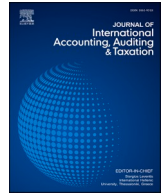


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The materiality of non-financial tax disclosure: Experimental evidence

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ABSTRACT

This study examines whether corporate tax information from non-financial disclosure is material for investors. This is important because, recently, the Global Reporting Initiative (GRI) enacted, and the European Union (EU) passed, new non-financial tax disclosure requirements. By conducting a factorial survey experiment, we are the first to show that non-professional investors are more likely to invest in companies providing detailed public country-by-country-reporting (CbCR) than in those that do not. We conclude that a public CbCR – as required by the GRI and the EU – is material for (non-professional) investors. Additional analyses show that the effect of the public CbCR is stronger (i) for socially responsible investors and (ii) for investors with high tax morale. In contrast to providing public CbCR, we find no evidence that reporting the corporate tax strategy (CTS) – as solely required by the GRI – affects investment decisions. Our findings provide novel insights into whether and how different types of investors integrate different kinds of non-financial tax disclosure in their decision-making processes. For this reason, our study at the intersection of corporate taxation, reporting, and sustainability provides implications for scholars, corporate decision-makers, policy-makers, and standard setters.

1. Introduction

In recent years, controversial discussions have arisen on both tax disclosure (Eberhartinger, Genest, & Lee, 2020; Hoopes, Robinson, & Slemrod, 2018; Joshi, Outslay, Persson, Shevlin, & Venkat, 2020) and materiality in non-financial reporting (Grewal, Hauptmann, & Serafeim, 2021; Khan, Serafeim, & Yoon, 2016). The public debate regarding tax transparency in general and tax avoidance strategies of large multinational technology companies, such as Amazon and Apple (Doyle, Frecknall-Hughes, & Summers, 2022; Oats & Tuck, 2019), prompted the Global Reporting Initiative (GRI) and the European Union (EU) to introduce tax disclosure regulations as an integral part of non-financial reporting. The new GRI 207: 2019 Tax standard mandates companies globally to disclose – among other things – their tax strategy and a public country-by-country-reporting (CbCR) if they want to continue to report “in accordance with” the GRI standards. In the eyes of the GRI, the corporate tax strategy (CTS) comprises a companies’ approach to taxation and might be illustrated by providing an overview of the use of tax havens (Gri, 2019, p. 6). The public CbCR covers information on financial, economic, and (most importantly) tax-related topics for each jurisdiction in which the company operates. In contrast to the GRI

approach, the EU passed a directive mandating solely a public CbCR in 2021, which member states must transpose into national law by mid-2024 (*Directive 2013/34/EU* 2013, Chapter 10a). Both standard setters justify the new disclosure requirement with the obligation that companies have to pay their fair share (Eu, 2021; Gri, 2019, p. 4). In line with this, a strand of literature (e.g., Abdelfattah & Aboud, 2020; Abdul Wahab & Holland, 2012; Hardeck & Hertl, 2014) classifies taxes as an element of corporate social responsibility (CSR) and of the even broader concept of corporate sustainability (CS).

We take the GRI 207:2019 Tax standard and the EU public CbCR directive as an inducement to examine the (financial) materiality of non-financial tax disclosures for investors as interpreted by the Sustainability Accounting Standards Board (SASB). This standard setter interprets CS information as material if there is “a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the ‘total mix’ of the information made available” (SASB, 2021). In this vein, a growing strand of literature focuses on various CS issues (e.g., greenhouse gas emissions or human rights issues) and shows that these issues tend to be material for investors (e.g., Bansal & Knox-Hayes, 2013; Fasan & Mio, 2017; Reimbschach, Schiemann, Hahn, & Schmiedchen, 2020; Yu & Zheng, 2020).

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Studying the materiality of specific CS issues is important because Khan et al. (2016) provide evidence that materiality affects stock prices and accounting performance. Moreover, Grewal et al. (2021) show that disclosing more material topics increases stock price informativeness. However, no study examines whether tax disclosure in non-financial reports is a material issue for investors. Prior studies on tax disclosure focus on tax disclosure in financial reports (e.g., Balakrishnan, Blouin, & Guay, 2019; Dyreng, Hoopes, & Wilde, 2016; Eberhartinger et al., 2020; Flagmeier, Müller, & Sureth-Sloane, 2021) or on changes in solely national tax rules to investigate investors' reaction to (public) tax disclosure (Chen, 2017; Hoopes et al., 2018). We investigate the international regulations of the GRI and the supranational EU regulation for non-financial reporting and, therefore, address the research gap on the (financial) materiality of non-financial tax disclosure. Hence, we state our first research question: Do the new tax disclosures depict a material topic from an investors' perspective?

However, investors are not a homogenous group. Different personal values and attitudes influence investment decisions (e.g., Nilsson, 2008; Pasewark & Riley, 2010). For our study at the intersection of corporate taxation, reporting, and sustainability, two investor characteristics are of interest. The first is the importance of sustainability to the individual investors. Accordingly, we classify our respondents into socially responsible and financially oriented investor types. The second is how investors think about taxation, i.e., if they are either a high or a low tax morale investor type. Consequently, our second research question is as follows: Are different investor types affected heterogeneously by the new tax disclosures of the GRI and EU?

To address our research questions, we conduct a factorial survey experiment (FSE), which, according to Oll, Hahn, Reimsbach, and Kotzian (2018, p. 26), is "*well suited to dealing with the complex interplay of societal-, organizational-, and individual-level factors in B[usiness] & S[ociety] research and to studying the principles underlying human perceptions, attitudes, values, social norms, and (anticipated) behavior.*" Exploiting these methodological strengths, we asked our respondents to evaluate investments based on six criteria: (i) CTS, (ii) CbCR, (iii) stock performance, (iv) energy management, (v) effective tax rate (ETR), and (vi) spillover effects of tax avoidance. To address the identified research gap, our main variables of interest are the CTS and a public CbCR (criteria i and ii). The remaining criteria (iii to vi) serve as tax and non-tax control variables that should be relevant in investment decisions. To control for heterogeneity in investor characteristics, we ask respondents about their attitudes toward sustainability and their tax morale.

In line with decision usefulness theory, our results show that investors significantly react to the provision of a public CbCR, i.e., CbCR is a material topic in non-financial reporting. This responds to the identified research gap by linking corporate tax disclosure and the materiality of CS issues. For this reason, the decision of the GRI and the EU to include tax disclosure in non-financial reports in general seems to provide material information to investors. However, our respondents solely react to a manipulation when a CbCR is provided, while no such effect can be observed for the manipulation in the CTS. Regarding our second research question, our results suggest that the new tax disclosures are not equally relevant to different investor types. A first sample split indicates that providing a public CbCR is more relevant for socially responsible investors than for financially oriented ones. A second sample split shows that investors' tax morale influences the effect of tax disclosure on investment decisions. More precisely, investors who disapprove of tax evasion are more strongly affected by companies' CbCR when making investment decisions than investors with low tax morale. Our findings hold after conducting several robustness (i.e., applying non-linear estimation techniques) and sensitivity tests (i.e., controlling for respondent characteristics).

Our study contributes to the literature in several ways. First, we provide novel insights by answering the question of whether disclosing a public CbCR and the CTS in non-financial reports is material for investors. Prior studies show that specific CS issues in the environmental,

social, and governance (ESG) pillars are financially material for investors (Johnson et al., Khan et al., 2016; Reimsbach et al., 2020). For instance, Johnson, Theis, Vitalis, and Young (2020) find in an experimental setting, that a company's emissions management strategy affects investment decisions. In this vein, Reimsbach et al. (2020) conduct an experiment in a non-financial disclosure setting and find that investors consider as material specific non-financial information about energy and biodiversity. However, no study exists examining whether tax disclosure in non-financial reports – as intended by the GRI and the EU – is material for investors. We address this gap and show that the mere provision of a public CbCR (as opposed to not providing a public CbCR) stimulates a response among investors. Future research should address other issues, such as whether the presentation and content of CbCR is relevant for stock price performance (Khan et al., 2016) and informativeness (Grewal et al., 2021).

Second, our study contributes to the strand of literature focusing on tax disclosure and investment decisions. Some prior studies exploit changes in specific national tax rules to investigate market reactions to an increase in tax transparency (Chen, 2017; Hoopes et al., 2018). For instance, Hoopes et al. (2018) use tax returns of Australian companies disclosed by the Australian Taxation Office and show that investors react negatively to anticipated and actual public tax disclosures. Our study contributes to this literature by going beyond national tax rules and instead examines the new tax disclosures of the GRI and the EU, two supranational standard setters in non-financial reports. Moreover, another strand of literature investigates the presentation of tax information disclosed in financial reports from the preparers' perspective. Companies, i.e., the preparers, try to anticipate investors' reactions to disclosed tax information and consequently adapt their disclosures strategically (e.g., Balakrishnan et al., 2019; Dyreng et al., 2016; Flagmeier et al., 2021). For instance, Flagmeier et al. (2021) provide evidence that preparers highlight ETRs, which are favorable for investors while unfavorable ETRs are less visible. Our experimental research approach allows us to investigate investor behavior directly and ex-ante, i.e., even before the first reports of the new tax disclosures are available and from the users' perspective. As a result, we contribute to the literature by adding the user's perspective of corporate tax reporting to the literature.

Third, our contribution to the literature on ethical investments is twofold. We extend previous research on socially responsible investments (SRI) (e.g., Auer, 2016; Hartzmark & Sussman, 2019) by showing that a public CbCR is a material reporting topic for socially responsible investors. Considering the widely used screening approach in SRI, this kind of information (i.e., public CbCR) might, therefore, be included in the portfolio creation procedure for this specific form of investment and type of investors. Furthermore, we contribute to the literature on ethical values and investors' decision-making. Prior studies showed that investors' decisions are affected by their personal attitude toward socially important topics, such as environmental concerns (Nilsson, 2008) or their opinion on tobacco consumption (Pasewark & Riley, 2010). Incorporating these findings as well as such on consumer behavior and attitude toward taxation (Hardeck & Hertl, 2014), we extend the literature on investor types by showing that investors' tax morale also affects their investment decisions. More precisely, we find that investment decisions of high tax morale investors are affected by public CbCR to a higher extent than those of low tax morale investors.

The remainder of this paper proceeds as follows. Section 2 presents the related literature and develops the hypotheses. Section 3 describes the methodology and our data. Section 4 presents the results and in section 5 we discuss our findings and derive our implications. Section 6 concludes the paper.

2. Related literature and hypotheses development

From a theoretical perspective, the decision usefulness theory – which is well established in accounting research – underpins our study

(Baxter, 2000; Reimsbach et al., 2020; Staubus, 2000; Tschopp & Nasanski, 2014). According to the theory, positive (negative) information is decision useful if the information user reacts to the information positively (negatively). Recent literature shows, that various CS issues disclosed in non-financial reports, such as greenhouse gas emissions or human rights issues, tend to be decision useful for investors (e.g., Bansal & Knox-Hayes, 2013; Fasan & Mio, 2017; Reimsbach et al., 2020; Yu & Zheng, 2020). For instance, Reimsbach et al. (2020) find that investors consider as material the specific non-financial information of energy usage and biodiversity. Based on this, we expect a specific investor's reaction to the (newly) available tax information in non-financial reports, if the information provided is decision useful to them.

From an investor's perspective, corporate tax information might be decision useful because corporate tax payments display costs reducing a company's available resources and after-tax earnings (Khan, Srinivasan, & Tan, 2017). Investors are interested in high (distributable) after-tax profits and, therefore, corporate tax avoidance should cause positive investor reactions (Desai & Dharmapala, 2006; Goh, Lee, Lim, & Shevlin, 2016; Wilson, 2009). However, investors also anticipate the costs of engaging in (aggressive) tax avoidance. This might be direct costs from settling disputes with tax authorities or indirect costs arising from negative reputational effects (Abdelfattah & Aboud, 2020; Graham, Hanlon, Shevlin, & Shroff, 2014), negative customer reactions (Antonetti & Anesa, 2017; Hardeck, Harden, & Upton, 2021; Hardeck & Hertl, 2014), or political backlash (Hoopes et al., 2018). Public tax information will increase (and should do so in accordance with the associated intentions of GRI and EU) the indirect costs of tax avoidance. For this reason, one strand of literature shows directly that investors – anticipating these higher costs resulting in lower distributable earnings – react to public tax disclosures (Chen, 2017; Hoopes et al., 2018). For instance, Hoopes et al. (2018) find in an Australian setting that investors react negatively to anticipated and actual financial tax disclosures.

Another strand of literature indirectly indicates the relevance of tax disclosure for investors by looking at companies' tax disclosure behavior. Companies, as preparers of financial reports, try to anticipate investors' reactions to disclosed tax information and consequently adapt their disclosures strategically (e.g., Akamah, Hope, & Thomas, 2018; Balakrishnan et al., 2019; Dyreng et al., 2016; Flagmeier et al., 2021). For instance, Flagmeier et al. (2021) empirically test the disclosure behavior of companies and provide evidence that companies highlight tax information in financial reports that is favorable for investors, while unfavorable tax information is less visible. In sum, based on the apparent decision usefulness of tax disclosure in financial reports and the aforementioned materiality perception of investors regarding non-financial information, we argue that the disclosure of the CTS and a CbCR in non-financial reports as required by GRI and EU will be material information to investors and provoke a specific investment reaction.

The CTS can be regarded as a continuum spanning from a responsible tax approach to aggressive tax avoidance and finally tax evasion (Doyle et al., 2022; Hanlon & Heitzman, 2010). The GRI defines CTS as how a company balances after-tax profits with social and sustainability expectations (GRI 207-1). Therefore, a publicly available CTS might outline the company's tax principles and attitude toward tax planning as well as the risks the corporation is willing to accept. Thus, a major aspect of the CTS is the means and practices a company uses to decrease or avoid taxation (GRI 207-1). However, the CTS is – besides the academic efforts and the guidelines of the GRI to define it – a rather vague and company specific construct. To address this issue and to make the CTS more comprehensible, the GRI guidance on CTS disclosure provides several concrete examples on how a company should illustrate its approach to taxation. The examples are supposed to indicate the acceptability and riskiness of the CTS (Gri, 2019, p. 6). Having in mind that the GRI does not only address professional investors, but rather aims to provide information to various stakeholder groups, the examples chosen ought to be familiar to the public. Therefore, the first named example in the GRI guidance is the probably most prominent and widely

discussed instrument of an aggressive CTS: the use of tax havens (Thomsen & Watrin, 2018). In line with the GRI, we focus on tax havens to assess the effect of disclosing the CTS, because this information is (i) likely to be disclosed by companies following the guidelines of the GRI and (ii) with a high probability is likely the most familiar with non-professional investors.

In this study, we argue that publishing the CTS in general and the use of tax havens in particular is likely to influence various stakeholders. Prior experimental studies show that other stakeholders, such as customers, react negatively to aggressive corporate strategies and, as a result, develop a negative attitude toward companies implementing such strategies (Hardeck et al., 2021). As a result, this stakeholder group becomes less willing to buy the companies' products or services (Antonetti & Anesa, 2017; Hardeck & Hertl, 2014). Apart from that, some studies show that stock market reactions occur after aggressive tax avoidance or tax evasion becomes public, i.e., the behavior of investors is influenced by such news (Abdul Wahab & Holland, 2012; Blaufus, Möhlmann, & Schwäbe, 2019; Chen, Schuchard, & Stomberg, 2019; Desai & Hines, 2002).

So far, however, the CTS has mainly come to the attention of stakeholders in individual cases through, for example, media reports or legal proceedings, but has not been systematically reported by companies themselves. This changes with the GRI 207-1 since more companies will be confronted with the reactions to their CTS or, more specifically, their use of tax havens. Against the background of debates on fair share and corporate citizenship (Dyreng et al., 2016; Hardeck & Hertl, 2014), we argue that the negative stakeholder reactions on this kind of additional company reporting will prevail. Investors anticipate those negative reactions and are less inclined to invest in a company that reports the use of tax havens. Based on this we hypothesize that:

Hypothesis 1. *Compared to an aggressive use of tax havens, refraining from using tax havens affects investment decisions positively.*

The GRI implemented a public CbCR with GRI 207-4 and the EU passed a directive mandating a public CbCR (Directive 2013/34/EU 2013, Chapter 10a). Both public CbCR frameworks will provide stakeholders with a wide range of economic, financial, and (for us most importantly) tax information about the reporting company (Dutt, Ludwig, Nicolay, Vay, & Voget, 2019). Data such as the number of employees, revenues, profits, and taxes paid broken down for each jurisdiction a company is doing business in (see Appendix 2) will allow stakeholders to assess the scale of activity and contribution to society of a company. Mismatches between these aspects will probably – and as intended by the GRI and the EU – increase media interest and create public pressure on companies to pay their fair share (Eu, 2021). In fact, prior research on public CbCR in the European banking industry indicates that banks adjust their profit shifting and tax avoidance behavior, i.e., banks restrict it (e.g., Joshi et al., 2020; Overesch & Wolff, 2021). Based on this, increased corporate tax payments decrease after-tax profits (Dutt et al., 2019) and, therefore, might trigger negative investor reactions to a public CbCR.

However, public CbCR inevitably provides a deeper public insight into the company's business, such as the geographical distribution of activities and earnings. Prior literature indicates that originally tax-related information can be useful in forecasting future earnings (Bratten, Gleason, Larocque, & Mills, 2017; Dutt et al., 2019; Hanlon & Heitzman, 2010). For this reason, a detailed public CbCR might provide material information to analysts and investors. Further, the additional information provided by CbCR mitigates the information asymmetry between companies and shareholders. This hinders the private rent extraction by company managers identified in prior literature (Desai & Dharmapala, 2006; Desai, Dyck, & Zingales, 2007). Consequently, investors may react positively to public CbCR (Dutt et al., 2019).

Despite, or perhaps because of, the manifold detailed information the CbCR provides, it is also possible that investors may not use it in their decision making at all. Financial as well as non-financial reporting

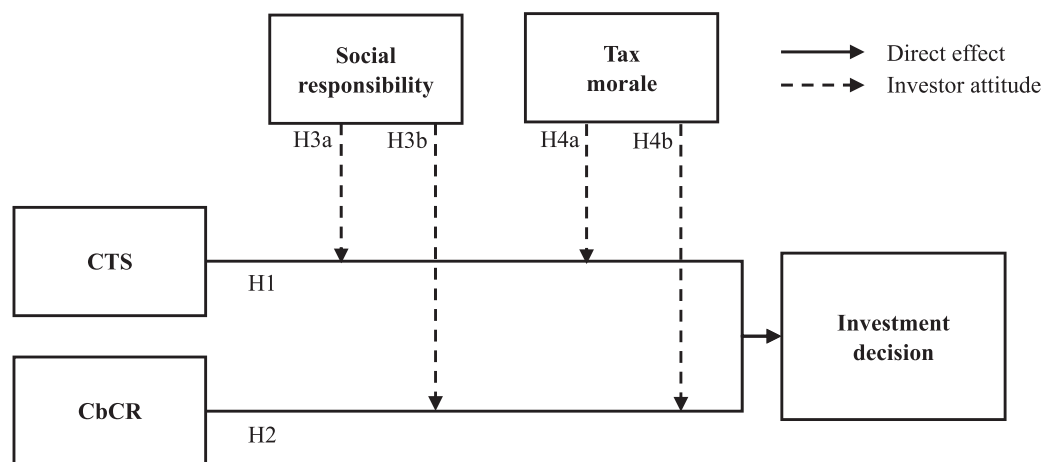


Fig. 1. Research framework.

already supplies a tremendous amount of information and there is a debate on whether and how this existing information is used considering the costs associated with acquiring and analyzing corporate disclosures (for an overview see Blankespoor, deHaan, & Marinovic, 2020). Furthermore, investors might substitute complex constructs with more easier accessible ones. For instance, Kadous, Koonce, and Thayer (2012) show that users of financial reports replace the complex construct of relevance in a fair value estimation by the less complex properties of reliability. Therefore, we refrain from examining the extensive content of CbCR in detail but investigate whether the mere provision of such a report is sufficient to influence investment decisions. Investors could interpret the provision of a CbCR in the non-financial report as a signal that the company “has nothing to hide” or the absence as a signal that the company is not paying its fair share. As a result, the provision of CbCR might lower investment risk.

To sum up, investors’ potential reactions to the new disclosure rules regarding CbCR appear ambiguous. Nevertheless, initiatives like the OECD’s Base Erosion and Profit Shifting project (BEPS) already aim to impede common tax avoidance measures (e.g., profit shifting), which can be revealed through CbCR. For this reason, we argue that the positive effects of public CbCR – less information asymmetry and lower investment risk – outweigh the negative ones and state the following hypothesis:

Hypothesis 2. *Compared to not providing a public CbCR, providing a public CbCR affects investment decisions positively.*

In a next step, we draw on previous research on SRI (e.g., Auer, 2016; Hartzmark & Sussman, 2019) and link tax disclosure to a socially responsible attitude of investors. By examining whether socially responsible investors perceive specific tax disclosure as more relevant than financially oriented investors, we acknowledge the heterogeneity of investors. We argue for a higher relevance of additional tax disclosure for the former as opposed to the latter for three reasons. First, their beliefs differ as to the importance of ethical issues for investment decisions. For example, Nakai, Honda, Nishino, and Takeuchi (2018) observed that the main motivation for socially responsible investors is to make a positive contribution to society through their investments and not earning profits. Second, both investor types differ fundamentally in their investment decision-making processes (e.g., McLachlan & Gardner, 2004). Third, socially responsible and financially oriented investors perceive moral intensity differently. For instance, Døskeland and Pedersen (2016) show that it is important for socially responsible investors to follow their own beliefs and ethical values. Therefore, the new tax disclosures should help socially responsible investors to allocate their investments to companies that pay a fair share of taxes. In addition, such investments should correspond to a higher extent with the beliefs and

values of socially responsible investors compared to those of financially oriented investors. As a result, we derive the following hypothesis:

Hypothesis 3a. *The CTS is more important to socially responsible investors than financially oriented investors.*

Hypothesis 3b. *Public CbCR is more important to socially responsible investors than financially oriented investors.*

Finally, we expect that the effect of CTS and public CbCR on investment decisions will be different for investors with different personal tax mentalities (Lewis, 1979). The literature suggests that investors incorporate their environmental concerns and other social issues into their investment decisions (Nilsson, 2008) and that ethical values influence investor choices. For instance, the attitude toward tobacco consumption affects decisions regarding an investment in tobacco companies (Pasewark & Riley, 2010). Further, Hardeck and Hertl (2014) show that the tax mentality of consumers can affect their relationship with a company depending on its tax strategy. Based on these results, we argue that the personal tax mentality of investors is likely to influence their investment decisions.

From the various dimensions of tax mentality, we examine investors’ personal tax morale, i.e., “one’s attitude toward illegal tax evasion” (Hardeck & Hertl, 2014, p. 314). We expect that investors with a high tax morale prefer investing in companies that pursue a less aggressive tax strategy, such as not using tax havens, because these companies match their personal tax mentalities. For the same reason, such investors should appreciate public CbCR as a high-quality source of information on the company’s activities and the corresponding tax payments, and this investor group might even evaluate the provision of such a report as a signal that the company “has nothing to hide”. In contrast, the values of low tax morale investors might be more congruent with companies maximizing after-tax profits by using aggressive tax avoidance measures, such as tax havens, and such investors may have no ethical interest in a detailed breakdown of tax data by individual jurisdictions or even the provision of a public CbCR. Overall, we argue that CTS and public CbCR are more important for investors with a high tax morale and hypothesize the following:

Hypothesis 4a. *The CTS is more important to investors with a high tax morale than those with a low tax morale.*

Hypothesis 4b. *Public CbCR is more important to investors with a high tax morale than those with a low tax morale.*

Fig. 1 depicts our research framework including Hypotheses 1 to 4b. We consider tax information from various sources. We distinguish whether tax information is provided in non-financial reports, in financial reports, or by the media. By doing so, we intend to derive the

Table 1
Variable definitions table.

Variable name	Description	Variable type	Operationalization
<i>InvestmentDecision</i>	Dependent variable showing the investment likelihood of a respondent	Interval	Seven-point Likert-type scale from 1 = very unlikely to invest to 7 = very likely to invest
<i>CorpTaxStrat</i>	Explanatory variable showing the corporate tax strategy (CTS) of a company	Dummy	Does a company report having any subsidiaries in so-called tax havens? Coded 0 if yes uses tax havens , and coded 1 if no tax havens used .
<i>CbCReport</i>	Explanatory variable showing whether a company provides a country-by-country-reporting (CbCR) report	Dummy	Does the company disclose how much revenue and profit it generates in individual countries and how much tax it pays there in each case (so-called “country-by-country reporting”)? Coded 0 if does not disclose, and coded 1 if discloses in detail .
<i>StockPerf</i>	Control variable showing how a company performed on the stock market	Dummy	Company’s stock performance compared to DAX, the major German stock index. Coded 0 if below average , coded 1 if above average .
<i>EnergySource</i>	Control variable showing the energy management of the company	Dummy	Coded 0 if a company mainly uses fossil energy sources (coal, natural gas, or crude oil) . Coded 1 if a company mainly uses renewable energy sources (solar or wind power) .
<i>EffTaxRate</i>	Control variable showing the effective tax rate of a company	Dummy	The company’s effective group tax rate in recent years compared to its peer group companies. Coded 0 if lower , and coded 1 if higher .
<i>TaxSpillOver</i>	Control variable showing news about a peer company’s tax avoidance measures	Dummy	Coded 0 if according to various media reports, proceedings have been opened against a company from the same sector for possibly unfair tax practices. Coded 1 if according to various media reports, proceedings have been discontinued as without cause against a company from the same sector for possibly unfair tax practices.
<i>Age</i>	Control variable for respondent’s age	Numerical	Age in years
<i>Sex</i>	Control variable for respondent’s gender	Categorical	1 = Diverse; 2 = Female; 3 = Male; 4 = No statement
<i>Degree</i>	Control variable for respondent’s education	Categorical	1 = Undergraduate; 2 = Graduate; 3 = Other
<i>SocialResponsibleAttitude</i>	Shows a respondent’s personal interest in sustainability issues to generate sub-samples for stronger and weaker social responsibility attitude respondents (Hypotheses 3a and 3b). The former we define as socially responsible investors and the latter as financially oriented investors.	Dummy	Sample split using median; Coded 0 for Weaker and 1 for Stronger based on 2 questions with 5 point Likert-type scale: a. Environmental protection is an important topic for me in all areas of life (Oll et al., 2018). b. I consciously try to make a contribution to fighting the climate crisis in my private life (e.g., preferring public transportation) (Reimsbach et al., 2020).
<i>TaxMoraleAttitude</i>	Shows a respondent’s personal tax morale (based on Eriksen & Fallan, 1996; Hardeck & Hertl, 2014; Körner & Strotmann, 2006; Lewis, 1979) to generate sub-samples for higher and lower tax moral respondents (Hypotheses 4a and 4b).	Dummy	Sample split using median; Coded 0 for Lower and 1 for Higher based on 3 questions with 5 point Likert-type scale: a. Tax evasion is in no case ethical (Körner & Strotmann, 2006). b. One cannot criticize a person who declares a lower income than was the case on his or her tax return when there are so many others doing exactly the same (Eriksen & Fallan, 1996, reverse coded). c. If the tax system is unfair, you can justify tax evasion. (Eriksen & Fallan, 1996, reverse coded).

materiality of tax information in a sustainability context. We further examine whether CTS and CbCR are more relevant to investors with specific attitudes regarding social responsibility and tax morale.

3. Method

3.1. Design

We test our hypotheses by conducting a FSE. This research method is widely used in social sciences, especially in studies on personal attitudes or social judgements (Aguinis & Bradley, 2014; Rossi & Nock, 1982, pp. 15–67; Wallander, 2009). The method dates back to the 1970s (Rossi, Sampson, Bose, Jasso, & Passel, 1974), but has been only recently identified as suitable for research like ours in the field of business studies in general and of business ethics and corporate citizenship in particular (Oll et al., 2018). Furthermore, since the disclosure requirements of the GRI and the EU were recently enacted or passed, no archival data is available, so an experimental design is the sole option to answer our research questions. Using the FSE, our paper therefore adds to a small but growing number of studies that apply the method (e.g., Azadegan, Golara, Kach, & Mousavi, 2018; Dickel & Graeff, 2018).

In FSEs, respondents are confronted with several “vignettes.” Vignettes are concise, carefully worded descriptions of hypothetical situations that represent a systematic combination of attributes known as “dimensions” (Auspurg & Hinz, 2015). The values of these dimensions (“levels”) vary across the vignettes enabling us to estimate their impact on the respondent’s behavior (Alexander & Becker, 1978; Wallander, 2009). We draw the four vignettes answered by each respondent

randomly from the entire vignette universe, which comprises all possible combinations of levels (Auspurg & Hinz, 2015; Wallander, 2009). To test our hypothesis, we created vignettes describing a fictitious private investment decision and asked the respondents if they would invest in shares of the respective (fictitious) company from the technology & communication industry described in each vignette. We choose a fictitious rather than an existing company to avoid prior learning effects as well as to enhance the internal validity (Hardeck et al., 2021) and the specific industry in order to control for established material ESG issues (see Appendix 3).

A major advantage of FSEs is that this method forces respondents to make trade-offs between several dimensions of a problem, which makes the setting closer to real-life decisions. The multidimensionality also mitigates the problem of social desirability bias, which is a major concern in studies examining issues with an ethical dimension – in our case aggressive corporate tax avoidance, SRI, and tax morale (Alexander & Becker, 1978; Auspurg & Hinz, 2015; Wallander, 2009). Further, the FSE enables us to consider disclosure and materiality from the user (i.e., investor) perspective as opposed to the more frequently examined preparer (i.e., company) perspective (Reimsbach et al., 2020). Finally, Oll et al. (2018) already showed that FSEs are a suitable method for conducting research on socially responsible investment decisions.

3.2. Vignettes

To test our hypotheses, we included tax havens usage as a proxy for the CTS (*CorpTaxStrat*) and whether a CbCR is disclosed (*CbCReport*) as our variables of interest in each vignette. For the former, this is because

the GRI explicitly names the usage of tax havens as an example on how to explain the CTS in their GRI 207 standard (see Appendix 1). This illustrates that tax haven usage is a vibrant example for a common CTS measure and an important indication of the acceptability and riskiness of the CTS. Regarding CbCR, we argue that companies provide precise information beyond the usage of tax havens to the public. As seen in Appendix 2, a CbCR provides various tax and non-tax information such as income tax paid or profit on the country level, respectively, and the provision of a CbCR is a signal that the company “has nothing to hide.” However, from these various information, at least experienced investors might derive tax haven usage, because tax haven usage (*CorpTaxStrat*, our proxy for CTS) and CbCR are interrelated to some extent. Nevertheless, we argue that the specific information of tax haven usage – as required by the GRI – provides a much clearer signal concerning the CTS to investors compared to the information on possible tax haven usage derived from the CbCR. Providing a clearer signal might be important, because such easily accessible information causes a response even though the granular information is already available elsewhere. One example of this phenomenon is that when information regarding a group’s greenhouse gas (GHG) emissions level is disclosed in an aggregated format on the level of the ultimate parent company, it better informs stakeholders. This increased transparency allows stakeholders (among them shareholders) to exert more pressure on the company, ultimately leading to a reduction in GHG emissions levels. Notably, this effect is observed even when GHG emissions data were previously available at the installation level. Thus, the enhanced accessibility of information induces a response in stakeholders’ behavior (Downar, Ernstberger, Reichelstein, Schwenen, & Zaklan, 2021).

Beyond that, we integrated additional control dimensions in our vignettes. Since stock performance significantly affects investment decisions, we provided prior stock performance information (*StockPerf*) as a control variable indicating financial performance. Furthermore, because energy management is a material issue in the technology & communication industry according to SASB’s Materiality Map® (see Appendix 3), *EnergySource* serves as a control variable for the materiality of an established ESG issue. Moreover, the ETR (*EffTaxRate*) as an established tax indicator in financial reporting (Flagmeier et al., 2021) is included. Finally, news about peer’s tax avoidance strategies and related investigations (*TaxSpillOver*), which was recently identified as relevant for investors (Bauclloh, Hardeck, Inger, Wittenstein, & Zwergel, 2021), complete our set of control variables. These four variables also enhance the variety of the vignettes. This is important because we present four vignettes to each respondent and evaluating very similar vignettes leads to boredom and fatigue effects (Auspurg & Hinz, 2015; Sauer, Auspurg, Hinz, & Liebig, 2011). Table 1 summarizes all variables and their operationalizations.

Our vignette universe comprised $2 \times 2 \times 2 \times 2 \times 22 = 64$ vignettes. According to the literature, in general, seven (plus or minus two) dimensions are ideal for vignettes, smaller numbers of levels result in more efficient designs, and a balanced number across the dimensions avoids the bias-causing number-of-level effect (Auspurg & Hinz, 2015; Blaufus & Ortlieb, 2009). Because of the relatively small size of our vignette universe, we conducted a full FSE; however, each respondent in an FSE only judges a reduced sample of the whole universe to avoid inconsistencies arising from cognitive overload or fatigue (Dülmer, 2007; Sauer et al., 2011). Based on the recommendations of the literature and to keep the overall survey as short as possible, we presented four different vignettes to each of our respondents.

We used an algorithm optimized for constructing D-efficient designs to group the vignettes into 16 sets of four vignettes each (so-called “blocks”; Auspurg & Hinz, 2015; Auspurg et al., 2017). The survey software randomly assigned the blocks to our respondents, and within the blocks, the vignettes appeared in a random order to prevent order or framing effects (Auspurg & Hinz, 2015; Auspurg & Jäckle, 2017; Oll et al., 2018). Some respondents did not finish the survey so that each block in the final sample was answered by five to ten different

respondents. This answer rate is sufficient (Aguinis & Bradley, 2014). To enhance clarity, we opted for a tabular form of the vignettes (Aguinis & Bradley, 2014; Sauer et al., 2011) and added a per block unique, but contentless company name, to our vignette to highlight the independence of each described investment situation.

Fig. 2 depicts a sample vignette. Using a seven-point Likert-type scale ranging from “very unlikely” to “very likely,” the respondents stated how likely an investment in shares of the company, as described in the vignette, would be. In real-life scenarios, investment decisions are complex and based on more information than can be included in the vignettes. Therefore, we stated additional relevant factors in our introductory text as constant conditions (e.g., that the company is successful and generates profits); to not deter respondents from investing in the company, we phrased these factors positively and stated that the investment corresponds with our respondents’ investment strategy and horizon.

To classify the respondents into investor types, we measured some personal characteristics on five-point multi-item Likert-type scales. We collected data on the personal interest of our respondents in sustainability issues (*SocialResponsibleAttitude*) to determine whether a respondent shows a socially responsible or financially oriented investor (Oll et al., 2018; Reimsbach et al., 2020). Further, we provided some statements on tax evasion to assess respondents’ tax morale (*TaxMoraleAttitude*) (Eriksen & Fallan, 1996; Hardeck & Hertl, 2014; Körner & Strotmann, 2006; Lewis, 1979). The associated questions are summarized in Table 1.

3.3. Respondents and data

We collected our data via an online survey at two German universities. To keep intrinsic motivation high, we refrained from providing any incentives (Shamon & Berning, 2020). Prior literature finds no evidence that rewards increase participation rates (Keusch, 2015; Porter & Whitcomb, 2003). In our sample, 66.96 % of the respondents were undergraduate students and 33.04 % were graduate students. Nearly all students were enrolled in business-related programs (92.86 %). The respondents were predominantly men (53.50 %) and were, on average, 22 years old. Moreover, Table 2 shows that the mean social responsible attitude in our sample is 4.09 and the mean tax morale attitude is 3.86.

In Table 3, we provide additional descriptive statistics regarding our investor respondents’ characteristics and demographics. As seen in Panel A, on average, financial orientated investors with a weaker social responsibility attitude (*SocialResponsibleAttitude*) are more likely to invest in our setting. The same holds for lower tax morale investors (*TaxMoraleAttitude*), even though the difference is smaller. Regarding respondent demographics (see Panel C and D), the sample does not exhibit any conspicuous features. We additionally provide a correlation matrix in Table 4.

Business students are a suitable sample for our research because they are likely to be an approximation for at least non-professional investors (Harris, Hobson, & Jackson, 2016; Oll et al., 2018). Moreover, students perform well in experimental tasks in general (Khera & Benson, 1970), and in vignette evaluations in particular (Sauer et al., 2011). Finally, other experimental studies on tax-related topics (Blaufus & Ortlieb, 2009; Davis, Moore, & Rupert, 2021; Eriksen & Fallan, 1996; Hardeck et al., 2021; Hardeck & Hertl, 2014), on investor reactions (Elkins, Entwistle, & Schmidt, 2021; Guiral, Moon, Tan, & Yu, 2020; Harris et al., 2016), and on corporate disclosure (Elliott, Jackson, Peecher, & White, 2014; Holm & Rikhardsson, 2008) successfully used student samples.

Overall, we received 114 complete questionnaires, totaling 456 vignette observations (four per respondent), but we had to exclude two questionnaires (i.e., eight vignette observations) because of failed attention checks. The final sample comprised 112 respondents and 448 vignette observations, respectively. Using a five-point Likert scale, the respondents in the final sample stated that they noticed the

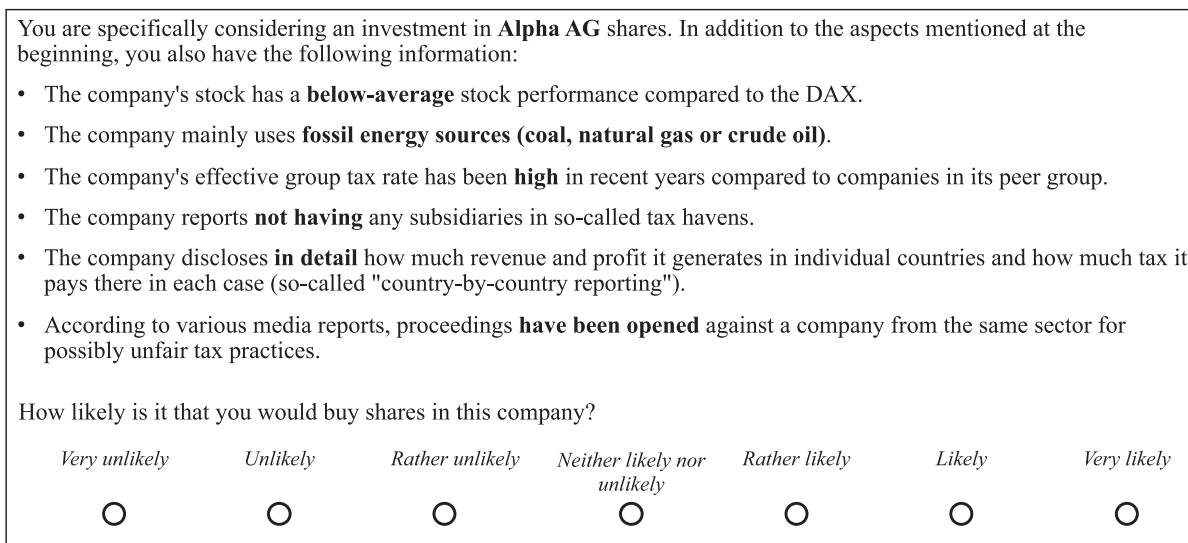


Fig. 2. Sample vignette.

Table 2
Descriptive statistics.

Variable	Observations	Mean	Std. Dev.	Min	Max
InvestmentDecision	448	3.475	1.781	1	7
Age	448	21.839	3.043	18	37
SocialResponsibleAttitude	448	4.094	0.690	2	5
TaxMoraleAttitude	448	3.857	0.874	1.333	5

Note: See Table 1 for all variable definitions.

manipulations in the vignettes (manipulation check) regarding tax havens (mean = 4.18, SD = 0.99) and CbCR (mean = 3.79, SD = 1.18). The respondents regarded the instructions and questions of the study as comprehensible (see Appendix 4). Fig. 3 depicts the frequency distribution of vignette evaluations, which shows no indication of a censored response problem (Auspurg & Hinz, 2015).

Table 3
Additional descriptive statistics.

PANEL A. Mean investment decision by investors' social responsibility attitude					
SocialResponsibleAttitude	No. of respondents	Mean InvestmentDecision	Std. Dev.	Min	Max
Weaker	256	3.621	1.742	1	7
Stronger	192	3.281	1.817	1	7
PANEL B. Mean investment decision by investors' tax morale attitude					
TaxMoraleAttitude	No. of respondents	Mean InvestmentDecision	Std. Dev.	Min	Max
Lower	268	3.515	1.781	1	7
Higher	180	3.417	1.784	1	7
PANEL C. Mean investment decision by academic degree					
Degree	No. of respondents	Mean InvestmentDecision	Std. Dev.	Min	Max
Undergraduate	300	3.487	1.732	1	7
Graduate	116	3.534	1.853	1	7
Other	2	3.156	1.986	1	7
PANEL D. Mean investment decision by gender					
Sex	No. of respondents	Mean InvestmentDecision	Std. Dev.	Min	Max
Diverse	1	3.750	1.708	2	6
Female	206	3.466	1.691	1	7
Male	240	3.483	1.853	1	7
No statement	1	3.250	2.63	1	7

Note: See Table 1 for all variable definitions.

3.4. Model

Since each respondent evaluates four vignettes, our data are hierarchically structured: respondent data (e.g., age or social responsibility attitude) and vignette judgments. We account for this by using a multilevel analysis with random intercepts and fixed slopes (Auspurg et al., 2017; Auspurg & Hinz, 2015; Oll et al., 2018). To test Hypotheses 1 and 2, we built a model with vignette variables only. We denoted the outcome variable as $InvestmentDecision_{ij}$ for the vignette i answered by the respondent j , the intercept as β_0 , the regression coefficients for the six vignette dimensions as β_1 to β_6 , and the random error component in judgment as ϵ_{ij} . The respondent specific error term is depicted as u_j , which, together with the intercept β_0 , adds up to the random intercept. The decomposition of the error term in two components is necessary, as each respondent answers to more than one vignette. We further consider the complex error structure by calculating cluster-robust standard errors. Finally, n_i denotes the number of vignettes presented to each respondent and n_r is the number of respondents. Model (1) can be

Table 4
Pearson correlation matrix of main variables.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) InvestmentDecision	1.000											
(2) CorpTaxStrat	0.049 (0.301)	1.000										
(3) CbCReport	0.296* (0.000)	0.004 (0.925)	1.000									
(4) StockPerf	0.363* (0.000)	-0.018 (0.706)	0.013 (0.777)	1.000								
(5) EnergySource	0.430* (0.000)	0.009 (0.851)	-0.004 (0.925)	0.071 (0.131)	1.000							
(6) EffTaxRate	-0.051 (0.277)	0.027 (0.572)	-0.004 (0.925)	0.009 (0.851)	0.009 (0.851)	1.000						
(7) TaxSpillOver	0.119* (0.012)	0.027 (0.572)	0.013 (0.777)	-0.009 (0.851)	0.009 (0.851)	0.036 (0.451)	1.000					
(8) Age	0.038 (0.427)	0.000 (1.000)	0.019 (0.691)	-0.001 (0.975)	-0.025 (0.598)	0.000 (1.000)	0.000 (1.000)	1.000				
(9) Sex	-0.006 (0.907)	0.000 (1.000)	-0.028 (0.561)	-0.031 (0.506)	0.016 (0.740)	0.000 (1.000)	0.000 (1.000)	0.016 (0.743)	1.000			
(10) Degree	-0.028 (0.561)	0.000 (1.000)	0.010 (0.831)	0.029 (0.543)	0.000 (1.000)	0.000 (1.000)	0.000 (1.000)	0.267* (0.000)	-0.013 (0.788)	1.000		
(11) SocialResponsibleAttitude	-0.093* (0.050)	0.000 (1.000)	-0.029 (0.547)	-0.006 (0.891)	-0.016 (0.733)	0.000 (1.000)	0.000 (1.000)	0.043 (0.360)	0.086 (0.070)	0.006 (0.901)	1.000	
(12) TaxMoraleAttitude	-0.010 (0.826)	0.000 (1.000)	0.004 (0.926)	-0.003 (0.943)	-0.005 (0.914)	0.000 (1.000)	0.000 (1.000)	0.092 (0.051)	0.150* (0.001)	0.084 (0.075)	0.156* (0.001)	1.000

Notes: * denotes statistical significance at the 5 % level. See Table 1 for all variable definitions.

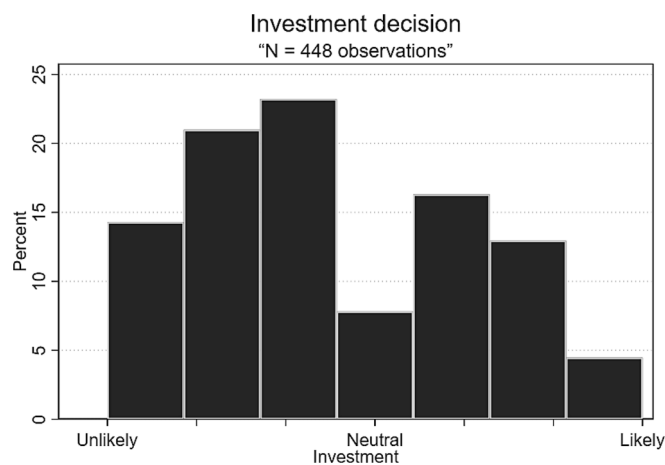


Fig. 3. Frequency distribution of vignette evaluations.

illustrated as follows:

$$\begin{aligned}
 InvestmentDecision_{ij} = & \beta_0 + \beta_1 CorpTaxStrat_{ij} + \beta_2 CbCReport_{ij} \\
 & + \beta_3 StockPerf_{ij} + \beta_4 EnergySource_{ij} + \beta_5 EffTaxRate_{ij} \\
 & + \beta_6 TaxSpillOver_{ij} + u_j + \varepsilon_{ij} \text{ with } i = 1, \dots, n_d \text{ and} \\
 & j = 1, \dots, n_r
 \end{aligned}
 \tag{1}$$

To test Hypotheses 3a to 4b, we split the sample based on the respondent characteristics of their attitude to social responsibility and tax morale, respectively.

4. Results

4.1. Regression analysis

We examined the link between tax information and investment likelihood with model (1). Table 5 presents the results for our random intercept regression using *InvestmentDecision* as the dependent variable. Hypothesis 1 states that unlike an aggressive use of tax havens, refraining from using tax havens has a positive effect on investment

Table 5
Regression results model (1) without and with control variables for respondents' characteristics.

	<i>InvestmentDecision</i> (1)	<i>InvestmentDecision</i> (2)
CorpTaxStrat	0.173 (0.144)	0.173 (0.145)
CbCReport	1.032*** (0.122)	1.031*** (0.123)
StockPerf	1.184*** (0.142)	1.190*** (0.141)
EnergySource	1.449*** (0.153)	1.453*** (0.154)
EffTaxRate	-0.221 (0.143)	-0.221 (0.144)
TaxSpillOver	0.411*** (0.146)	0.411*** (0.147)
Age		0.034 (0.025)
Sex		0.016 (0.108)
Degree		-0.159 (0.141)
Constant	1.464*** (0.176)	0.924* (0.548)
N	448	448
R_squared	40.12	40.60

Notes: The table presents random intercept regressions of *InvestmentDecision* on the respective explanatory variables as defined in Hypotheses 1 to 4b. In parenthesis, cluster-robust standard errors are shown. * and *** represent significance levels of 10% and 1%, respectively. See Table 1 for all variable definitions.

decisions. For this, we follow the new GRI 207: 2019 Tax standard that describes tax haven usage as a major part of a company's CTS. This more intuitive description of CTS (i.e., tax haven usage) reduces the complexity in assessing information about corporate tax strategies for our respondents. However, based on the findings in model (1) both with and without controls (see columns (1) and (2), respectively), *CorpTaxStrat* has no significant effect on *InvestmentDecision*, and we reject Hypothesis 1.

Our results support Hypothesis 2, as we observe a relatively large and significant coefficient for the *CbCReport* in both models. Providing a

Table 6
Attitude toward social responsibility and tax morale sample split results.

	<i>InvestmentDecision</i> (Financially oriented investors)	<i>InvestmentDecision</i> (Socially responsible investors)	<i>InvestmentDecision</i> (Lower tax morale investors)	<i>InvestmentDecision</i> (Higher tax morale investors)
	(1)	(2)	(3)	(4)
CorpTaxStrat	0.126 (0.189)	0.332 (0.210)	0.125 (0.186)	0.258 (0.232)
CbCReport	0.913*** (0.171)	1.167*** (0.175)	0.947*** (0.158)	1.157*** (0.192)
StockPerf	1.374*** (0.202)	0.865*** (0.190)	1.189*** (0.197)	1.178*** (0.207)
EnergySource	1.414*** (0.215)	1.413*** (0.217)	1.327*** (0.211)	1.647*** (0.221)
EffTaxRate	-0.108 (0.185)	-0.451* (0.235)	-0.249 (0.197)	-0.160 (0.195)
TaxSpillOver	0.269 (0.202)	0.577*** (0.203)	0.595*** (0.204)	0.126 (0.193)
Constant	1.600*** (0.178)	1.370*** (0.345)	1.555*** (0.248)	1.310*** (0.238)
N	256	192	268	180
R_squared	41.21	41.32	36.70	47.12

Notes: The table presents the random intercept regressions of *InvestmentDecision* on the respective explanatory variables as defined in Hypotheses 3a to 4b. In parenthesis, cluster-robust standard errors are shown. * and *** represent significance levels of 10% and 1%, respectively. See Table 1 for all variable definitions.

public CbCR (vs. not providing a public CbCR) increases investment likelihood by 1.032 points in our sample. Since all dimensions in our FSE have two levels, we can directly compare the relative effect size of the coefficients (Auspurg & Hinz, 2015, p. 99). For this reason, as an above-average stock performance (vs. a below-average stock performance) increases the likelihood of investment by 1.184 points in model (1), we argue that the effect of CbCR effect is highly relevant and causes a strong reaction among our respondents. This indicates that a public CbCR¹ is an important driver of investment decisions even when including stock performance (*StockPerf*) as a control variable.

Furthermore, we can gain some insights regarding materiality from our second non-tax control variable *EnergySource* (see Appendix 3). Table 5 shows that the coefficient *EnergySource* (=1.449; rob. std. err. = 0.153) is highly significant at 0.01 and shows a positive sign. More precisely, the use of renewable energy increases the probability of an investment in our sample. Therefore, *CbCReport*, as it is similar to *EnergySource* in magnitude and significance, depicts a material topic in line with the SASB Materiality Map®. Regarding our tax control variables, *EffTaxRate* does not affect our respondents' investment decisions, while *TaxSpillOver* (i.e., news about a peer company's tax avoidance measures) significantly affect investment decisions. The 0.01 significance level of *TaxSpillOver* is comparable to *StockPerf* and *CbCReport*, but the magnitude is not. More precisely, discontinuing proceedings as without cause (vs. recently opened proceedings against a peer company) increases the likelihood of investment by 0.411 points. This effect is not even half the size of *StockPerf* (=1.184) or *CbCReport* (=1.032) in column (1).

Hypotheses 3a and 3b relate to the derived heterogeneous attitudes of the socially responsible and the financially oriented investor type. To test these hypotheses, we categorize respondents into groups that have either a weaker or a stronger attitude toward social responsibility. To code *SocialResponsibleAttitude*, we use the median to divide respondents into two groups and assign the value 0 to respondents with a weaker attitude and the value 1 to respondents with a stronger attitude toward

¹ Due to the potential interrelation between CTS and CbCR (as shown above in subsection 3.2 *Vignettes*), we test whether both variables provide different tax information to our respondents by rerunning model (1) including interaction terms *EffTaxRate*CorpTaxStrat* and *EffTaxRate*CbCReport*, respectively. In untabulated results, we observe heterogeneous effects (in magnitude and direction) for both interaction terms and argue that conditioned on *EffTaxRate* the variables *CorpTaxStrat* and *CbCReport* provide our respondents with different tax information.

social responsibility. In our sample, 64 respondents have a weaker attitude toward social responsibility and are classified as financially oriented investors, and 48 respondents have a stronger attitude toward social responsibility and are classified as socially responsible investors. Then we run model (1) and the respondents' control model on both subsamples (i.e., respondents with stronger/weaker attitudes to social responsibility).

Table 6 (see columns (1) and (2)) shows the results and demonstrates that *CorpTaxStrat* is again not statistically significant, i.e., not relevant for our respondents. Regarding *CbCReport*, while both are significant at the 0.01 level, the effect is in magnitude more important for our socially responsible respondents (coeff. = 1.167) than to our financially oriented ones (coeff. = 0.913). Beyond that, among socially responsible respondents, *CbCReport* shows a higher effect on investment decisions than prior stock performance (*StockPerf* = 0.865; rob. std. err. = 0.190). To test whether the differences obtained by the social responsibility sample split are statistically significant, we apply an *F* test (i.e., *Chow* test; Auspurg & Hinz, 2015; Wooldridge, 2020). Accordingly, we interact all vignette variables with the social responsibility attitude. Next, we include those interactions, the vignette variables, and the social responsibility attitude in a pooled model using the sample with all respondents. The null hypothesis of the *F* test is that there would be no differences in respondents' evaluation principles. Based on the results, we can reject the null hypothesis ($F(7, 111) = 2.04; p = 0.056$) and argue that our sample split coefficients are significantly different. Overall, this supports Hypothesis 3b, but we reject Hypothesis 3a.

Finally, we examine whether CTS and CbCR would be more important for investors with higher tax morale than those with a lower tax morale (*TaxMoraleAttitude*) (Hypotheses 4a and 4b). Based on the answers regarding tax morale, we again use the median to assign respondents into two groups. Respondents with lower tax morale are assigned 0 while those with higher tax morale are assigned 1. In our sample, 67 respondents have a lower tax morale in contrast to 45 respondents with a higher tax morale. We run model (1) for both investor types and present the results in Table 6 (columns (3) and (4)). We find indications for different evaluation principles between lower and higher tax morale respondents. For the latter, as hypothesized, *CbCReport* is more important (1.157) than for the former (0.947). Again, the coefficient for *CorpTaxStrat* lacks statistical significance in both subsamples and we reject Hypothesis 4a. Nevertheless, our findings for *CbCReport* support Hypothesis 4b. Further, the subsample analysis shows that prior stock performance is approximately equally important while energy management is more relevant for respondents exhibiting a higher tax

Table 7
Robustness test non-linear (Tobit) models.

	InvestmentDecision Random intercept (RI)	InvestmentDecision Tobit (RI) lower limit	InvestmentDecision Tobit (RI) lower and upper Limit
	(1)	(2)	(3)
CorpTaxStrat	0.173 (0.144)	0.173 (0.128)	0.216 (0.156)
CbCReport	1.038*** (0.122)	1.032*** (0.128)	1.167*** (0.158)
StockPerf	1.182*** (0.142)	1.184*** (0.128)	1.345*** (0.158)
EnergySource	1.448*** (0.153)	1.449*** (0.128)	1.700*** (0.159)
EffTaxRate	-0.221 (0.143)	-0.221* (0.128)	-0.230 (0.155)
TaxSpillOver	0.411*** (0.146)	0.411*** (0.128)	0.529*** (0.156)
Constant	1.464*** (0.176)	1.464*** (0.166)	1.301*** (0.202)
N	448	448	448
Log likelihood	-778.84	-778.45	-674.83

Notes: The table presents linear and non-linear (Tobit) RI regressions (maximum likelihood estimation) of *InvestmentDecision* on the respective explanatory variables. In parenthesis, cluster-robust standard errors are shown. * and *** represent significance levels of 10% and 1%, respectively. See Table 1 for all variable definitions.

morale. However, for tax morale we cannot reject the null hypothesis of the *F* test ($F(7, 111) = 0.92; p = 0.490$) and, consequently, tax morale results must be interpreted carefully.

4.2. Robustness and sensitivity tests

First, we want to address potential censored response issues that arises when the scale is limited to lower and upper limits (in our case “very likely” and “very unlikely”) – however, some respondents would evaluate specific vignettes as even more extreme. Fig. 3 does not depict that one of the limits was chosen more often than other judgments. Even though this already indicates that we do not have a censored response problem, we run further non-linear Tobit models with lower and upper limits and compare them to a linear random intercept model. By doing so, we can compare the coefficients (magnitude and significance) and consequently strengthen the robustness of our results (Auspurg & Hinz, 2015). We argue that the results of the non-linear Tobit models support our previous findings since all coefficients are similar regarding magnitude and significance level in both the linear and the non-linear Tobit models (see Table 7).

Second, we run model (1) including cross-level interactions to further test the robustness of our sample split models (Hypotheses 3a to 4b). According to Auspurg and Hinz (2015), cross-level interactions are

an appropriate approach to testing whether respondent characteristics (e.g., attitudes toward social responsibility or tax morale) affect specific vignette variables (e.g., *CbCReport*). The corresponding interaction terms support our previous findings that *CbCReport* is more relevant for respondents with either a stronger attitude toward social responsibility or a higher tax morale and *CorpTaxStrat* is not relevant in all four sub-samples (weaker/stronger attitude toward social responsibility; lower/higher tax morale). Fig. 4 illustrates this using attitude toward social responsibility as an example. In the left panel, the x-axis shows whether previous stock performance was low or high. As can be seen, the likelihood of investing is equal for socially responsible and financially oriented respondents when previous stock performance is low. However, high previous stock performance is more important for financially oriented respondents. The right panel illustrates that socially responsible respondents exhibit a significantly lower likelihood of investment when no *CbCR* is provided. In sum, the results of our cross-level interaction regressions (results not tabulated) and our graphical approach support our previous findings. We also checked for interaction effects between various vignette and/or respondent characteristics and controlled for any influence that age or gender might have on the results by adding the respective terms to model (1). However, as expected, we did not find any significant differences.

Table 8
Sensitivity analysis: Educational level.

	Undergraduate	Graduate
StockPerf	1,152*** (0,169)	1,260*** (0,278)
EnergySource	1,205*** (0,201)	1,918*** (0,231)
EffTaxRate	-0,175 (0,173)	0,021 (0,233)
CorpTaxStrat	-0,040 (0,174)	0,467* (0,257)
CbCReport	1,093*** (0,138)	1,189*** (0,268)
TaxSpillOver	0,495*** (0,172)	0,250 (0,285)
Constant	1,637*** (0,225)	0,972*** (0,272)
N	300	116
R_squared	38.42	55.08

Notes: The table presents random intercept regressions of *InvestmentDecision* on the respective explanatory variables for a sensitivity analysis on respondents’ educational level. In parenthesis, cluster-robust standard errors are shown. * and *** represent significance levels of 10% and 1%, respectively. See Table 1 for all variable definitions.

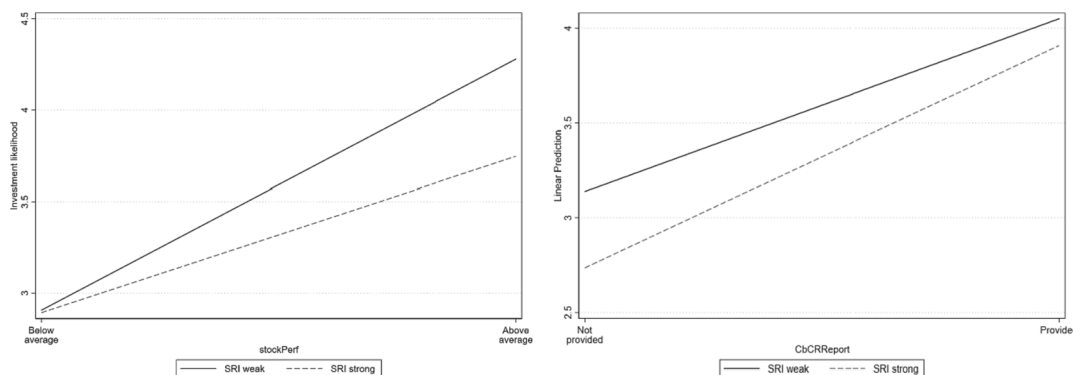


Fig. 4. Marginal effects of *StockPerformance* and *CbCReport* on investment decision.

Disclosure 207-1 Approach to tax

Reporting requirements

Disclosure 207-1

The reporting organization shall report the following information:

- a. A description of the approach to tax, including:
 - i. whether the organization has a tax strategy and, if so, a link to this strategy if publicly available;
 - ii. the governance body or executive-level position within the organization that formally reviews and approves the tax strategy, and the frequency of this review;
 - iii. the approach to regulatory compliance;
 - iv. how the approach to tax is linked to the business and sustainable development strategies of the organization.

Guidance

Background

An organization's approach to tax defines how the organization balances tax compliance with business activities and ethical, societal, and sustainable development-related expectations. It can include the organization's tax principles, its attitude to tax planning, the degree of risk the organization is willing to accept, and the organization's approach to engaging with tax authorities.

An organization's approach to tax is often described in a tax strategy, but it could also be described in equivalent documents, such as policies, standards, principles, or codes of conduct.

In addition to the overall strategy, if the organization has tax strategies that apply to individual entities or tax jurisdictions, the organization can explain any relevant differences between these strategies.

Guidance for Disclosure 207-1-a-iii

When describing its approach to regulatory compliance, the organization can describe any statements in its tax strategy or equivalent documents regarding its intention with respect to the tax laws in the jurisdictions in which it operates. For example, the organization can describe whether it seeks to comply with the letter and the spirit of the law. That is, whether the organization takes reasonable steps to determine and follow the intention of the legislature.²

Guidance for Disclosure 207-1-a

The reporting organization can illustrate its approach to tax by providing examples drawn from its tax practices. For example, the organization can provide an overview of its use of tax havens, the types of tax incentive it uses, or its approach to transfer pricing. These examples help demonstrate the organization's risk appetite and the tax practices deemed acceptable and unacceptable by the organization and its highest governance body.

Guidance for Disclosure 207-1-a-iv

When describing how its approach to tax is linked to its business strategy, the organization can explain how its tax planning is aligned with its commercial activities. The description can include any relevant statements from its tax strategy or equivalent documents.

When describing how its approach to tax is linked to its sustainable development strategy, the organization can

Fig. A1. Excerpt from the GRI 207: Tax standard. Source: <https://www.globalreporting.org>.



Allianz Group Tax Transparency Report 2021



5. Tax Reporting

5.4 Country-by-Country data^{15v}

In this table we provide an overview of the total income, profit before income taxes, income tax, current income tax for the current year, income tax paid, expected income tax rate, effective income tax rate, tangible assets and number of employees per country and the Group in total¹⁵. Countries each contributing less than 0.07% to Group's total income and profit before income taxes are aggregated in the line 'Other'.

Country	Total income ¹⁵ € mn	Profit before income taxes € mn	Income tax ¹⁵ € mn	Current income tax ¹⁵ € mn	Income tax paid	Expected income tax rate ¹⁵ %	Effective income tax rate	Comment reference	Tangible assets	Number of employees ¹⁵
Germany	54,357.0	2,128.5	-1,046.8	-513.5	-735.7	31.0%	49.2%	a	5,143.3	46,081
USA	18,415.9	883.8	86.2	-1,648.7	-980.4	21.0%	-9.8%	b	2,040.6	7,926
France	14,235.8	753.1	-207.7	-184.3	-203.2	28.4%	27.6%	c	4,382.1	26,239
Italy	6,365.0	810.0	-261.9	-218.1	-245.8	24.0%	32.3%	d	1,230.3	4,876
Ireland	5,041.4	361.7	-66.9	-62.8	-60.5	12.5%	18.5%	e	13.4	854
Switzerland	3,804.9	673.3	-105.2	-110.8	-77.5	18.0%	15.6%		2,903.4	2,824
United Kingdom	3,608.2	189.1	-48.8	-26.9	-21.6	19.0%	32.7%	f	568.7	8,541
Australia	3,474.4	222.8	-71.3	-127.7	11.4	30.0%	32.0%		10.4	5,379
Spain	2,599.1	173.3	-45.6	-45.6	-59.2	25.0%	26.3%		223.3	3,666
Netherlands	1,982.2	386.2	-105.6	-66.2	-61.1	25.0%	27.3%		23.0	2,083

Fig. A2. CbCR excerpt from Allianz Group Tax Transparency Report 2021. Source: <https://www.allianz.com>.

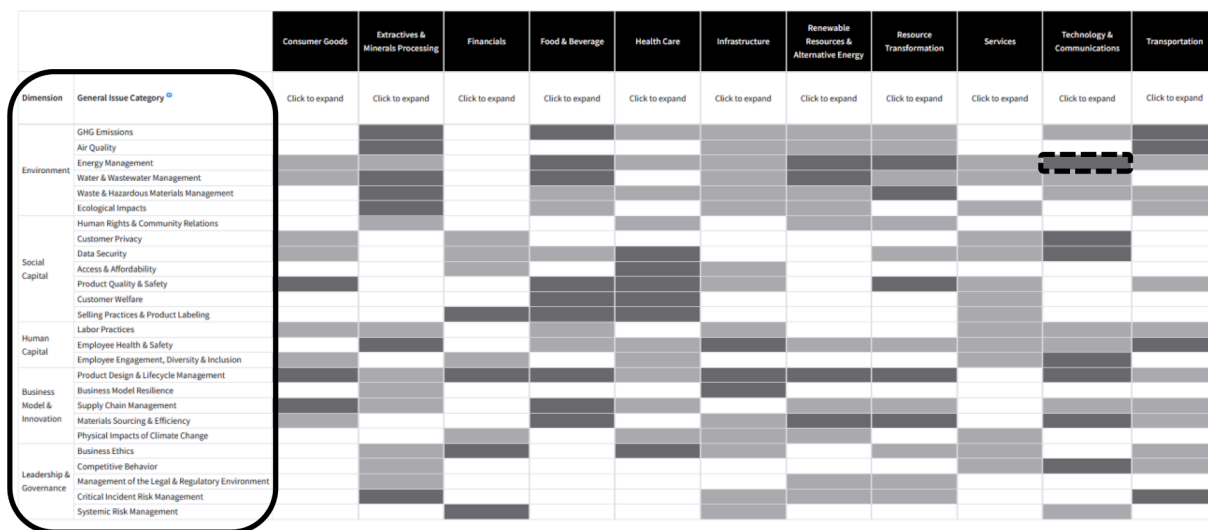


Fig. A3. SASB Materiality Map®. Source: <https://navigator.sasb.org/materiality-map>.

As a next step, we conduct a sensitivity analysis to further strengthen our results. Therefore, we examine whether the degree level of our respondents² supports our previous findings. For the latter, graduate students should be more experienced when reading financial statements or evaluating corporate strategies and their effects on future stock performance. As seen in Table 8, the coefficients are similar both in magnitude and significance except for *CorpTaxStrat*. However, while the coefficient is not significant (and negative) in the undergraduate sample, the coefficient in the graduate sample shows a weak significance (at the 10 % level) and is positive. Regarding *CbCReport*, the magnitude and significance level of the coefficient supports our results in the undergraduate and graduate sample. For this reason, we argue that both groups were able to evaluate our vignettes and that CbCR affects investment decisions of our respondents.

5. Discussion

We conducted a FSE to examine whether newly introduced tax information in non-financial reporting depict a material topic for investors. The FSE design enables us to examine disclosure and materiality from a user (i.e., investor) perspective. This is important since Reim-sbach et al. (2020) highlight that previous studies examine corporate disclosure mainly from the preparer (i.e., company) perspective. Our results show that receiving a public CbCR causes a reaction in investors' decision making and, therefore, we argue that CbCR provides material information for investors. In contrast, we do not find evidence that the CTS is material for investors. This is important since the recently enacted GRI 207: 2019 Tax standard includes CTS and CbCR and the passed EU CbCR directive solely includes CbCR. Our findings empirically indicate that the EU has chosen a suitable scope of (non-financial) tax disclosure (i.e., solely CbCR) for investors whereas the broader GRI approach might not deliver additional benefits (for investors) by requiring CTS. One reason for this result might be that investors interpret the provision of a CbCR in the non-financial report as a signal that the company "has

nothing to hide." Compared to the CTS, this might be a more comprehensible signal of a reduced investment risk resulting from a lower probability of public backlash that would threaten financial performance. Another reason for the materiality of CbCR might be that the CbCR provides next to tax information useful non-tax information to the investors, such as the geographical distribution of activities and earnings that help investors to forecast future earnings or to reduce information asymmetry towards the company's management. However, since the GRI follows a multi-stakeholder approach, we leave it to future research to examine whether the disclosure of CTS might be relevant to other stakeholder groups such as customers.

Further, we simultaneously examine the influence of tax transparency next to other non-tax and tax investment criteria to test our research approach and to assess the relative strength of our main variables of interest. First, as expected, stock performance as an indicator of pure financial considerations is a significant factor for investment decisions. The magnitude of the effect is comparable to the one of public CbCR. Second, by including energy management, we compare the new tax information to an already established material topic. According to the SASB Materiality Map®, energy management is material for investors in the technology & communication industry (SASB, 2021). Our results confirm the materiality of energy management since investors positively respond to the usage of green energy. The effects of a public CbCR are comparable in significance and magnitude. This emphasizes the materiality of public CbCR for investors. Third, we include the ETR, which is an established and condensed indicator of how successful a company manages its taxes (Britten et al., 2017). Investors might interpret a low ETR as a favorable small tax burden (Graham, Hanlon, & Shevlin, 2011). As expected, a high ETR has a negative effect on investment decisions in our setting, however, the coefficient is not significant. Fourth, drawing on a recent event study revealing the relevance of spillover effects of corporate tax avoidance (Baucloh et al., 2021), we compare CTS and CbCR to news on a peer company's tax behavior. In line with the results of Baucloh et al. (2021), we find that this news significantly affect the investment decisions of our respondents (in contrast to the CTS), but the effect is not even half the size of that of CbCR. Overall, the control variables show the expected effect (indicating that our experimental approach is suitable for our setting) and that at least CbCR has a high impact on investment decisions.

Our results bear implications for policy-makers, corporate decision-makers, and investors. Regarding policy-makers and standard setters, both the GRI 207: Tax 2019 standard and the EU CbCR directive

² While it is mandatory for the business students (92% in our sample) to attend financial statement analyses and corporate tax course in the first semesters, it is not for the remaining students (other = 8%). To test whether students not enrolled in business administration programs might bias our results, we exclude them from the sample and rerun our analyses (Hypothesis 1 to Hypothesis 4b). The untabulated results stay qualitatively the same and confirm the results of our analyses spanning the whole sample.

improve the access to material (tax) information for investors through the lens of (financial) materiality (for CS issues) (Khan et al., 2016). Given that tax disclosure is material to investors, standard setters, such as the International Sustainability Standards Board (ISSB) into which the SASB was incorporated, should use or emphasize tax information as a (non-financial) reporting topic. For instance, based on the SASB's financial materiality approach, we argue that providing a CbCR – since it reduces investment risk – depicts a potential new general issue category (GIC) on the map, or at least it should be emphasized that it belongs to an already existing GIC in the leadership and governance dimension (in the technology & communication industry). Moreover, the ISSB might incorporate CbCR in the public consultation regarding the general requirements for the disclosure of sustainability-related financial information (IFRS Foundation, 2022).

Corporate decision-makers can expect positive investor reactions from disclosing tax information – especially a public CbCR – in non-financial reports. Interestingly, in our setting, the sole provision of a public CbCR results in positive investor reactions. We argue that this effect occurs because of a signal that reporting companies “have nothing to hide” and, thus, there is a lower risk. However, henceforth, new regulations make omitting tax information impossible for numerous companies. This is because the EU CbCR directive becomes effective via national law in mid-2024. As a result, companies whose consolidated revenue exceeded a total of €750,000,000 for each of the last two consecutive financial years are required to report their financial, economic, and tax-related outcomes in each jurisdiction (*Directive 2013/34/EU 2013, Article 48b, Nr. 1*). Moreover, if companies want to report “in accordance with” the GRI in the future, they will have to disclose a CbCR and their CTS – even though the latter might not generate additional benefit for investors. For this reason, when providing a public CbCR becomes mandatory for a specific company, the provision effect might disappear and the content of a CbCR (therefore tax avoidance “performance”) receives higher importance and attention. According to Khan et al. (2016), this implies that a well performing company – for which taxes are a material GIC – could expect superior stock performance. Executives are confronted with a trade-off between using aggressive tax avoidance schemes vs. “good performance” in CbCR.

Our results indicate that tax transparency might not be equally important to different investor types. For socially responsible investors (compared to financially oriented investors), CbCR is more important. We argue that CbCR supports them in identifying companies that pay their fair share. This is particularly important since SRI funds steadily increase their market share and manage their portfolios not only on negative screening (i.e., excluding controversial business areas such as alcohol, tobacco, or gambling) but also increasingly on positive screening (i.e., companies must meet specific ESG standards to have their stocks included in SRI portfolios; Auer, 2016). Based on our results, SRI funds should add tax information to their positive screening criteria and fund managers should incorporate CbCR information into their screening frameworks.

6. Conclusion

Our study is the first to examine the materiality of tax disclosure in non-financial reports for investors. We draw on recent initiatives by the GRI and the EU that aim to enhance the tax transparency of companies and show that investors react to the new disclosure requirements. We derive our results from a FSE and show that providing a public CbCR, as required by the GRI 207: Tax 2019 standard and the EU CbCR directive,

is highly material for investors. However, we find no evidence that disclosing the CTS – required solely by the GRI – is material for investors. Further, our results indicate that the relevance of these new tax disclosures differs among investor types. We classify our respondents into socially responsible and financially oriented investors and show that the former evaluates CbCR as more important than the latter. Moreover, our results suggest that tax disclosure is more important to investors with a higher personal tax morale, i.e., investors with a higher tax morale are more affected by a detailed CbCR than those with a lower tax morale.

By examining the materiality of different tax disclosures for investors, our findings contribute to the literature in several ways. First, prior research on non-financial disclosure and materiality reports that material ESG topics, as classified by the SASB Materiality Map®, affect investment decisions (Grewal et al., 2021; Johnson et al., 2020; Khan et al., 2016; Reimsbach et al., 2020). We extend this literature through our focus on the materiality of tax disclosure in non-financial reports. Since our results show that a public CbCR is highly material information for investors, the EU has chosen the correct scope for tax disclosure (i.e., solely CbCR). In contrast, we do not find evidence that the CTS disclosure is material for investors. Therefore, it might be that the broader GRI approach does not provide useful information for investors.

Second, we contribute to the literature on tax disclosure and investment decisions. Prior studies examine companies tax disclosure behavior and find a strategic disclosure behavior in financial reports (Balakrishnan et al., 2019; Dyreng et al., 2016; Flagmeier et al., 2021). The strategic behavior indicates that investors are affected by public tax disclosures in financial reports. Other studies investigate and find investors reactions to tax transparency more directly by exploiting country-specific initiatives for enhanced tax disclosure (Chen, 2017; Hoopes et al., 2018). We add to the strand of literature on tax disclosure and investment decisions by experimentally investigating the user's (investors) perspective of corporate tax reporting, and by examining the specific investor reactions to the new tax disclosures of the GRI and the EU in non-financial reports. Third, we provide first evidence that different investor types use the new public tax disclosures of GRI and EU heterogeneously. This adds to the research on ethical investments, more precisely on those of SRI (Auer, 2016; Hartzmark & Sussman, 2019) and on those of the relevance of investors' personal values for investment decisions (Nilsson, 2008; Pasewark & Riley, 2010).

Like most studies there are some limitations that must be considered when interpreting our results. First, since the amount of information processed is more extensive in real-life investment decisions, it is possible that the respondents – as in every other experimental setting – paid too much attention to the information provided in our study. However, by including tax (ETR and spillover effects) and non-tax (stock performance and energy management) control variables, we argue that our results are reliable in both magnitude and significance. Second, regarding the concept of materiality, we have only one variable, energy management, that controls whether investors evaluate it as being material. However, the literature suggests focusing on a small number of criteria, and we saw the possibility of overwhelming our respondents by including additional criteria (Auspurg & Hinz, 2015). Third, in our FSE, we measure only hypothetical, not real, decisions. The participants might behave differently in real-life investment decisions. However, as Petzold and Wolbring (2019) pointed out, it is possible to infer the determinants of actual behavior from FSEs.

Finally, there are potential limitations because German business students were used as respondents. This is a common approach when conducting experimental research on investment decisions and

corporate disclosure (Elkins et al., 2021; Guiral et al., 2020; Holm & Rikhardsson, 2008; Reimsbach et al., 2020). Moreover, students perform well in experimental tasks in general (Khera & Benson, 1970) and in vignette evaluations in particular (Sauer et al., 2011). However, as professional and non-professional investors might differ between their view of what is “decision useful”, we acknowledge that consequently our results may not be generalizable. In addition, the perception and evaluation of tax information might differ geographically. In this vein, Ermasova, Haumann, and Burke (2021) study the importance of national culture for Germany and the United States (US). The authors conclude that people in Germany are less comfortable with uncertainty in companies’ tax avoidance behavior compared to US citizens. In a more granular view, US and German consumers react heterogeneously to different types of tax avoidance strategies (Hardeck et al., 2021). As a result, if our German respondents interpret the presented tax information as uncertain tax avoidance measures, results might differ for respondents from the US or other countries.

Therefore, this study opens avenues for further research. First, scholars might examine whether the materiality of tax information for non-professional investors is heterogeneous in different industry sectors or geographical regions. Second, future studies could focus on different stakeholder groups, such as customers or employees, and investigate whether for some the CTS or a CbCR is relevant. Third, future studies might also focus on whether there is a change in corporate tax behavior. More precisely, do corporate decision-makers shun aggressive tax avoidance measures because of the new disclosure regulations and standards? How investors react to the disclosure of the first mandatory public CbCR reports leads to another research idea; scholars might use the new disclosure requirements as an exogenous shock in quasi-experiments once the required data is available.

CRediT authorship contribution statement

Max Götsche: Conceptualization, Writing – original draft, Investigation. **Florian Habermann:** Conceptualization, Writing – original draft, Investigation, Methodology, Project administration. **Sebastian Sieber:** Conceptualization, Writing – original draft, Investigation, Methodology.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

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Ethical Approval

Ethics clearance was not obtained; because of the nature of the human participation in this study, the authors’ institutional ethics review board did not require it.

Informed Consent

Informed consent was obtained from all individual respondents included in this study.

Appendix

Appendix 1

The figure below provides an excerpt from the GRI 207: Tax 2019 standard (p 6). Next to the standard itself, Fig. A1 shows the guidance the GRI made available to support the companies using the standards. As seen in the black box, the usage of tax havens is the first mentioned example of possible disclosures that should enable readers of the report to assess the CTS in general and the risk and acceptability of the company’s tax behavior in particular.

Appendix 2

Fig. A2 below provides an excerpt from the 2021 Allianz Group Tax Transparency Report 2021 according to the new GRI 207: Tax 2019 standard. As seen in the black box, the topic-specific Disclosure 207–4 CbCR provides novel tax information such as income tax paid and effective income tax rate on the country level, respectively.

Appendix 3

Fig. A3 below depicts the SASB Materiality Map®. As seen in the solid line box, there are five dimensions: *Environment, Social Capital, Human Capital, Business Model & Innovation, and Leadership & Governance* comprising 26 sustainability-related business issues. Gray and dark gray fields denote material and highly material topics, respectively. Since energy management (which we operationalized as the variable *EnergySource*) is a material issue in the technology & communication industry (see dotted line box), we use it as a control variable. By doing so, we argue that we can derive conclusions when comparing the coefficients of CTS and CbCR to the coefficient of *EnergySource*.

Appendix 4

Table A1 shows responses to control questions regarding different scenarios in CTS and CbCR, corporate tax behavior, and tax reporting.

Table A1
Response to control questions.

Question	Mean	Std. Err.
Did you notice a different use of tax havens in the scenarios? (1 = Definitely no; 5 = Definitely yes)	4.18	0.05
Did you notice a difference in country-by-country reporting in the scenarios? (1 = Definitely no; 5 = Definitely yes)	3.79	0.06
Can you imagine that in reality companies try to pay as few taxes as possible? (1 = Definitely no; 5 = Definitely yes)	4.71	0.03
Can you imagine that in reality companies do not want to publish information about your tax payments? (1 = Definitely no; 5 = Definitely yes)	4.21	0.04
A transparent publication of corporate tax data is important when making investment decisions. (1 = Disagree at all; 5 = totally agree)	4.30	0.04
The use of tax havens by companies plays a role in investment decisions. (1 = Disagree at all; 5 = totally agree)	3.88	0.04

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