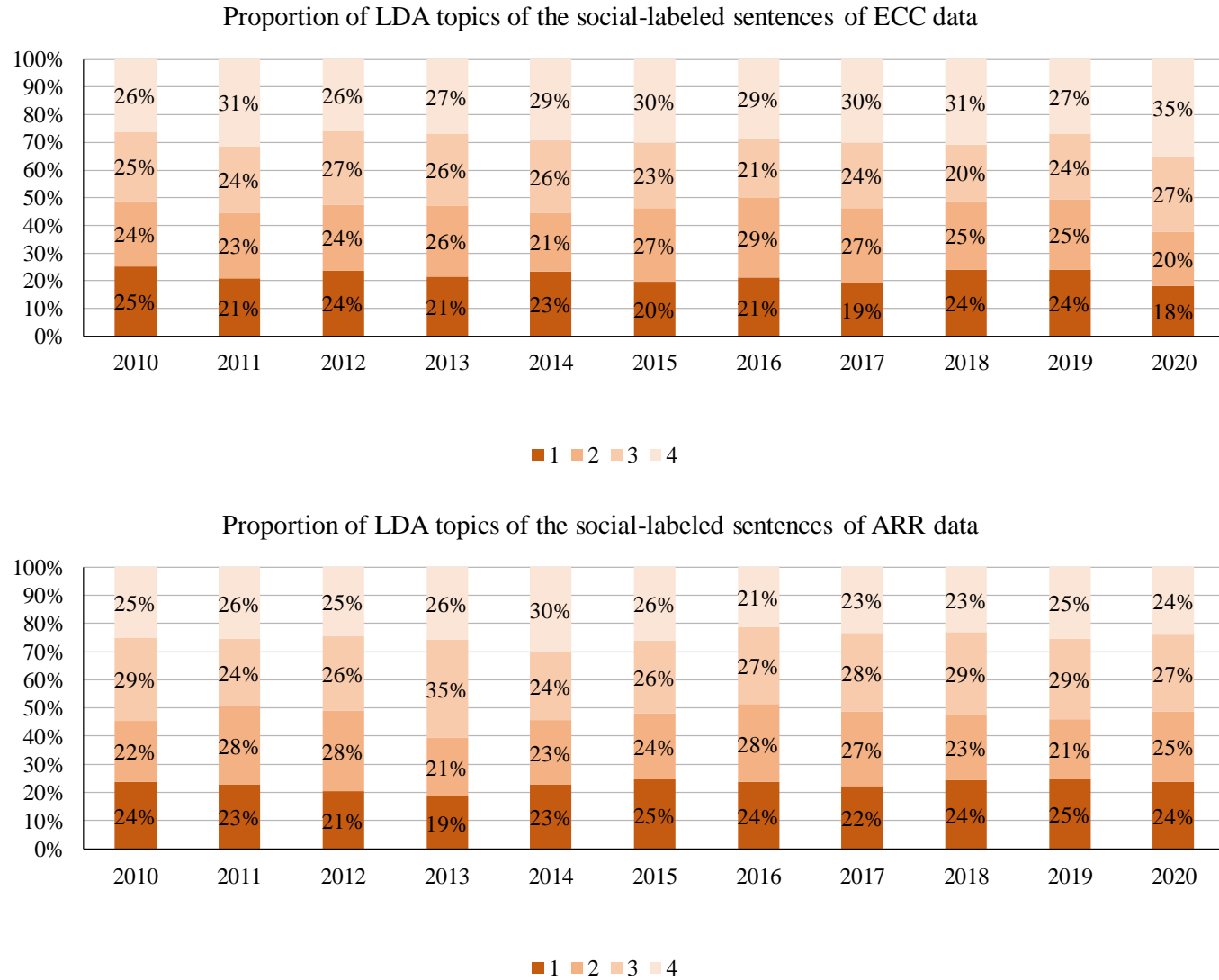
Notes : This figure provides an overview of the average count of labeled sentences in ECC and ARR data across years. The whole ECC transcript (presentation section and Q&A-session) is analyzed.

Figure 2: Proportion of Environmental-related Topics



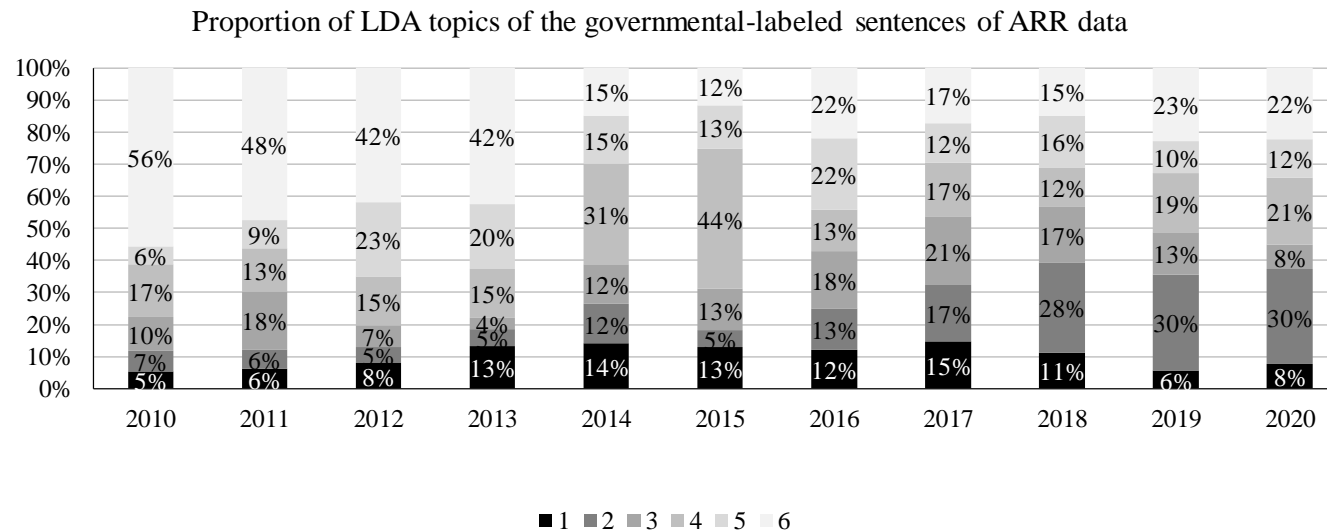
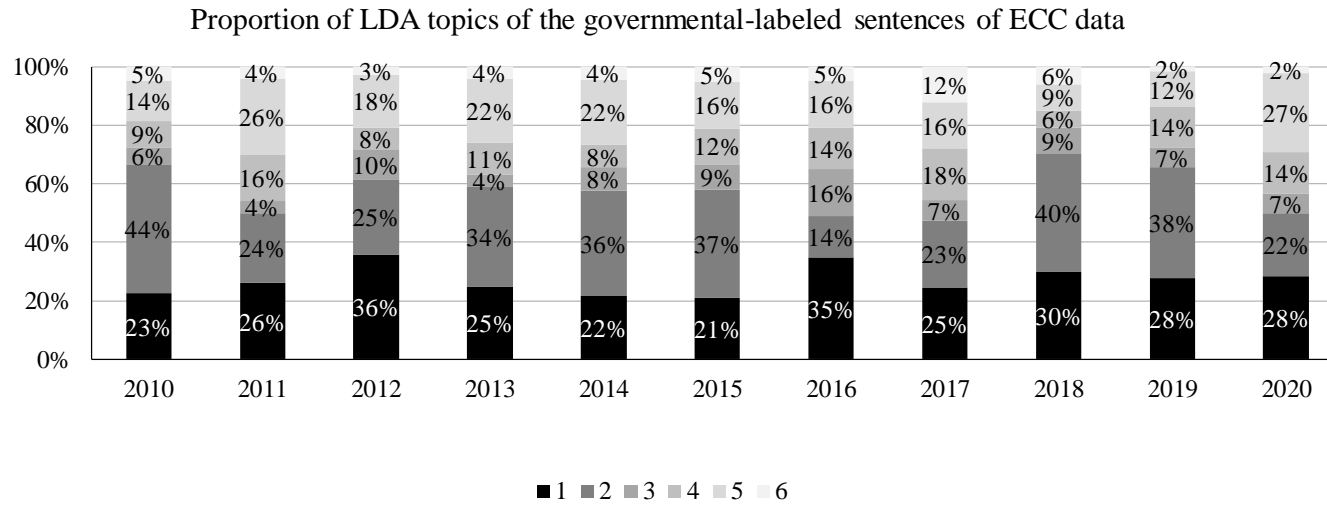
Notes: This figure provides an overview of the share of LDA topics of environmental-labeled sentences in ECC and ARR data across years. The whole ECC transcript (presentation part and Q&A-session) is analyzed. Table 3 labels and defines the LDA topics.

Figure 3: Proportion of Social-related Topics



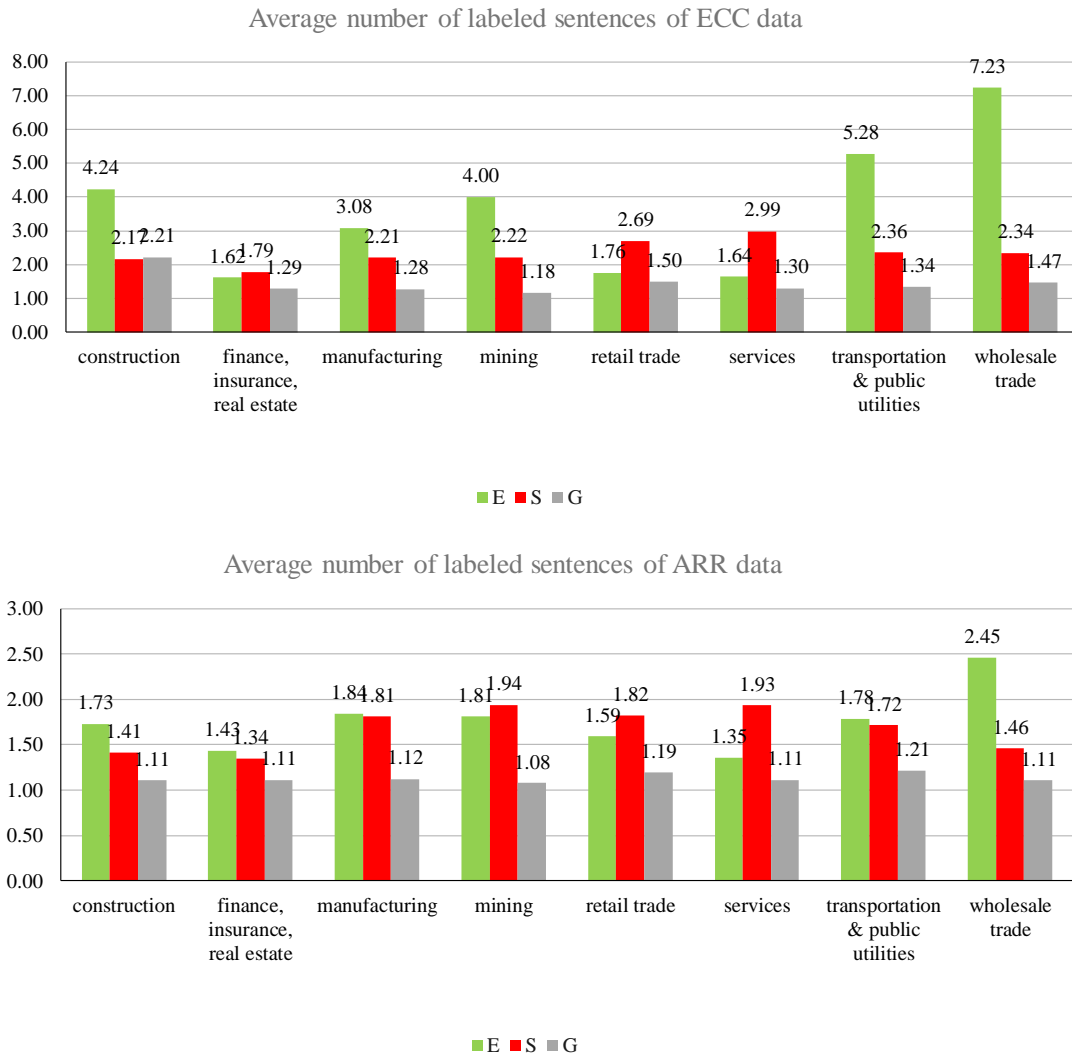
Notes: This figure provides an overview of the share of LDA topics of social-labeled sentences in ECC and ARR data across years. The whole ECC transcript (presentation part and Q&A-session) is analyzed. Table 3 labels and defines the LDA topics.

Figure 4: Proportion of Governmental-related Topics



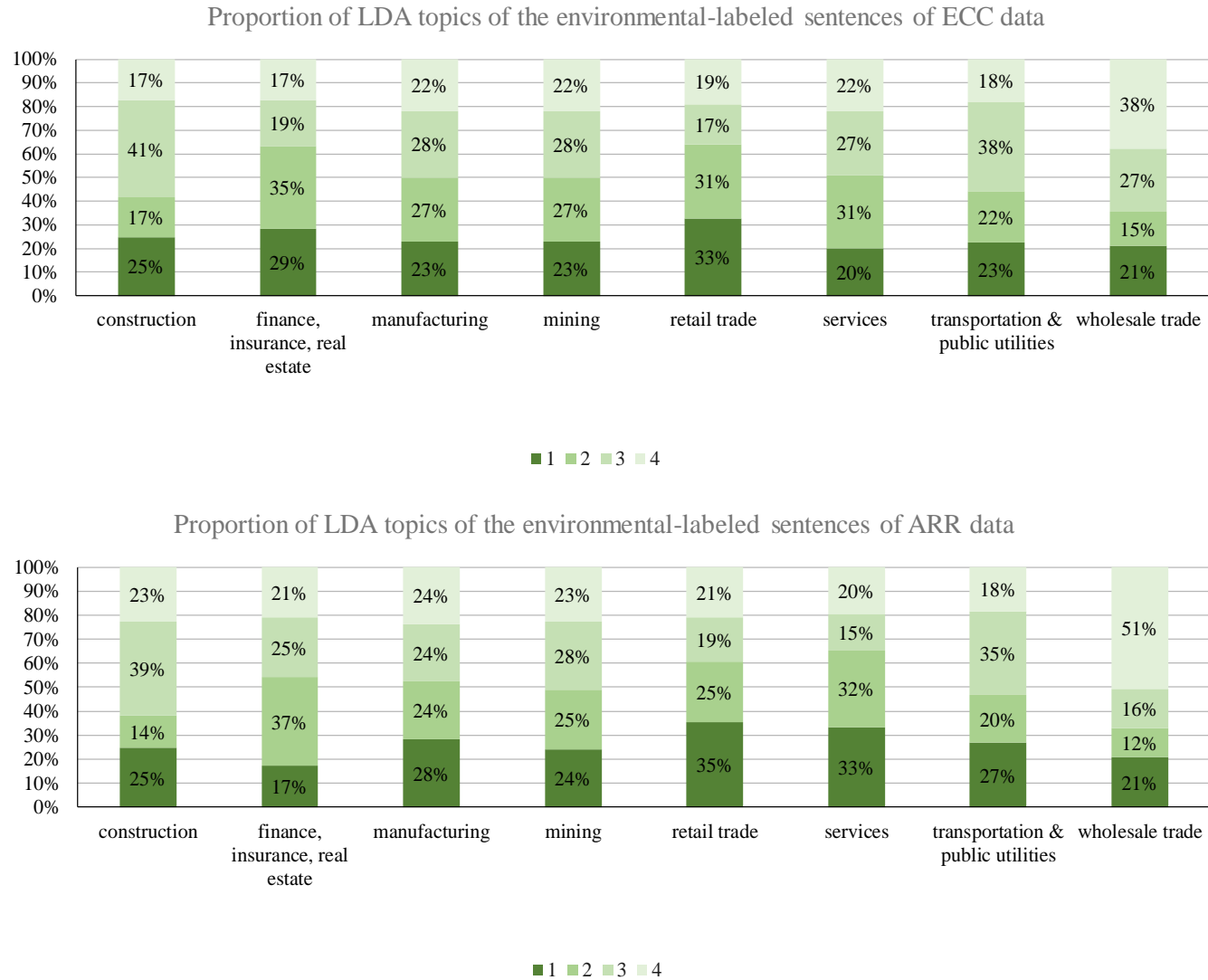
Notes: This figure provides an overview of the share of LDA topics of governmental-labeled sentences in ECC and ARR data across years. The whole ECC transcript (presentation part and Q&A-session) is analyzed. Table 3 labels and defines the LDA topics.

Figure 5: Average Number of E-S-G-labeled Sentences across Industries



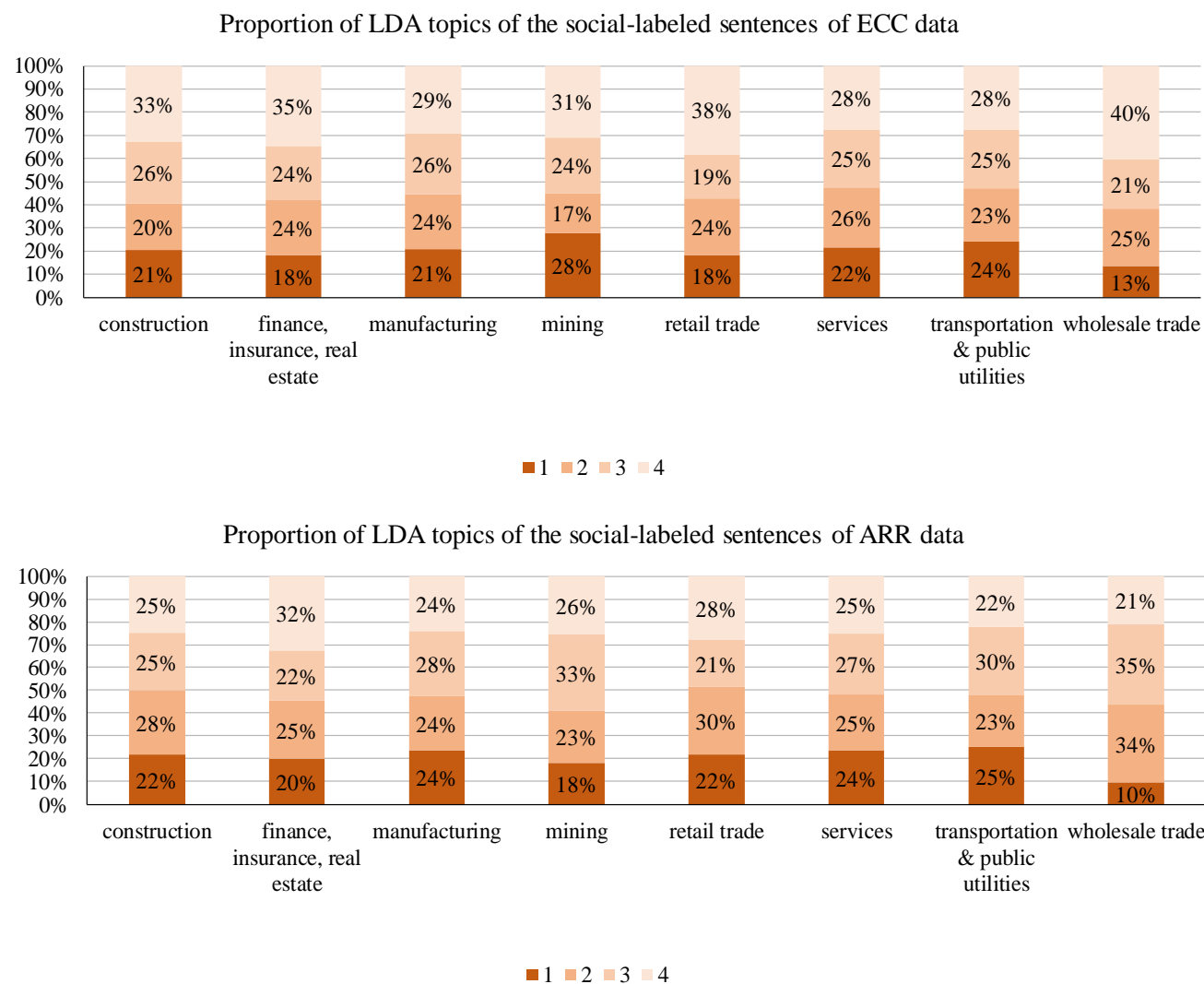
Notes: This figure provides an overview of the average count of labeled sentences in ECC and ARR data across industries. The whole ECC transcript (presentation section and Q&A-session) is analyzed.

Figure 6: Proportion of Environmental-related Topics across Industries



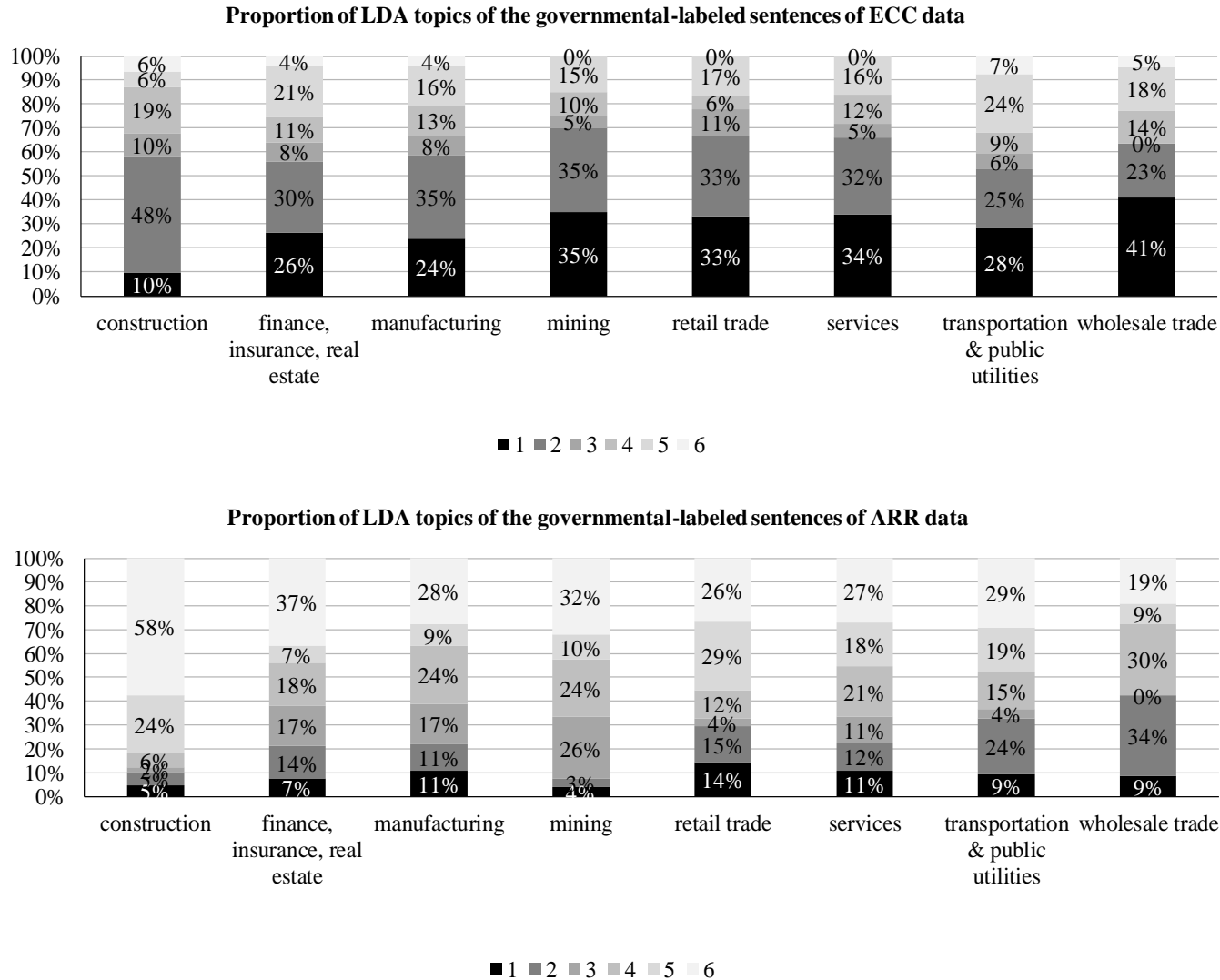
Notes: This figure provides an overview of the share of LDA topics of environmental-labeled sentences in ECC and ARR data across industries. The whole ECC transcript (presentation part and Q&A-session) is analyzed. Table 3 labels and defines the LDA topics.

Figure 7: Proportion of Social-related Topics across Industries



Notes: This figure provides an overview of the share of LDA topics of social-labeled sentences in ECC and ARR data across industries. The whole ECC transcript (presentation part and Q&A-session) is analyzed. Table 3 labels and defines the LDA topics.

Figure 8: Proportion of Governmental-related Topics across Industries



Notes: This figure provides an overview of the share of LDA topics of governmental-labeled sentences in ECC and ARR data across industries. The whole ECC transcript (presentation part and Q&A-session) is analyzed. Table 3 labels and defines the LDA topics.