// NO.21-077 | 10/2021

DISCUSSION PAPER

// RAPHAEL MÜLLER, CHRISTOPH SPENGEL,
AND STEFAN WECK

How Do Investors Value the Publication of Tax Information? Evidence From the European Public Country-By-Country Reporting

Leibniz Association

ZEW

How Do Investors Value the Publication of Tax Information? Evidence from the European Public Country-by-Country Reporting

Raphael Müller
University of Mannheim[a]
raphael.mueller@uni-mannheim.de

Christoph Spengel
University of Mannheim[a]
ZEW Mannheim[b]
spengel@uni-mannheim.de

Stefan Weck
ZEW Mannheim[b]
University of Mannheim[a]
stefan.weck@zew.de

This version: October 2021

Abstract:

We examine the capital market reaction to the announcement of the European Union (EU) to introduce a public tax country-by-country reporting (CbCR) regime. By employing an event study methodology, we find a significant cumulative average abnormal return (CAAR) of -0.699%, which translates into a monetary value drop of approximately EUR 65 billion. We conclude that investors evaluate reputational risks arising from public scrutiny and competitive disadvantages to outweigh potential benefits of an extended information environment or more sustainable corporate tax strategies. In cross-sectional tests, we find that the average investor reaction is more pronounced for firms with low effective book tax rates, indicating that reputational concerns play a significant role in the marginal investor's investment behavior. Furthermore, our cross-sectional results indicate that the market reaction is stronger for firms operating in industries with high growth in market participants, providing an initial indication for the role of the competitive environment as an additional channel. Our inferences are of particular importance in light of the current ongoing debates on similar disclosure rules (particularly in the United States; cf. "Disclosure of Tax Havens and Offshoring Act") as well as for sustainability standard setters.

JEL Classification: F23; G14; G38; H25; H26; M41

Keywords: tax transparency; tax disclosure; tax avoidance; event study; country-by-country reporting

---

Acknowledgments: We thank Christopher Ludwig for helpful comments. We gratefully acknowledge funding from the Leibniz Science Campus MannheimTaxation, from the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) – Project-ID 403041268 – TRR 266, and from the Graduate School of Economic and Social Sciences of the University of Mannheim.

---

[a] University of Mannheim, Castle, East Wing, 68131 Mannheim, Fax: +49 621 181-1706.
[b] ZEW Mannheim, L 7, 1, 68161 Mannheim, Fax: +49 621 1235-224.

1 Introduction

Over the last decade, the revelation of so-called "aggressive" tax planning strategies of multinational enterprises (MNE) created considerable pressure for politicians to take action against such harmful tax practices. The apparent lack of information about sophisticated tax arrangements was considered a major impediment to effective tax enforcement. With the implementation of the confidential CbCR for large MNE, legislators aimed at deterring aggressive tax planning by increasing tax transparency of corporate taxpayers towards tax authorities (OECD 2015). At the same time, there is a rising perception that firms should be held publicly accountable for paying their fair share of taxes where they operate.

In the EU, several attempts were made to adopt a public CbCR but failed due to a lack of majority support among member states. During the Portuguese EU Council Presidency in the first half of 2021, the discussions re-gained momentum with a new compromise draft. According to this compromise draft, affected firms would be required to publicly disclose their international activities and financial figures aggregated at the country-level. After initial confusion about whether this new draft would be able to secure majority support, the legislative bodies of the EU announced a political agreement on the introduction of a public CbCR mandate for large EU firms across industries in June 2021. This political breakthrough was enabled as several member states changed their opinions due to rising public demand for stronger corporate tax transparency.[1]

The decision to implement a public CbCR constitutes a substantial shift towards public tax transparency. However, the measure is highly controversial as firms are concerned about reputational and competitive risks resulting from such measures.[2] The growing popularity of tax transparency measures underscores the need to understand the economic consequences of public tax disclosure, but, as Müller et al. (2020) point out, the empirical literature is divided about whether and to what extent the expected risks materialize. This study builds on prior evidence and provides novel insights into the costs and benefits of public tax transparency.

We exploit the EU's announcement of the public CbCR to analyze how investors value the mandatory tax disclosure for EU firms. More precisely, the change in stock prices should

[1] For instance, Austria and Estonia, who previously seemed to have voted against public CbCR, indicated to have revised their positions.

[2] In a public consultation by the Organisation for Economic Co-operation and Development (OECD), the lobby group Business at OECD (2020), for example, emphasizes that "[m]any members remain strongly opposed to any attempt to make CbC report information public, for a number of reasons, including that the reports contain commercially sensitive data." Similarly, the association Technology Industries of Finland (2020) argues that "[p]ublic reporting is an unnecessary administrative burden, including high risk for misinterpretations and request to reveal commercially sensitive data."

reflect investors' aggregated assessment of the possible effects of the new directive. The main advantage of our setting is that the content of the new reports is already available to national tax authorities.[3] This implies that investor reactions are not attributable to expected increases in tax enforcement or compliance costs, i.e., costs of preparing the reports. Thus, our setting provides a unique opportunity to examine the non-tax costs of public CbCR.

From the perspective of investors, several conflicting channels may be relevant. First, higher tax transparency could be beneficial for investors as it improves the information environment of investors leading to more accurate earnings forecasts (Bratten et al. 2017) and lower information asymmetries (Desai and Dharmapala 2006). Second, the disclosure may enable investors to better assess the tax risks associated with financial sustainability performance. However, the public disclosure could also negatively affect firms' future profitability due to reputational costs resulting from public discussions about low effective tax rates (Graham et al. 2014). Alternatively, firms may adjust legal tax arrangements to avoid public scrutiny (Dyreng et al. 2016). Another threat to firm value is the competitive disadvantage from the disclosure of commercially sensitive information to competitors and business partners. In light of the heterogeneous effects, it remains an empirical question, which channel ultimately dominates.

To identify an investor reaction to the introduction of a mandatory public CbCR, we employ a short-term event study design. Using the Factiva database, we measure media attention and identify a 3-day event window from June 2-4 in which we expect an investor reaction to take place. Based on a sample of 680 potentially affected firms, we find a significant negative investor reaction on the capital markets. The corresponding short-term CAARs amount to -0.699%, which translates into a value drop of EUR 65.487 billion. We conclude that investors evaluate reputational risks arising from public scrutiny and potential competitive disadvantages to outweigh potential benefits of an extended information environment or more sustainable corporate tax strategies.

Subsequently, we try to disentangle the drivers of the observed overall negative investor reaction and explore the two potential cost channels. We first examine the role of reputational risk exposure in the marginal investor's response behavior. Conducting various cross-sectional analyses, we find a significantly stronger response to firms that are regarded as more tax aggressive. Our finding suggests that investors expect a deterrence effect. That is, investors expect affected firms to refrain from more aggressive tax avoidance strategies to avoid

[3] The affected MNE have to provide even more detailed information to tax authorities under the confidential CbCR.

(net costly) reputational costs. Thereby, affected firms do not fully exploit their tax savings potential, which negatively impacts the expected cash flows.

In a second step, we examine the role of the competitive environment of our sample firms, using additional cross-sectional analyses. We find a significantly stronger response for firms operating in industries with high short- and long-term competitor growth rates. In contrast, we find no significant effects using industry concentration ratios, which are more established indicators for industry competition. Our results, therefore, suggest that the competitive environment is likely to play a role for investors. Due to the general limitations of competitive intensity measures, however, we are reluctant to imply causality and consider this finding rather indicative.

Located at the intersection of tax accounting and non-financial (sustainability) reporting, our analysis contributes to the extant literature in multiple ways. Prior studies examining the investor reaction to public CbCR were based on regimes that were originally introduced as public CbCR regimes. Hence, the investor reaction also reflected the expected cost of increased enforcement by tax authorities which made it difficult to assess the relevance of non-tax costs of public tax transparency. By contrast, the focal EU draft proposal subject to our analysis only requires the publication of previously confidentially reported information. Therefore, our setting offers a rare opportunity to exclude direct compliance costs resulting from a new obligation and indirect costs resulting from increased tax authority scrutiny and potential double taxation as potential drivers of the effect.

Furthermore, prior tax accounting literature examined investor reactions to CbCR in the context of the public CbCR regimes for either the extractive and logging industry (Johannesen and Larsen 2016) or the banking sector (Dutt et al. 2019). Notably, the CbCR regime for the extractive and logging industry was initially designed as a measure to combat corruption, which is a particularly prevalent issue in this specific industry. The CbCR regime for the banking sector, on the other hand, was implemented as part of a whole battery of measures intended to stabilize the EU banking sector in the course of the Basel III resolutions after the global financial crisis. Although the banking CbCR was included as a tax-motivated instrument via detours in this catalog, the attention of investors was presumably centered on other, more drastic measures within the bundle. Consequently, previous event studies drew tax implications from settings that were not primarily tax-driven or potentially confounded due to their course of introduction. By contrast, our study is the first to examine the investor reaction to public CbCR as a purely tax-motivated regime that is introduced as a stand-alone measure

and with a cross-industry scope. Thus, our setting allows for an unambiguous identification of the investor reaction to public *tax* transparency.

Regarding the discussion about public CbCR representing a component of sustainability reporting, we add to an emerging stream of literature. In particular, our results corroborate prior findings that investors do not appreciate CSR disclosures at any cost. Grewal et al. (2019) examine investor reactions to the passage of the EU directive on disclosure of non-financial information and find positive abnormal returns for firms with strong pre-regulation environmental, social and governmental (ESG) disclosure and performance but even stronger negative abnormal returns for firms with low pre-regulation ESG disclosure and performance. Hombach and Sellhorn (2019) examine an SEC disclosure rule, which requires oil and gas firms to publish details about their payments to host governments and find a negative investor reaction that is particularly pronounced for firms with greater reputational risks. Both studies focus on ESG reporting in general but do not provide evidence for its individual components. To the best of our knowledge, we are the first in this context to add more granular evidence on tax transparency, which is a momentum-gaining component of non-financial sustainability reporting.

The inherent characteristics of our setting provide for a high external validity of our findings. Our implications are equally applicable to similar measures and very timely given ongoing political efforts in the USA to expand the confidential CbCR regime into a public regime. With the "Disclosure of Tax Havens and Offshoring Act", a corresponding draft bill has already been submitted to the Senate and awaits approval for further legislative actions. In addition, the globally most widely applied standard for the non-financial (sustainability) reporting, Global Reporting Initiative (GRI), was augmented by an additional module on taxation (GRI 207: Tax), providing for a de facto voluntary public CbCR. Against this background, our findings provide a meaningful contribution for the design of similar tax transparency measures. Our results imply that, in case of a mandatory public CbCR measure, decision-makers should take into account that affected firms will incur substantial costs that significantly exceed the benefits from an investor perspective.

The remainder of this paper is organized as follows. Section 2 describes the setting of our event study, contextualizes it against the extant literature, and presents our hypothesis. Section 3 describes our sample selection procedure and methodological approach to identify the investor reaction. Section 4 presents the corresponding findings from our main analysis and

robustness tests. Section 5 examines the relevance of reputational and competitive costs associated with the public CbCR for investors in cross-sectional analyses. Section 6 concludes.

2 Institutional Background

2.1 EU Proposal on public CbCR

The idea to require large MNE to publicly disclose a detailed CbCR was first discussed in 2016 when the EU legislative bodies adopted the confidential CbCR to tax authorities. The confidential CbCR was part of Action 13 of the OECD/G20 project on base erosion and profit shifting (BEPS). In its final report, the OECD emphasized that the measure was developed to facilitate high-level risk assessments by tax authorities and that the reports should remain confidential (OECD 2015).

In parallel to the adoption of the confidential CbCR in the EU and despite the clear guideline by the OECD, the European Commission published a draft proposal for the public disclosure of income tax information on April 12, 2016. The measure was intended to complement the confidential CbCR. The European Parliament expressed support for the initiative arguing that additional tax transparency would allow for better public monitoring of multinational firms. Subsequently, the European Parliament defined its negotiation position in a plenary vote on July 4, 2017. The negotiations in the Council of the EU proceeded slowly in the following months and were delayed due to substantial disagreement between member states.[4] On November 13, 2019, the Finish Presidency of the Council released a compromise draft. However, the negotiations reached a deadlock in the Council as the majority of countries disapproved the proposal. Under the successive two presidencies, no further attempt was made to advance the process.

At the beginning of its Presidency, Portugal published a new compromise draft to revive the negotiations in the Council (January 13, 2021). The draft was discussed in various committees and working groups, but it was questionable whether Portugal could secure the required majority vote. On February 25, the Portuguese Council Presidency invited the Member States to exchange their views on the latest compromise draft during an informal video conference. At the end of the meeting, the Presidency noted that there was sufficient support from the member states for a further procedure with the draft proposal. While the outcome of the informal meeting was not legally binding, it set the ground for the Council to enter into

[4] Officially, the main concern was related to procedural rules for a public CbCR. Directives on direct taxation require unanimity among member states whereas directives on financial reporting may be adopted by qualified majority in the Council.

interinstitutional negotiations with the European Parliament and the European Commission ("trilogue"). These formal negotiations usually take several months and may fail if the institutions do not strike a compromise. The early breakthrough after the third trilogue meeting was, therefore, quite a surprise. In the late evening of June 1, 2021, the European Parliament announced that a provisional agreement on the directive had been reached. This political agreement of the legislative bodies constitutes our main event since it resolved investors' long-lasting uncertainty on the legislative process. Moreover, the agreed-upon compromise draft clearly defined the scope of the new directive. To support our choice of the main event, we assess the media coverage of the legislative process by searching the Factiva database for relevant news articles (see Section 3.1).

The comprise draft requires large MNE headquartered in the EU with consolidated revenues above €750 million in each of the last two preceding financial years to prepare and disclose a detailed report on its geographic operations together with financial figures aggregated on country-level.[5] The requirements are similar to the confidential CbCR, but the proposal constitutes a reduced version of the OECD approach in terms of scope and financial items. The geographic coverage is limited to activities in European member states and a number of other jurisdictions that are blacklisted as non-cooperative jurisdictions for tax purposes ("tax havens").[6] In contrast to the confidential CbCR, firms are not required to separate related-party revenues and third-party revenues. Moreover, stated capital and tangible assets are not included in the public version. The reports must be made available to the public free of charge on the firm's website or public registers within 12 months after the financial year. Affected firms may obtain a deferral of disclosure of certain commercially sensitive items for a maximum of five years.[7] In sum, the proposed reporting requirement is less comprehensive than previous CbCR regimes and the voluntary sustainability reporting standard on taxation, GRI 207, which requires a public CbCR on worldwide activities (GSSB 2019a).

[5] The reporting obligation also applies to EU subsidiaries of non-EU multinationals if consolidated group revenues exceed the threshold.

[6] This list is compiled and regularly updated by the Council. The current version includes mostly small pacific islands but also more prominent countries like Panama, Turkey, and Australia (EU Council, 26.02.2021, 2021/C 66/10).

[7] However, information on jurisdictions listed as tax havens may never be omitted.

2.2 Related Literature and Hypothesis

The capital market reaction to the new directive depends on investors' expectations about how the higher level of tax transparency will impact future cash flows of affected firms. The information contained in the reports provides novel insights on the international business structures of affected firms to investors and several stakeholders, including analysts, business partners, competitors, NGOs, the media, and customers. Rational investors will take the reactions of all stakeholders into account when assessing the consequences of the new measure.

In principle, investors may appreciate the additional disclosure as it helps to evaluate firm fundamentals and future cash flows. Prior studies suggest that tax-related disclosure is associated with more accurate forecasts on future earnings (Bratten et al. 2017; Hanlon et al. 2005). Public CbCR makes detailed information about the profitability and tax payments in foreign markets available. The geographic segment reporting under current financial reporting standards does not provide this level of granularity.

Moreover, CbCR may enable investors to evaluate the efficiency of managers' tax avoidance strategies (Frischmann et al. 2008). Tax savings from legal tax planning increase corporate profits and are, thus, in the interest of shareholders. In line with this argument, prior literature documents positive stock price reactions to news on legal corporate tax avoidance (Blaufus et al. 2019) or the disclosure of advance tax rulings in Luxembourg (Huesecken et al. 2018). While tax planning is, per se, beneficial for investors, it might also give rise to agency conflicts if managers set up complex structures to divert private rents (Desai and Dharmapala 2006). This problem seems to be more pronounced for firms with weak corporate governance mechanisms. Desai and Dharmapala (2009) examine the ambivalent relationship between tax avoidance and firm value. The authors find that tax planning increases firm value only for firms with a high share of institutional owners. The agency perspective helps to explain positive market reactions to increased tax enforcement (Desai et al. 2007). Similarly, public CbCR could reduce information asymmetries between shareholders and managers and allow for better monitoring of firm insiders.

Several NGOs and investors supported the inclusion of a public CbCR in the new GRI reporting standard on taxation. According to the public comments, CbCR can be used as an informative source for evaluating firms' performance on sustainability and its value implications (GSSB 2019b). The positions are not representative of all capital market participants but reflect the growing demand for non-financial disclosure and investment opportunities in sustainable firms. Yet, even if all investors appreciate the reporting mandate,

they might still conclude that the disclosure will be costly for affected firms. Grewal et al. (2019) examine capital market reactions to events around the passage of the non-financial reporting directive in the EU. The authors show that stock prices of affected firms decline significantly, suggesting that the disclosure mandate is expected to lead, on average, to net costs for affected firms.[8] Moreover, their empirical results imply that the negative reaction is mainly attributable to proprietary and reputational costs.[9]

Reputational risks and public pressure are important determinants for corporate tax strategies (Austin and Wilson 2017; Graham et al. 2014). For instance, Dyreng et al. (2016) find that UK firms reduce the level of tax avoidance following public scrutiny on their disclosures provoked by an activist group. Such adjustments decrease after-tax profits and subsequently shareholder wealth if alternative schemes cannot sustain the tax savings. Under public CbCR, activist groups or the media could utilize the tax information in the reports to exert pressure on firms to "pay their fair share". In fact, holding firms publicly accountable for their tax payments has been an explicit goal of the measure (European Parliament 2019). If investors predict that public CbCR increases the probability of public pressure and causes firms to adjust their tax planning strategies, we should observe a negative reaction around the event.

Besides reputational risks, investors might be concerned about competitive disadvantages arising from the disclosure of commercially sensitive information. Non-EU competitors may use the information about geographic exposure and profitability. Similarly, suppliers and business clients benefit from insights into the international value chains of their partners. Direct evidence on proprietary costs is scant, but recent studies suggest that proprietary costs are responsible for reduced voluntary corporate disclosure in competitive markets (Huang et al. 2017; Ellis et al. 2012). In the context of geographic segment reporting under IFRS 8, Leung and Verriest (2019) find that firms aggregate financial items for growing and profitable regions consistent with high proprietary costs.

In sum, all channels likely influence investors' response to the new public CbCR-requirement, but with different weights. Two related studies analyze capital market reactions to the introduction of industry-specific CbCR initiatives in the EU. Johannesen and Larsen (2016) examine firms' stock prices in the extractive industries (i.e., oil, gas, and mining firms) around key dates in the legislative process. Notably, the primary purpose of the regulation was to

[8] However, Grewal et al. (2019) document positive investor reactions for firms that had good CSR performance and voluntary reporting scheme prior to the directive.

[9] The results are similar to the findings by Hombach and Sellhorn (2019) who assess capital market reactions to the SEC's extractive payments disclosure rules.

increase financial transparency in a sector that is prone to bribery and fraud, especially in developing countries (Rauter 2020). The authors document very strong decreases in firm value but do not test for potential channels that drive the effect. In contrast, Dutt et al. (2019) find no significant market response to the introduction of a public CbCR in the banking sector.[10] Both studies conclude that increased tax transparency led to a reduction in tax avoidance opportunities as it facilitates the detection of aggressive tax planning schemes for tax authorities. This interpretation is supported by several studies that find evidence consistent with banks reducing profit shifting activities among affiliates and tax havens following the disclosure requirement (Eberhartinger et al. 2020; Joshi et al. 2020; Overesch and Wolff 2021).

The main difference between our setting and the two industry-specific CbCR regimes is that tax authorities had no information about foreign activities and tax payments prior to the publication of the industry-specific reports. Thus, the results above imply that the authorities may have used the reports for unilateral transfer pricing adjustments. However, in our setting, the disclosed reports should not reveal any additional information to tax authorities as they receive the more detailed confidential reports for their tax assessments.[11] Therefore, we can effectively rule out that investors anticipate negative effects on future cash flows because of improved tax enforcement or direct costs from preparing the reports. Thus, absent this mechanism, we analyze whether the costs of disclosure (reputational or proprietary costs) still outweigh the benefits of reduced information asymmetries. In that sense, our analysis is also related to the setting in Hoopes et al. (2018), who examine an Australian tax disclosure rule. The regulation mandated the Australian Taxation Office (ATO) to disclose taxable income and tax payable for large public Australian and foreign-owned firms. Their event study analysis shows that stock prices of affected firms decline significantly around the enactment of the law. The authors focus on firms with zero tax expense reported in financial statements, hence, those firms with presumably the highest public scrutiny. The results suggest that investors anticipated higher costs for these firms. Even though the scope of the Australian disclosure regime is limited to few financial items and one country only, similar considerations might apply in the case of a public CbCR.

[10] The transparency measure was part of the Capital Requirement Directive (CRD) IV, which implemented the Basel III standards into EU law. The main purpose of the directive was to ensure the financial stability of the EU banking system (Dutt et al. 2019).

[11] First empirical evidence indicates that multinational firms reduce the level of tax avoidance and shift real investments to European tax havens following the confidential CbCR (De Simone and Olbert 2021; Joshi 2020).

Based on these findings, we expect that investors perceive the disclosure of a public country-by-country report as costly. In particular, we conjecture that the benefits of the new information do not compensate for the reputational risks arising from the disclosure. Our hypothesis is:

H1: Investors respond negatively to the political agreement on a public CbCR for large European firms.

3 Empirical Strategy

3.1 Event Date

As discussed in Section 2.1, the unexpected trilogue agreement to introduce a public CbCR regime in the EU was communicated in the evening of June 1, at around 9:15 pm. Given that the major stock exchanges were already closed or about to close at the time of the announcement,[12] we expect a stock price reaction to take place on June 2 at the earliest. To validate our expectation, we measure international media attention using the Dow Jones Factiva database (Borghesi et al. 2014; Chen et al. 2019). Figure 1 depicts the corresponding result.

The graph shows particularly strong media attention between June 1 to June 4, confirming our expectation. The cumulative media coverage around the June event (i.e., June 1-4) accounts for 43.1% (i.e., (33+68+24+3)/325) of the overall media coverage measured. Consequently, we identify June 2 as the event date of interest for our analysis.

Moreover, we observe above-average media attention around the event on February 25 (13.5% of the overall media coverage measured). However, after inspecting the articles, we do not expect an investor reaction around this event despite the high media coverage for two reasons. First, the agreement in February was only of preliminary and unofficial nature, which is also reflected in the media reports. For example, the British newspaper *The Guardian* headlined "EU states *back plan* to expose big companies' tax avoidance"[13] on February 26. In contrast, on June 2, the respective headline was "EU *agrees* to force multinationals to disclose tax, piling pressure on UK"[14]. Second, it is especially smaller and local media with a geographically limited target audience that pick up the agreement in February. Except for *The Guardian*, we could not identify any further outlets with an international target audience around the February event. In contrast, the main event in June is also covered by the *Financial Times*

[12] The major European and Asian Stock exchanges (i.e., London, Frankfurt, Paris, Hong Kong, Tokyo, Singapore, Shanghai) were already closed at the time of the announcement. The stock exchanges in New York and Toronto closed 45 minutes after the announcement.
[13] Italic emphasis was subsequently added. We refer to Figure 2 for a screenshot of the headline.
[14] Italic emphasis was subsequently added. We refer to Figure 3 for a screenshot of the headline.

and *Shanghai Daily,* for example. Moreover, while we do not find an official press release from a constitutional organ of the EU in February, the European Parliament published a press release on June 1, which was headlined "EU lawmakers strike milestone deal for corporate tax transparency". Nevertheless, we assess the capital market reaction around February 25 as an alternative event date.

3.2 Data and Methodological Approach

To analyze the investor reaction to the EU announcement, we examine the stock returns of affected firms around the identified event, as described by Kothari and Warner (2007) and applied in recent literature (Kajüter et al. 2019). That is, we estimate the magnitude of abnormal returns based on the stock price development of a suitable benchmark (i.e., market) portfolio.

We identify firms that are likely to be subject to the directive using Bureau van Dijk's (BvD) flagship database Orbis, based on the scope of the EU draft proposal. That is, we require sample firms to exceed the turnover threshold of EUR 750 million in their last two available reporting periods. Moreover, we require firms to be active and publicly listed to be able to observe stock returns. To ensure the timeliness of our data, we exclude firms whose last available reporting year is prior to 2019. Furthermore, we require firms to be headquartered within the EU to ensure that the selected firms fall under the scope of the directive. We exclude firms that operate either in the extractive and logging industry,[15] respectively the banking sector,[16] as these firms are already subject to an industry-specific CbCR regime. We merge the resulting 715 firms with the Thomson Reuters EIKON database to obtain accounting data from Worldscope and stock market information from Datastream. We lose 30 firms that cannot be merged in this step.

We retrieve return information for our treatment firms and the benchmark portfolio from Datastream for the period starting January 1, 2020, and ending June 17, 2021, resulting in stock return information on 382 trading days for each firm. We use Datastream's Total Return Index (RI),[17] which represents a theoretical value growth by assuming that dividends are reinvested to purchase additional units of the respective stock. Due to the international scope

[15] The corresponding NACE Rev. 2 codes are 6411-6499 and 6611-6630.
[16] The corresponding NACE Rev. 2 codes are 0110-0322 and 0510-0990.
[17] The index value RI is calculated using a method in which the discrete quantity of dividend paid is added to the price on the ex-dividend date. That is, RI is computed as follows: $RI_t = RI_{t-1} * \frac{p_t}{p_{t-1}}$, where p_t equals the price on date t and p_{t-1} equals the price on the previous date. If t equals the ex-date of dividend payment D_t, the method adjusts as follows: $RI_t = RI_{t-1} * \frac{p_t + D_t}{p_{t-1}}$.

of our sample, we consider the MSCI World to be the most suitable available proxy for the market portfolio. The MSCI World is a global stock index that tracks the performance of more than 1,600 firms from 23 countries. The firms in our sample account for 10.8% of the MSCI World, mitigating concerns that treatment firms considerably impact the return of the benchmark portfolio.

Our Factiva analysis shows that the media coverage spike for our main event lasts until June 4 and subsequently reverts to the average level of media attention. Therefore, we expect a reaction to take place within the first two days following the event, i.e., our event day June 2 and the two subsequent days.[18] Thereby, we allow capital markets to impound the reactions into firms' stock prices (Grewal et al. 2019). For the estimation period, we follow Johannesen and Larsen (2016) and Dutt et al. (2019) and use a 1-year period ending six days before the respective events.[19] We only keep firms with at least 70% non-zero returns in our estimation and event period to ensure that sample firms are actively traded to mitigate difficulties during the estimation of the market model (Dutt et al. 2019). Based on this identification strategy, we end up with a final sample of 680 treatment firms. Table 1 provides a detailed overview of our selection process.

Table 2 shows the descriptive statistics of our sample. The average daily stock return amounts to 0.09 percent, slightly higher than the average daily return of the benchmark portfolio MSCI World (0.07 percent). The minimum turnover value of EUR 750 million in the last available year indicates that at least one firm is located close to the reporting threshold. The median firm accounts for a turnover of EUR 2.74 billion, operates in the B2C sector, has a GAAP effective tax rate of 24.75% (respectively a cash effective tax rate of 23.50%), and an intangible-to-total-assets ratio of 19.28%. We provide a country breakdown of our sample in Table 3.

For our main analysis, we use the event study design of Thompson (1985) and Eckbo (2007), assuming the Sharpe-Lintner Capital Asset Pricing Model (CAPM) to be the applicable return-generating process. This procedure implies the following regression model for the estimation of abnormal returns:

$$r_{it} = \alpha_i + \beta_i r_{mt} + \gamma_i Event_t + \varepsilon_{it} \quad (1)$$

[18] This is also our specification of choice for the alternative event day, given that the media reaction reaches a spike on February 25 and decays until February 27.

[19] To test the robustness of our results, we also employ a short-term estimation period of three months in Section 4.2 and find that our results are robust to alternative estimation period specifications.

where r_{it} is the realized return of firm *i* on trading day *t*, r_{mt} is the realized return of the benchmark portfolio (i.e., in our main analysis the MSCI World) and $Event_t$ is a dummy variable indicating trading days within the event period. ε_{it} is the error term and captures all effects that are not included in the model. The constant α_i represents an estimate for the alpha of an equally-weighted portfolio of our treatment firms and β_i is an estimate for the portfolio's market beta. γ_i represents an estimate for the average abnormal return during the event window and is, therefore, our coefficient of interest. To compute the CAAR, we multiply each γ_i by the number of days in our event window (Doidge and Dyck 2015; Klein et al. 2019).

4 Results

4.1 Main Findings

The results for our main event are presented in Table 4. In both specifications, we use the 1-year period estimation window (-267,-6) and cluster standard errors on firm-level and trading day-level. Column 1 depicts the results of our baseline analysis. For the 3-day event window (0,2), we find that the average sample firm experiences an abnormal return of -0.699%, statistically significant at the 1%-level. Considering the total market capitalization of our sample firms on June 1 (i.e., the day before the event) of EUR 8,131.5 billion, this translates into a value drop of EUR 65.487 billion within the first two days after the event. Our regression results further indicate a market beta of 0.674 (significant at the 1%-level) and a portfolio alpha of 0.109 (significant at the 5%-level).

Column 2 shows our regression results using an alternative 2-day event window (0,1). We find that the average firm accounts for an abnormal return of -0.499%, which translates into a value drop of EUR 48.532 billion. Estimates for the market beta and portfolio alpha are unaffected by this change, both in terms of magnitude and statistical significance.

Next, we analyze the alternative event on February 25, which was identified in the Factiva media coverage analysis. We follow our main event analysis and use (0,2) and (0,1) as event window specifications. The corresponding results are depicted in Table 5. We find positive CAARs for both specifications, amounting to 0.572% and 0.904% for the (0,2) and (0,1) event windows, respectively. In both cases, however, our estimates are statistically insignificant.

In conclusion, we find an average negative investor reaction to the EU's announcement of a public CbCR regime in our main analysis. Our findings are consistent with the notion that the average investor evaluates the associated costs of *public* disclosure to exceed the benefits

from a more extensive information environment and a potentially improved financial sustainability position associated with the increasing public pressure to be a "good corporate citizen".

Moreover, these findings are consistent with the results of Johannesen and Larsen (2016), who also find a negative investor response for the introduction of a public CbCR in the extractive sector. The smaller effect size of our estimations is likely due to the divergent backgrounds of the CbCR regimes. As explained in Section 2.2, the CbCR regime for the extractive and logging sector was developed primarily to combat criminal business practices, such as corruption in developing countries. In addition to reputational costs, the discovery of illegal activities also leads to direct costs from legal proceedings and potential fines. The tax CbCR on the other hand, was primarily designed to reveal tax avoidance resulting from mostly legal practices that exploit loopholes in the global system of national tax laws.

4.2 Robustness Tests

To increase the confidence in our results, we run a series of robustness tests, in which we alter the assumptions and parameters of our baseline analysis.[20] Table 6 shows the corresponding results. In column 1, we follow prior literature and employ the S&P Global 1200 as an alternative market proxy to the MSCI World (Dutt et al. 2019; Johannesen and Larsen 2016). The coefficient of interest remains unchanged by this alteration, both in terms of magnitude and statistical significance. In column 2, we winsorize firm and market returns within the estimation and event periods at the 1st and 99th percentile. The outbreak of the COVID-19 crisis has led to increased volatility in the global capital market. By winsorizing, we aim to account for the impact of COVID shocks, such as the discovery of a new virus variant or the successful test phase of a vaccine candidate. The corresponding results show that the alteration leads to a decrease in effect size by 0.082 percentage points to -0.617%, but an increase in statistical significance. In column 3, we control for potential confounding events and exclude firms with an earnings announcement within a (-2,2) window around the event date. We retrieve earnings announcement dates from I/B/E/S and identify four firms that made announcements during that period. Given the small share of affected sample firms, it is not surprising that our coefficient of interest is hardly affected by their exclusion. The effect size drops by 0.013 percentage points to -0.686% and remains statistically significant at the 1%-level. In column 4, we combine the winsorization and exclusion of firms with earnings

[20] Our baseline regression is shown in Table 4, column 1. I.e., for our robustness tests, we analyze the main event (June 2), using a 1-year estimation period (-267, -6) and a 3-day event-window (0,2).

announcements tests. The CAAR drops to -0.604% while remaining statistically significant at the 1%-level.

In a second step, we alter the estimation period to a short-term 3-month window starting 68 days and ending 6 days before the event date and replicate our baseline analysis and the robustness tests from Table 6. The corresponding results are depicted in Table 7. Column 1 shows the results of the baseline analysis but with the altered estimation period. We find that the CAAR drops to -0.509% but remains statistically significant at the 5%-level. Column 2 shows the results for using the S&P Global 1200 as an alternative benchmark portfolio. Here, the coefficient of interest amounts to -0.523%, significant just above the 5%-level (p-value of 5.5%). Winsorizing the return information in the estimation and event period reduces the effect size to -0.478% (column 3) and the exclusion of firms with earnings announcements during the (-2,2) window around the event date yields CAARs of -0.497% (column 4). In column 5, we find that the combination of a short-term estimation period, winsorization of return data, and exclusion of firms that have earnings announcements around the event date results in the smallest overall effect size in our test series. The CAAR amounts to -0.465% and is statistically significant at conventional levels.

Taken together, the analyses in this Section show that our results are robust to changes in assumptions or parameters of our estimation model. Our results remain similar in terms of magnitude and statistical significance, and our main inference from the previous Section does not change. This supports our view that the marginal capital market investor is negatively pricing in the EU announcement of the introduction of a public CbCR.

5 Heterogeneity Analysis

5.1 Data and Methodological Approach

After identifying an overall negative investor reaction, we aim to better understand the firm characteristics the marginal investor takes into consideration. As laid out in Section 2.2, our setting allows us to exclude direct implementation costs and indirect costs from tax authority scrutiny as potential reasons for an adverse reaction. The remaining indirect costs can be classified as reputational costs from being publicly exposed as an aggressive tax avoider (regardless of whether such exposure was justified or not) and costs resulting from competitive disadvantages. We, therefore, expect that the effect size should be larger for firms that are more sensitive to reputational concerns and firms situated in fierce competition. For our analyses, we thus extend our baseline model as follows:

$$r_{it} = \alpha_i + \beta_i r_{mt} + \gamma_i Event_t + \varphi_i I_i + \delta_i I_i * Event_t + \varepsilon_{it} \quad (2)$$

where I_i is a vector of firm-specific indicators. $I_i * Event_t$ is the interaction term of the indicator vector I_i and our dummy variable that indicates trading days within the event window. All other variables are as explained in equation 1. The new coefficient of interest is the coefficient of the interaction vector δ_i. To examine the role of the two cost channels separately, we determine meaningful measures that indicate the degree of reputational concerns and the fierceness of the competitive environment based on the extant literature. We describe the choice of the respective measures in the following.

Identification of reputational concerns

Two common measures of tax avoidance are the effective tax rate (ETR) of a firm based on accounting figures (so-called GAAP ETR), respectively based on the actual taxes paid (so-called Cash ETR) (Hanlon and Heitzman 2010). Using data from the consolidated financial statements for the financial year 2020 from Worldscope, we compute the GAAP ETR by dividing the income taxes (as stated in the profit and loss statement) by the pretax income of the respective firm and the Cash ETR by dividing the income taxes paid (as stated in the cash flow statement) by the pretax income of the respective firms. It is important to mention that GAAP ETR, unlike Cash ETR, does not capture a deferral of tax payments (Hanlon and Heitzman 2010) and might therefore not be the measure of choice for all instances. At the same time, an investor might prefer the GAAP ETR, given that it is easier to determine. For the computation of the GAAP ETR, both numerator and denominator can be retrieved from the same document (i.e., the profit and loss statement), whereas the Cash ETR requires information from both the profit and loss statement and the cash flow statement. We subsequently divide our sample firms into quintiles for each variable and define "Low-EBTR" and "Low-ECTR" as dummy variables that assume the value of 1 for firms in the first and second quintile of the GAAP ETR variable (EBTR), respectively the Cash ETR (ECTR) variable. We assume that investors consider potentially more tax aggressive firms to suffer from greater reputational risks.

Furthermore, we acknowledge that several empirical studies provide evidence for a tax-driven allocation of intangible assets within a multinational corporation. Dischinger and Riedel (2011) document that a decrease in the average tax difference to the remaining group affiliates by one percentage point increases the focal affiliate's level of intangible assets by 1.7%. Karkinsky and Riedel (2012) examine the impact of tax rates on patent locations and find that an increase in the corporate tax rate of 1 percentage point reduces the number of patent

applications by 3.5-3.8%. Estimating a model of firm decisions, Griffith et al. (2014) identify corporate tax rates as significant determinants in corporate patent location decisions. Heckemeyer et al. (2014) document that, conditional on the intensity of research & development activities of a firm, the level of intangible assets in the firm is associated with more tax planning efforts and ambitions. Thus, we argue that a higher intangible-to-total asset ratio might indicate higher and more sophisticated tax planning potential and could, therefore, serve as a proxy for investors to identify larger reputational risks. We, therefore, compute the respective ratio based on the 2020 financial information in Worldscope and allocate our sample firms into quintiles. We define "High-Int" as a dummy variable that assumes the value of 1 for firms in the fourth and fifth quintile with regard to the intangible-to-total-assets ratio.

Moreover, we consider the results of Eberhartinger et al. (2020), who document that banks reduce their presence in tax havens in response to the introduction of a public industry-specific CbCR. We retrieve ownership information for our sample firms from Orbis. With regard to the classification of tax haven jurisdictions, we follow the list provided by Fuest et al. (2021). We compute the relative share of subsidiaries located in tax haven jurisdictions and allocate our sample firms into quintiles. We define "High-Haven" as a dummy variable that assumes the value of 1 for firms in the fourth and fifth quintile with regard to the relative share of tax haven subsidiaries.

Finally, we consider that firms operating in the B2C sector are more exposed to public attention than B2B firms. In line with Dutt et al. (2019), we, therefore, examine the difference in the effect size along the B2C vs. B2B sector. We define "B2C" as a dummy variable that assumes the value of 1 for firms operating in the B2C sector and 0 for firms operating in the B2B sector. We apply the classification in Boyd and Kannan (2018) to allocate firms to the B2C sector based on their 4-digit SIC codes available in Orbis.

To be included in the sample, we require firms to have the necessary information for the computation of all indicator variables available. We drop firms with a negative pretax income, as ETR measures are otherwise difficult to interpret (Dyreng et al. 2017; Robinson et al. 2010; Bilicka et al. 2021). To reduce the impact of outliers, we cut GAAP ETR, Cash ETR, and the intangible-to-total-assets ratios at 0 and 1 (e.g., Joshi et al. 2020; Joshi 2020; Chyz et al. 2019). This procedure ultimately leads to a final sample of 480 firms for our cross-sectional heterogeneity analyses regarding reputational concerns. We estimate equation 2 using the parameter values from our baseline analysis. That is, we analyze the investor reaction to the EU

announcement on June 2, using a 1-year estimation window (-266,-6) and a 3-day event window (0,2).

Identification of the competitive environment

One of the most established metrics to measure the level of competition is the Herfindahl-Hirschman Index (HHI), which is frequently used by national antitrust agencies[21] and in the extant literature (Francis et al. 2013; Borenstein et al. 1999). The index measures the industry concentration by incorporating the relative market share of all firms in a given industry. It is computed by summing up the squared market shares of each market player in a given industry. After multiplying the market shares by 100, the HHI assumes values between $\frac{10{,}000}{N} \leq HHI \leq 10{,}000$ whereby N represents the number of market players in the given industry. Higher index values indicate higher concentrations of market shares within a given industry and, thus, lower competition among firms in that industry. To calculate the HHI, we use BvD's classification of industry peers in Orbis,[22] which allows us to identify potential competitors of our sample firms and calculate the total turnover volume per industry as well as the individual market shares based on the available turnover information for the financial year 2019.[23] In our analysis, we include the dummy "Low-HHI", which assumes the value of 1 for firms in industries in the lowest two quintiles with regard to the HHI (i.e., industries with high competitive pressure) and 0 otherwise.

Another established group of concentration measures is represented by the so-called Concentration Ratios (OECD 2021). Concentration Ratios measure the cumulative market share of the top N-firms in a given industry. A low Concentration Ratio implies that the market is less dominated by the N-largest firms (Francis et al. 2013). By focusing on the largest firms, the measure neglects the distribution of market shares of the remaining competitors (contrary to the HHI). We measure the Concentration Ratio for the ten largest firms in terms of turnover ("CR10") and define "Low-CR10" as a dummy variable that assumes the value of 1 for firms operating in industries allocated to the first and second quintile with regard to CR10.

We acknowledge that concentration measures, in general, are imperfect proxies for the actual competitive environment within industries. Most importantly, they do not measure competition directly but the structural market outcome of competition (OECD 2021).[24]

[21] For instance the Norwegian Competition Authority, see https://konkurransetilsynet.no/competition-has-been-stable-in-norway-for-the-last-decades/?lang=en (01.10.2021).
[22] The classification is based on the four-digit NACE-industry codes, but more granular due to additional adjustments by BvD.
[23] The year 2019 represents the most recent year for which we have financial information available in Orbis.
[24] For further shortcomings, see among others, Matsumoto et al. (2012) and Borenstein et al. (1999).

Furthermore, we note that concentration measures on a stand-alone basis are limited to a static description of the market structure but do not account for dynamic developments. We address this issue and complement our analyses by using two additional dynamic indicators.

Our first indicator measures the 1-year (5-year) industry growth in terms of total turnover. We argue that industries with low industry growth rates suggest higher competitive pressure on firms, as a firm's market position may primarily be strengthened by retaining its customers and attracting the existing customers of competing firms, yet not through the attraction of new customers. Thus, we define "Low-1yr turnover growth" ("Low-5yr turnover growth") as a dummy taking the value of 1 for firms in industries belonging to the first and second quintile in terms of the 1-year (5-year) turnover growth.

The second indicator is derived from Porter's Five Forces Model, in which the threat of an entry of new market participants is presented as a determinant for the dynamic rivalry within a given industry (Porter 1980). Our approach is similar to Buijink et al. (1998), but we define a combined measure accounting for market entries and exits. More precisely, we calculate the 1-year (5-year) growth rate in the number of competitors for each industry. Industries with high growth rates are considered more competitive. The dummy variable "High-1yr competitor growth" ("High-5yr competitor growth") equals 1 for firms in industries belonging to the fourth and fifth quintile of the respective variables.

In the absence of observable characteristics that would enable us to delineate product markets,[25] we emphasize that our approach to identify the competitive environment is based on industry classifications. Industry classifications are typically more broadly defined than product markets. In combination with the above-mentioned general shortcomings of concentration measures, we are cautious to interpret the results of our analyses regarding the competitive environment as causal links and consider them rather indicative.

5.2 Findings

Heterogeneous effects for different levels of reputational concerns

Our results for the heterogeneity analyses regarding different levels of reputational concerns are shown in Table 8. In columns 1-5, vector I_i contains the indicator variables individually, whereas, in column 6, we include all five indicator variables.

[25] A common measure is the similarity of product descriptions in firms' 10-K filings (e.g., Hoberg and Phillips 2016). However, such information is not available for our European sample.

Column 1 depicts the results for the GAAP ETR analysis. In line with our expectation, our results show that the investor reaction is considerably stronger for more tax aggressive firms in terms of the GAAP ETR. While the average firm in the less tax aggressive sample experiences an abnormal stock price reaction of -0.595% in the 3-day event window, the average tax aggressive firm in terms of GAAP ETR experiences a -0.247 percentage points lower 3-day CAAR. This finding is in line with the notion that investors expect firms to converge towards more conservative tax planning strategies in anticipation of increasing public pressure, which indirectly affects the expected value of cash flows due to foregone tax savings. Interestingly, we find no significant difference in effect sizes in the cash ETR analysis (column 2). The marginal investor thus seems to rely on the readily available but, in some instances, less informative ETR measure.

Column 3 shows the results for the intangible-to-total-assets ratio analysis. The corresponding coefficient of interest is negative with a considerable effect size of -0.227% but is not statistically significant at conventional levels. Similarly, we do not find a significant difference between firms with high versus low shares of tax haven subsidiaries (column 4). The coefficient of interest is close to 0 and insignificant, for which we identify two possible reasons. First, it is comparatively costly to obtain the ratio. Unlike the basic values used to compute the ETR measures or the intangible-to-total-assets ratio, the number of subsidiaries is generally not directly available from the financial statements but has to be compiled on the basis of news or legal documents or via paid access to corresponding databases. The high number of subsidiaries for MNE of this size (our median sample firm accounts for 195 subsidiaries, the average is just over 591) also complicates the manual allocation into tax haven and non-tax haven subsidiaries. Secondly, as Table 2 shows, 75% of our sample firms account for a share of tax-haven subsidiaries between 0% and 5.51%. Consequently, the marginal investor might lack sufficient variation to expect a reputational risk differential and to react accordingly.

Similar to the tax haven and intangible ratio analyses, we cannot draw any new conclusions from the B2C analysis (column 5). Again, this finding could be related to the low degree of variation in the data, as 87% of our sample firms operate in the B2C sector. However, the combined regression (column 6), including the whole vector of indicators, confirms our finding that more tax aggressive firms with regard to GAAP ETR are more affected than other firms. The respective coefficient indicates -0.318 percentage points lower CAARs. The event coefficient shifts close to 0 and becomes insignificant, which we attribute to the high degree of partitioning via five interaction terms. In sum, our findings imply that the marginal investor factors in the reputational risks of more tax aggressive firms.

Heterogeneous effects for different levels of competition

Next, we explore the potential role of the second cost channel as a complementary driver of the overall negative investor reaction. Our results for the heterogeneity analyses regarding different levels of competition are presented in Table 9. We estimate equation 2 using each of our six competitive intensity indicators individually.

Columns 1 and 2 show the results for our concentration measures. The CAARs of firms operating in medium-to higher-concentrated industries amount to -0.600% in the HHI analysis (column 1) and -0.619% in the CR10 analysis (column 2), both statistically significant at the 1%-level. In line with our expectation, we find that firms operating in industries with lower concentrations experience more negative CAARs than firms operating in more concentrated industries. The effect size differential is stronger when using the HHI measure (-0.137 percentage points) than the CR10 measure (-0.094 percentage points). In both cases, however, our coefficients of interest are not significant at conventional levels. In untabulated results, we also test CR3 and CR5 as commonly applied Concentration Ratio alternatives (OECD 2021) but do not find any significant differences in effect size.

In the next step, we look at turnover growth as a measure reflecting the dynamic development of our sample firm industries. Columns 3 depicts the results for the (short-term) 1-year turnover growth rate analysis, whereas column 4 shows the results for the (long-term) 5-year turnover growth rate. Again, we find significant negative CAARs for firms operating in medium- to high-growth industries. The event coefficients yield CAARs of -0.635% (-0.710%) for the short-term (long-term) growth rates. Our coefficients of interest, however, yield mixed results. While firms with lower short-term growth rates experience on average a -0.078 percentage points lower CAARs, firms with lower long-term growth rates seem to yield less negative CAARs. However, similar to the concentration analyses, both coefficients of interest are insignificant and therefore fail to support our initial assumption about heterogenous effects for different levels of competitive intensity.

In a final step, we examine differences in competitive intensity levels by means of competitor growth within a given industry. Similar to turnover growth, the competitor growth measure reflects the dynamic developments of our sample firm industries. The corresponding results of our (short-term) 1-year and (long-term) 5-year competitor growth rate analyses are shown in columns 5 and 6. Here, we find evidence supporting our expectation that differences in competitive intensity are priced in by the marginal investor. Our estimates suggest that firms operating in industries with high short-term (long-term) competitor growth rates experience

significantly stronger negative CAARs, amounting to -0.263 (-0.281) percentage points. In untabulated results, we confirm the robustness of our finding employing a (medium-term) 3-year competitor growth rate.

Taken together, we do not find comprehensive evidence to support our assumption concerning the competitive distortion channel. We document that firms in industries with higher growth rates in terms of the number of competitors are more affected by the regulation. However, we acknowledge the weaknesses of the measurement approach outlined in Section 5.1 and interpret our results as indicative of competitive risks associated with the introduction of a public CbCR in the EU. The assumption of a causal relationship requires a more precise measurement approach based on observable delineations of product markets.

6 Conclusion

In this study, we examine the EU's announcement to introduce a public CbCR scheme in the night of June 1 to June 2, 2021. According to the draft directive, large European multinational enterprises would be required to publicly disclose formerly confidentially reported key financials on a CbC basis. We employ an event study methodology to analyze the investor reaction on the capital market around the day of the announcement of a political agreement to introduce the public CbCR scheme. Based on BvD's Orbis database, we identify a set of 680 EU-based listed firms to fall under the public reporting obligation. Using daily stock return data from Datastream, we document negative CAARs for up to two days after the event day. Contingent on the specification, the CAARs range between -0.499% and -0.699% for the firms in our sample, which translates into a monetary value drop between EUR 48 billion and EUR 65 billion. Our findings suggest that investors expect non-tax risks associated with public CbCR to outweigh potential benefits from a better information environment.

Adding upon these findings, we further identify potential channels to explain our results. Our setting enables us to rule out direct costs of compliance and indirect costs resulting from increased tax authority scrutiny as potential drivers of a negative investor reaction, given that firms were previously already required to confidentially report CbCR data to the national tax authorities. That leaves reputational concerns from public scrutiny and potential competitive disadvantages as possible drivers. The results of our cross-sectional analyses indicate that investors are indeed concerned about reputational risks associated with the disclosure requirement. We find significant differences in effect sizes between firms with lower GAAP ETRs, amounting to stronger negative abnormal returns of -0.247 percentage points over the three days following the EU announcement. Furthermore, we find that firms with higher short-

and long-term competitor growth rates experience significantly stronger negative abnormal returns than firms with lower growth rates. Our estimates indicate a -0.263 (-0.281) percentage points stronger negative CAARs for firms with higher 1-year (5-year) competitor growth rates over the 3-day event period. These findings are consistent with the notion that investors price in different levels of competition of affected firms. Yet, due to limitations of our competition measures, we interpret the heterogenous effect sizes as indicative evidence for the role of competitive risks arising from the public CbCR. We leave a more sophisticated measurement approach as an interesting avenue for future research.

Overall, our findings provide a meaningful contribution to currently ongoing discussions among politicians and standard setters on increasing tax transparency. In the U.S., for instance, the Disclosure of Tax Havens and Offshoring Act, which provides a similar extension of the existing confidential CbCR to a public CbCR, awaits approval by the Senate. Additionally, the world's most widely applied non-financial reporting standard, GRI, introduced a new module on taxation, including a public CbCR, effective as of 2021. When considering the introduction or particular design of comparable public CbCRs, legislators and standard setters should be aware that mandatory public tax transparency results in substantial non-tax costs. Against this background, decision-makers should carefully consider the merits of such public disclosure schemes.

References

Austin, Chelsea Rae; Wilson, Ryan J. (2017): An Examination of Reputational Costs and Tax Avoidance: Evidence from Firms with Valuable Consumer Brands. In *Journal of the American Taxation Association* 39 (1), pp. 67–93. DOI: 10.2308/atax-51634.

Bilicka, Katarzyna Anna; Casi, Elisa; Seregni, Carol; Stage, Barbara (2021): Qualitative Information Disclosure: Is Mandating Additional Tax Information Disclosure Always Useful? ZEW - Leibniz-Zentrum für Europäische Wirtschfatsforschung. Mannheim (ZEW - Centre for European Economic Research Discussion Paper, 21-047). Available online at http://hdl.handle.net/10419/234982, checked on 8/11/2021.

Blaufus, Kay; Möhlmann, Axel; Schwäbe, Alexander N. (2019): Stock price reactions to news about corporate tax avoidance and evasion. In *Journal of Economic Psychology* 72, pp. 278–292. DOI: 10.1016/j.joep.2019.04.007.

Borenstein, Severin; Bushnell, James; Knittel, Christopher R. (1999): Market Power in Electricity Markets: Beyond Concentration Measures. In *The Energy Journal* 20 (4), pp. 65–88.

Borghesi, Richard; Houston, Joel F.; Naranjo, Andy (2014): Corporate socially responsible investments: CEO altruism, reputation, and shareholder interests. In *Journal of Corporate Finance* 26, pp. 164–181. DOI: 10.1016/j.jcorpfin.2014.03.008.

Boyd, D. Eric; Kannan, P. K. (2018): (When) Does Third-Party Recognition for Design Excellence Affect Financial Performance in Business-to-Business Markets? In *Journal of Marketing* 82 (3), pp. 108–123. DOI: 10.1509/jm.15.0150.

Bratten, Brian; Gleason, Cristi A.; Larocque, Stephannie A.; Mills, Lillian F. (2017): Forecasting Taxes: New Evidence from Analysts. In *The Accounting Review* 92 (3), pp. 1–29. DOI: 10.2308/accr-51557.

Buijink, Willem F. J.; Maijoor, Steven J.; Meuwissen, Roger H. G. (1998): Competition in Auditing: Evidence from Entry, Exit, and Market Share Mobility in Germany versus The Netherlands. In *Contemporary Accounting Research* 15 (3), pp. 385–404. DOI: 10.1111/j.1911-3846.1998.tb00565.x.

Business at OECD (2020): Comment on Public Review of Country-by-Country Reporting (BEPS Action 13). OECD. Available online at https://www.dropbox.com/s/qovaugzkxsym3ia/oecd-public-comments-received-2020-cbc-review.zip?dl=0, checked on 8/21/2021.

Chen, Shannon; Schuchard, Kathleen; Stomberg, Bridget (2019): Media Coverage of Corporate Taxes. In *The Accounting Review* 94 (5), pp. 83–116. DOI: 10.2308/accr-52342.

Chyz, James A.; Gaertner, Fabio B.; Kausar, Asad; Watson, Luke (2019): Overconfidence and Corporate Tax Policy. In *Review of Accounting Studies* 24 (3), pp. 1114–1145. DOI: 10.1007/s11142-019-09494-z.

De Simone, Lisa; Olbert, Marcel (2021): Real Effects of Private Country-by-Country Disclosure. Available online at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3398116, checked on 7/9/2021.

Desai, Mihir A.; Dharmapala, Dhammika (2006): Corporate tax avoidance and high-powered incentives. In *Journal of Financial Economics* 79 (1), pp. 145–179. DOI: 10.1016/j.jfineco.2005.02.002.

Desai, Mihir A.; Dharmapala, Dhammika (2009): Corporate Tax Avoidance and Firm Value. In *Review of Economics and Statistics* 91 (3), pp. 537–546. DOI: 10.1162/rest.91.3.537.

Desai, Mihir A.; Dyck, Alexander; ZINGALES, L. (2007): Theft and taxes. In *Journal of Financial Economics* 84 (3), pp. 591–623. DOI: 10.1016/j.jfineco.2006.05.005.

Dischinger, Matthias; Riedel, Nadine (2011): Corporate taxes and the location of intangible assets within multinational firms. In *Journal of Public Economics* 95 (7-8), pp. 691–707. DOI: 10.1016/j.jpubeco.2010.12.002.

Doidge, Craig; Dyck, Alexander (2015): Taxes and Corporate Policies: Evidence from a Quasi Natural Experiment. In *The Journal of Finance* 70 (1), pp. 45–89. DOI: 10.1111/jofi.12101.

Dutt, Verena K.; Ludwig, Christopher A.; Nicolay, Katharina; Vay, Heiko; Voget, Johannes (2019): Increasing tax transparency: investor reactions to the country-by-country reporting requirement for EU financial institutions. In *Int Tax Public Finance* 26 (6), pp. 1259–1290. DOI: 10.1007/s10797-019-09575-4.

Dyreng, S.; Hanlon, Michelle; Maydew, Edward L.; Thornock, Jacob R. (2017): Changes in corporate effective tax rates over the past 25 years. In *Journal of Financial Economics* 124 (3), pp. 441–463. DOI: 10.1016/j.jfineco.2017.04.001.

Dyreng, S.; Hoopes, Jeffrey L.; Wilde, Jaron H. (2016): Public Pressure and Corporate Tax Behavior. In *Journal of Accounting Research* 54 (1), pp. 147–186. DOI: 10.1111/1475-679X.12101.

Eberhartinger, Eva; Speitmann, Raffael; Sureth-Sloane, Caren (2020): Real Effects of Public Country-by-Country Reporting and the Firm Structure of European Banks. In *SSRN Journal*. DOI: 10.2139/ssrn.3523909.

Eckbo, B. Espen (Ed.) (2007): Handbook of Corporate Finance. Empirical Corporate Finance. Amsterdam: North-Holland (1).

Ellis, J. A.; Fee, C. E.; Thomas, S. E. (2012): Proprietary Costs and the Disclosure of Information About Customers. In *Journal of Accounting Research* 50 (3), pp. 685–727. DOI: 10.1111/j.1475-679X.2012.00441.x.

European Parliament (2019): Legislative resolution on disclosure of income tax information by certain undertakings and branches. European Parliament. Available online at https://www.europarl.europa.eu/RegData/seance_pleniere/textes_adoptes/provisoire/2019/03-27/0309/P8_TA-PROV(2019)0309_EN.pdf, checked on 8/20/2021.

Francis, Jere R.; Michas, Paul N.; Seavey, Scott E. (2013): Does Audit Market Concentration Harm the Quality of Audited Earnings? Evidence from Audit Markets in 42 Countries. In *Contemporary Accounting Research* 30 (1), pp. 325–355. DOI: 10.1111/j.1911-3846.2012.01156.x.

Frischmann, Peter J.; Shevlin, Terry; Wilson, Ryan (2008): Economic consequences of increasing the conformity in accounting for uncertain tax benefits. In *Journal of Accounting and Economics* 46 (2-3), pp. 261–278. DOI: 10.1016/j.jacceco.2008.08.002.

Fuest, Clemens; Hugger, Felix; Neumeier, Florian (2021): Corporate Profit Shifting and the Role of Tax Havens: Evidence from German Country-by-Country Reporting Data. CESifo. Munich (CESifo Working Paper, 8838). Available online at http://hdl.handle.net/10419/232435, checked on 8/11/2021.

Graham, John R.; Hanlon, Michelle; Shevlin, Terry; Shroff, Nemit (2014): Incentives for Tax Planning and Avoidance: Evidence from the Field. In *The Accounting Review* 89 (3), pp. 991–1023. DOI: 10.2308/accr-50678.

Grewal, Jody; Riedl, Edward J.; Serafeim, George (2019): Market Reaction to Mandatory Nonfinancial Disclosure. In *Management Science* 65 (7), pp. 3061–3084. DOI: 10.1287/mnsc.2018.3099.

Griffith, Rachel; Miller, Helen; O'Connell, Martin (2014): Ownership of intellectual property and corporate taxation. In *Journal of Public Economics* 112, pp. 12–23. DOI: 10.1016/j.jpubeco.2014.01.009.

GSSB (2019a): GRI 207: TAX 2019. Available online at https://www.globalreporting.org/search/?query=GRI+207, checked on 8/13/2021.

GSSB (2019b): Basis for Conclusions for GRI 207: Tax 2019. Summary of Public Comments on the Exposure Draft of the Standard, and GSSB Responses. GRI. Amsterdam. Available online at https://www.globalreporting.org/media/50wfs120/gssb-basis-for-conclusions-for-gri-207-tax-2019.pdf, checked on 8/17/2021.

Hanlon, Michelle; Heitzman, Shane (2010): A review of tax research. In *Journal of Accounting and Economics* 50 (2-3), pp. 127–178. DOI: 10.1016/j.jacceco.2010.09.002.

Hanlon, Michelle; Laplante, Stacie Kelley; Shevlin, Terry (2005): Evidence for the possible information loss of conforming book income and taxable income. In *Journal of Law and Economics* 48 (2), pp. 407–442.

Heckemeyer, Jost; Richter, Katharina; Spengel, Christoph (2014): Tax Planning of R&D Intensive Multinationals. In *SSRN Journal*. DOI: 10.2139/ssrn.2557353.

Hoberg, Gerard; Phillips, Gordon (2016): Text-Based Network Industries and Endogenous Product Differentiation. In *Journal of Political Economy* 124 (51), pp. 1423–1465. DOI: 10.3386/w15991.

Hombach, Katharina; Sellhorn, Thorsten (2019): Firm Value Effects of Targeted Disclosure Regulation: The Role of Reputational Costs (TRR 266 Accounting for Transparency Working Paper Series No. 18). Available online at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3204505, checked on 8/13/2021.

Hoopes, Jeffrey L.; Robinson, Leslie; Slemrod, joel (2018): Public tax-return disclosure. In *Journal of Accounting and Economics* 66, pp. 142–162.

Huang, Ying; Jennings, Ross; Yu, Yong (2017): Product Market Competition and Managerial Disclosure of Earnings Forecasts: Evidence from Import Tariff Rate Reductions. In *The Accounting Review* 92 (3), pp. 185–207. DOI: 10.2308/accr-51558.

Huesecken, Birgit; Overesch, Michael; Tassius, Alexander (2018): Effects of Disclosing Tax Avoidance: Capital Market Reaction to LuxLeaks (Working Paper). Available online at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2848757, checked on 8/13/2021.

Johannesen, Niels; Larsen, Dan Thor (2016): The power of financial transparency: An event study of country-by-country reporting standards. In *Economics Letters* 145, pp. 120–122. DOI: 10.1016/j.econlet.2016.05.029.

Joshi, Preetika (2020): Does Private Country-by-Country Reporting Deter Tax Avoidance and Income Shifting? Evidence from BEPS Action Item 13. In *Journal of Accounting Research* 58 (2), pp. 333–381. DOI: 10.1111/1475-679X.12304.

Joshi, Preetika; Outslay, Edmund; Persson, Anh; Shevlin, Terry; Venkat, Aruhn (2020): Does Public Country-by-Country Reporting Deter Tax Avoidance and Income Shifting? Evidence from the European Banking Industry*. In *Contemp Account Res* 37 (4), pp. 2357–2397. DOI: 10.1111/1911-3846.12601.

Kajüter, Peter; Klassmann, Florian; Nienhaus, Martin (2019): The Effect of Mandatory Quarterly Reporting on Firm Value. In *The Accounting Review* 94 (3), pp. 251–277. DOI: 10.2308/accr-52212.

Karkinsky, Tom; Riedel, Nadine (2012): Corporate taxation and the choice of patent location within multinational firms. In *Journal of International Economics* 88 (1), pp. 176–185. DOI: 10.1016/j.jinteco.2012.04.002.

Klein, Daniel; Ludwig, Christopher; Spengel, Christoph (2019): Ring-Fencing Digital Corporations: Investor Reaction to the European Commission's Digital Tax Proposals. In *SSRN Journal*. DOI: 10.2139/ssrn.3498183.

Kothari, S. P.; Warner, J. (2007): Econometrics of event studies. In B. Espen Eckbo (Ed.): Handbook of Corporate Finance. Empirical Corporate Finance, vol. 1. Amsterdam: North-Holland (1), pp. 3–36.

Leung, Edith; Verriest, Arnt (2019): Does location matter for disclosure? Evidence from geographic segments. In *J Bus Fin Acc* 46 (5-6), pp. 541–568. DOI: 10.1111/jbfa.12375.

Matsumoto, Akio; Merlone, Ugo; Szidarovszky, Ferenc (2012): Some notes on applying the Herfindahl–Hirschman Index. In *Applied Economics Letters* 19 (2), pp. 181–184. DOI: 10.1080/13504851.2011.570705.

Müller, Raphael; Spengel, Christoph; Vay, Heiko (2020): On the Determinants and Effects of Corporate Tax Transparency: Review of an Emerging Literature: ZEW Discussion Paper (ZEW - Centre for European Economic Research Discussion Paper No. 20-063).

OECD (2015): Transfer Pricing Documentation and Country-by-Country Reporting. Action 13 - 2015 Final Report. Edited by OECD Publishing. OECD. Paris. Available online at https://www.oecd-ilibrary.org/docserver/9789264241480-en.pdf?expires=1625825947&id=id&accname=ocid41023547&checksum=E1E6ABE59CB96A17ACD3189C59205ED3, checked on 7/9/2021.

OECD (2021): Methodologies to Measure Market Competition. Edited by OECD Publishing. OECD. Paris (OECD Competition Committee Issues Paper). Available online at https: //oe.cd/mmmc.

Overesch, Michael; Wolff, Hubertus (2021): Financial Transparency to the Rescue: Effects of Public Country-by-Country Reporting in the EU Banking Sector on Tax Avoidance*. In *Contemp Account Res*. DOI: 10.1111/1911-3846.12669.

Porter, Michael E. (1980): Industry Structure and Competitive Strategy: Keys to Profitability. In *Financial Analysts Journal* 36 (4), pp. 30–41. Available online at https://www.jstor.org/stable/4478361.

Rauter, Thomas (2020): The Effect of Mandatory Extraction Payment Disclosures on Corporate Payment and Investment Policies Abroad. In *Journal of Accounting Research* 58 (5), pp. 1075–1116. DOI: 10.1111/1475-679X.12332.

Robinson, John R.; Sikes, Stephanie A.; Weaver, Connie D. (2010): Performance Measurement of Corporate Tax Departments. In *The Accounting Review* 85 (3), pp. 1035–1064.

Technology Industries of Finland (2020): Comment on Public Review of Country-by-Country Reporting (BEPS Action 13). OECD. Available online at https://www.dropbox.com/s/qovaugzkxsym3ia/oecd-public-comments-received-2020-cbc-review.zip?dl=0, checked on 8/20/2021.

Thompson, Rex (1985): Conditioning the Return-Generating Process on Firm-Specific Events: A Discussion of Event Study Methods. In *The Journal of Financial and Quantitative Analysis* 20 (2), p. 151. DOI: 10.2307/2330952.

Table 1: Sample selection process

Search step	Search result
All active firms in Orbis	288,485,396
Require firms to be publicly listed	-288,397,152
Require firms to exceed the turnover threshold of EUR 750 million in their last two available years	-81,710
Require firms to have financial data available until at least 2019	-19
Exclude non-EU based firms	-5,685
Exclude firms in the extractive & logging industry	-32
Exclude firms in the banking sector	-83
Exclude firms that could not be identified in Datastream	-30
Require at least 30% of non-zero returns in the sample period	-5
Final sample	**680**

Note: The EU draft proposal requires firms exceeding a turnover threshold of EUR 750 million in two consecutive years to fall under the disclosure obligation. The term "turnover" in the table refers to the Orbis variable "Operating Revenue (Turnover)". Firms without data in reporting years 2021-2019 are excluded to ensure the temporal relevance of the dataset. Non-EU-based firms are excluded, as they are only subject to a reduced disclosure obligation under the draft proposal (i.e., they are only required to disclose their business activities within, but not outside of the EU on a CbC basis). Firms in the extractive & logging industry (NACE Rev. 2 codes: 6411-6499 and 6611-6630) and the banking sector (NACE Rev. 2 codes: 0110-0322 and 0510-0990) are excluded as they are subject to an industry-specific CbCR regime in the EU. Given that firms operating in the public sector (NACE Rev. 2 codes: 8411-8430) are not necessarily comparable to those operating in the non-public sector (e.g., because national governments typically hold significant stakes in those firms), we also exclude those firms. To mitigate difficulties resulting from the estimation of the market model with a zero-return high ratio, we require at least 30% of non-zero return days in our sample (Dutt et al. 2019).

Table 2: Descriptive statistics

Variable	N	Mean	SD	P25	Median	P75	Min	Max
Stock Return	259,080	0.09	2.90	-1.07	0	1.19	-66.67	184.44
MSCI World Return	259,080	0.07	1.54	-0.38	0.11	0.68	-10.06	8.40
S&P Global 1200 Return	259,080	0.06	1.52	-0.46	0.14	0.67	-9.82	8.36
Turnover in last available year	183,360	9.16	18.90	1.44	2.74	8.36	0.75	231.00
B2C	183,360	0.87	0.34	1	1	1	0	1
GAAP ETR	183,360	29.01	20.93	18.96	24.75	31.25	0	100
Cash ETR	183,360	30.83	25.86	15.02	23.50	37.70	0	100
Intangible-to-total assets ratio	183,360	23.72	19.38	6.07	19.28	37.70	0	88.58
Total number of subsidiaries	183,360	591.53	1205.60	76.5	195	508.5	1	9,463
Relative share of tax haven subsidiaries	183,360	4.02	5.86	0.41	2.72	5.51	0	75
HHI	247,154	333.62	428.86	118.05	207.72	368.06	6.03	4013.53
CR10	247,154	0.38	0.16	0.25	0.36	0.47	0.06	0.94
1yr turnover growth	247,154	-0.03	0.54	-0.19	-0.08	0.00	-0.75	7.29
5yr turnover growth	247,154	0.30	0.62	0.01	0.18	0.43	-0.99	7.45
1yr competitor growth	247,154	1.34	5.97	-0.19	0.07	0.93	-0.66	81.88
5yr competitor growth	247,154	1.54	6.72	-0.23	0.03	1.68	-0.73	90.81

Note: The table shows descriptive statistics of our sample firms. Turnover is stated in billion EUR. B2C is an indicator variable assuming 0 for B2B firms and 1 for B2C firms. HHI is the Herfindahl-Hirschman Index after multiplying the percent market shares by 100 (i.e., HHI may assume values of up to 10,000). All other variables are stated in percent. GAAP ETR, Cash ETR, and Intangible-to-total-assets ratio are restricted to values between [0, 100] to limit the influence of outliers (Joshi et al. 2020; Joshi 2020). The sample selection process is described in detail in Table 1. We provide a detailed overview of our variable definitions in Table 10.

Table 3: Country breakdown of sample firms

Country	Frequency	Percent
Austria	20	2.94%
Belgium	26	3.82%
Cyprus	6	0.88%
Czech Republic	2	0.29%
Germany	129	18.97%
Denmark	25	3.68%
Spain	44	6.47%
Finland	37	5.44%
France	126	18.53%
Greece	7	1.03%
Croatia	2	0.29%
Hungary	2	0.29%
Ireland	33	4.85%
Italy	53	7.79%
Luxembourg	23	3.38%
Malta	1	0.15%
Netherlands	49	7.21%
Poland	27	3.97%
Portugal	10	1.47%
Romania	2	0.29%
Sweden	55	8.09%
Slovenia	1	0.15%
Total	**680**	**100.0%**

Note: The table shows a geographic breakdown by countries of our sample. The assignment of a firm to a country is based on the ISO 3166-1 alpha-2 (ISO-2) country code provided by Orbis. The sample selection process is described in detail in Table 1.

Table 4: Results for main event date (June 2)

	(1) (0,2) Event window	(2) (0,1) Event window
Constant	0.109**	0.109**
	(2.478)	(2.478)
Market Return	0.674***	0.674***
	(10.873)	(10.868)
Event	-0.699***	-0.499***
	(-4.056)	(-3.842)
Observations	179,520	178,840
Standard errors clustered on firm-level	Yes	Yes
Standard errors clustered on trading days	Yes	Yes
Firms	680	680
Adj.-R^2	0.06	0.06
Value Effect	-65.487	-48.532

Note: The Table presents the estimation results of equation 1: $r_{it} = \alpha_i + \beta_i r_{mt} + \gamma_i Event_t + \varepsilon_{it}$ for the main event (June 2). r_{it} is the realized return of firm i on trading day t, r_{mt} is the realized return of the market portfolio (MSCI World) and $Event_t$ is a dummy variable indicating trading days within the (0,2) event window. ε_{it} is the error term and captures all effects that are not included in the model. Column 1 shows the regression results using a 3-day event window starting on the event date, i.e., June 2. Column 2 shows the regression results using a 2-day event window starting on the event date. The *event* coefficient is already multiplied by the number of days in the respective event window and therefore represents the CAARs. *Value effect* translates the CAARs into a monetary value, by multiplying the firm CAARs with their respective market capitalization on June 1. *Value effect* is stated in billion EUR. Test statistics in parentheses. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively.

Table 5: Results for alternative event date (February 25)

	(1) (0,2) Event window	(2) (0,1) Event window
Constant	0.036	0.036
	(0.578)	(0.576)
Market Return	0.724***	0.727***
	(10.923)	(10.856)
Event	0.572	0.904
	(0.305)	(0.509)
Observations	180,343	178,981
Standard errors clustered on firm-level	Yes	Yes
Standard errors clustered on trading days	Yes	Yes
Firms	681	681
Adj.-R^2	0.16	0.16

Note: The Table presents the estimation results of equation 1: $r_{it} = \alpha_i + \beta_i r_{mt} + \gamma_i Event_t + \varepsilon_{it}$ for the alternative event date (February 25). r_{it} is the realized return of firm i on trading day t, r_{mt} is the realized return of the market portfolio (MSCI World) and $Event_t$ is a dummy variable indicating trading days within the (0,2) event window. ε_{it} is the error term and captures all effects that are not included in the model. Column 1 shows the regression results using a 3-day event window starting on the alternative event date, i.e., February 25. Column 2 shows the regression results using a 2-day event window starting on the event date. The *event* coefficient is already multiplied by the number of days in the respective event window and therefore represents the CAARs. Test statistics in parentheses. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively.

Table 6: Robustness tests for (0,2) event window and 1-year estimation period

	(1) S&P Global 1200	(2) Winsorize	(3) Announcements	(4) Winsorize & Announcements
Constant	0.110**	0.087**	0.109**	0.087**
	(2.514)	(2.022)	(2.477)	(2.022)
Market Return	0.663***	0.655***	0.675***	0.656***
	(10.749)	(10.043)	(10.867)	(10.039)
Event	-0.699***	-0.617***	-0.686***	-0.604***
	(-3.471)	(-3.807)	(-4.080)	(-3.831)
Observations	179,520	179,520	178,464	178,464
Standard errors clustered on firm-level	Yes	Yes	Yes	Yes
Standard errors clustered on trading days	Yes	Yes	Yes	Yes
Firms	680	680	676	676
Adj.-R^2	0.06	0.07	0.06	0.07

Note: The Table presents the regression results for a series of robustness checks, using the market model in equation 1: $r_{it} = \alpha_i + \beta_i r_{mt} + \gamma_i Event_t + \varepsilon_{it}$. r_{it} is the realized return of firm i on trading day t, r_{mt} is the realized return of the market portfolio (MSCI World) and $Event_t$ is a dummy variable indicating trading days within the (0,2) event window. ε_{it} is the error term and captures all effects that are not included in the model. Using the initial specification from our baseline analysis, we analyze the main event on June 2 using a (0,2) event window and an estimation windows of one year (i.e., (-266,-6)) across all specifications. Column 1 shows the results when using the S&P Global 1200 as an alternative benchmark portfolio to the MSCI World. Column 2 shows the results when winsorizing firm and market returns at the 1st and 99th percentile to limit the effect of potential outliers. Column 3 shows the results when excluding firms that made an earnings announcement in a (-2,2) window around the event date. In Column 4, we winsorize firm and market returns and additionally exclude firms with earnings announcements in a (-2,2) window around the event date. Test statistics in parentheses. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively.

Table 7: Robustness tests for (0,2) event window and 3-month estimation period

	(1) Baseline	(2) S&P Global 1200	(3) Winsorize	(4) Announcements	(5) Winsorize & Announcements
Constant	0.108	0.110	0.100	0.108	0.100
	(1.556)	(1.604)	(1.481)	(1.554)	(1.478)
Market Return	0.507***	0.509***	0.495***	0.508***	0.496***
	(4.333)	(4.087)	(4.355)	(4.337)	(4.360)
Event	-0.509**	-0.523*	-0.478***	-0.497**	-0.465*
	(-2.102)	(-1.953)	(-2.007)	(-2.065)	(-1.968)
Observations	44,814	44,814	44,814	44,550	44,550
Standard errors clustered on firm-level	Yes	Yes	Yes	Yes	Yes
Standard errors clustered on trading days	Yes	Yes	Yes	Yes	Yes
Firms	679	679	679	675	675
Adj.-R^2	0.03	0.04	0.04	0.03	0.04

Note: The Table presents the regression results for a series of robustness checks, using the market model in equation 1: $r_{it} = \alpha_i + \beta_i r_{mt} + \gamma_i Event_t + \varepsilon_{it}$. r_{it} is the realized return of firm i on trading day t, r_{mt} is the realized return of the market portfolio (MSCI World) and $Event_t$ is a dummy variable indicating trading days within the (0,2) event window. ε_{it} is the error term and captures all effects that are not included in the model. In column 1, we conduct our baseline analysis with the shorter estimation window of three months (i.e., (-68,-6)). Columns 2-5 repeat the robustness tests from Table 6, using the shorter estimation window. Column 2 shows the results when using the S&P Global 1200 as an alternative benchmark portfolio to the MSCI World. Column 3 shows the results when winsorizing firm and market returns at the 1st and 99th percentile to limit the effect of potential outliers. Column 4 shows the results when excluding firms that made an earnings announcement in a (-2,2) window around the event date. In Column 5, we winsorize and additionally exclude firms with earnings announcements in a (-2,2) window around the event date. Test statistics in parentheses. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively.

Table 8: Cross-sectional results – Reputational concerns

	(1) GAAP ETR	(2) Cash ETR	(3) Intangibles	(4) Tax Havens	(5) B2C	(6) Combined
Constant	0.111***	0.100**	0.114***	0.098**	0.065	0.057
	(2.712)	(2.509)	(2.790)	(2.500)	(1.615)	(1.401)
Market Return	0.625***	0.625***	0.625***	0.625***	0.625***	0.625***
	(11.286)	(11.286)	(11.286)	(11.286)	(11.286)	(11.286)
Event	-0.595**	-0.688***	-0.603***	-0.668***	-0.345	0.023
	(-2.508)	(-3.790)	(-3.764)	(-3.621)	(-0.575)	(0.057)
Low-EBTR x Event	-0.247***					-0.318**
	(-2.762)					(-2.308)
Low-EBTR	-0.012					-0.019
	(-0.927)					(-1.516)
Low-ECTR x Event		-0.016				0.055
		(-0.098)				(0.292)
Low-ECTR		0.015				0.024*
		(1.126)				(1.858)
High-Int x Event			-0.227			-0.288
			(-1.074)			(-1.529)
High-Int			-0.020			-0.014
			(-1.315)			(-0.984)
High-Haven x Event				-0.054		-0.087
				(-0.323)		(-0.655)
High-Haven				0.017		0.021*
				(1.280)		(1.650)
B2C x Event					-0.401	-0.523
					(-0.799)	(-1.227)
B2C					0.047*	0.049*
					(1.792)	(1.949)
Observations	126,720	126,720	126,720	126,720	126,720	126,720
Standard errors clustered on firm-level	Yes	Yes	Yes	Yes	Yes	Yes
Standard errors clustered on trading days	Yes	Yes	Yes	Yes	Yes	Yes
Firms	480	480	480	480	480	480
Adj.-R^2	0.07	0.07	0.07	0.07	0.07	0.07

Note: The Table presents the regression results for a series of cross-sectional tests, using the market model in equation 2: $r_{it} = \alpha_i + \beta_i r_{mt} + \gamma_i Event_t + \varphi_i I_i + \delta_i I_i * Event_t + \varepsilon_{it}$. r_{it} is the realized return of firm i on trading day t, r_{mt} is the realized return of the market portfolio (MSCI World) and $Event_t$ is a dummy variable indicating trading days within the (0,2) event window. I_i is one of five variables (Low-EBTR, Low-ECTR, Low-Int, High-Haven, or B2C) along which we conduct sample splits. ε_{it} is the error term and captures all effects that are not included in the model. We define our variables in Table 10. Test statistics in parentheses. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively.

Table 9: Cross-sectional results – Intensity of competition

	(1) HHI	(2) CR10	(3) 1yr turnover growth	(4) 5yr turnover growth	(5) 1yr competitor growth	(6) 5yr competitor growth
Constant	0.113***	0.113***	0.099**	0.100**	0.110***	0.111***
	(2.622)	(2.599)	(2.347)	(2.303)	(2.600)	(2.605)
Market Return	0.671***	0.671***	0.671***	0.671***	0.671***	0.671***
	(10.836)	(10.836)	(10.836)	(10.836)	(10.836)	(10.836)
Event	-0.600***	-0.619***	-0.635***	-0.710***	-0.563***	-0.552***
	(-4.445)	(-4.587)	(-3.145)	(-3.795)	(-3.446)	(-2.900)
Low-HHI x Event	-0.137					
	(-0.468)					
Low-HHI	-0.010					
	(-0.795)					
Low-CR10 x Event		-0.094				
		(-0.352)				
Low- CR10		-0.008				
		(-0.705)				
Low-1yr turnover growth x Event			-0.078			
			(-0.313)			
Low-1yr turnover growth			0.028			
			(2.120)			
Low-5yr turnover growth x Event				0.139		
				(0.878)		
Low-5yr turnover growth				0.025		
				(1.606)		
High-1yr competitor growth x Event					-0.263***	
					(-3.443)	
High-1yr competitor growth					-0.004	
					(-0.252)	
High-5yr competitor growth x Event						-0.281***
						(-2.598)
High-5yr competitor growth						-0.006
						(-0.340)
Observations	170,808	170,808	170,808	170,808	170,808	170,808
Standard errors clustered on firm-level	Yes	Yes	Yes	Yes	Yes	Yes
Standard errors clustered on trading days	Yes	Yes	Yes	Yes	Yes	Yes
Firms	647	647	647	647	647	647
Adj.-R^2	0.06	0.06	0.06	0.06	0.06	0.06

Note: The Table presents the regression results for a series of cross-sectional tests, using the market model in equation 2: $r_{it} = \alpha_i + \beta_i r_{mt} + \gamma_i Event_t + \varphi_i I_i + \delta_i I_i * Event_t + \varepsilon_{it}$. r_{it} is the realized return of firm i on trading day t, r_{mt} is the realized return of the market portfolio (MSCI World) and $Event_t$ is a dummy variable indicating trading days within the (0,2) event window. I_i is one of six variables (HHI, CR10, the 1- and 5-year turnover growth, and the 1- and 5-year competitor growth within a given firm's industry) along which we conduct sample splits. ε_{it} is the error term and captures all effects that are not included in the model. We define our variables in

Table 10. Test statistics in parentheses. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively.

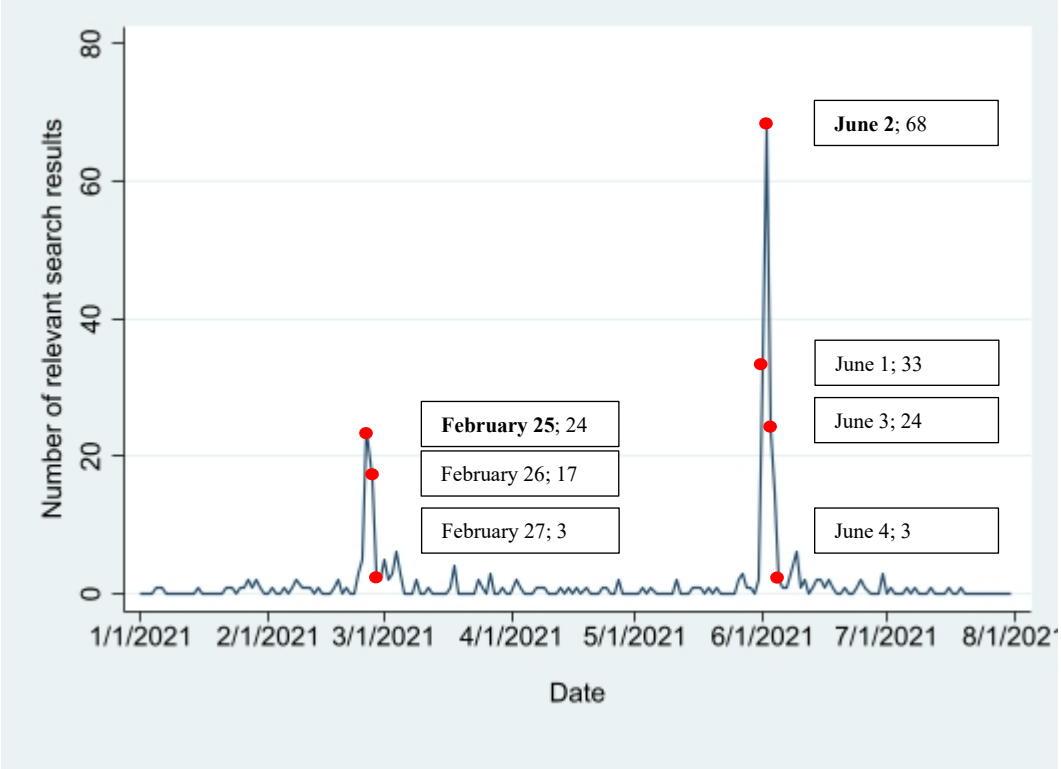
Table 10: Description of employed variables

Variable	Description	Data Source
1yr competitor growth	(Number of identified industry peers in 2019 / Number of identified industry peers in 2018) - 1	Industry classification and industry peer information retrieved from Orbis.
1yr turnover growth	(Total industry turnover in 2019 / Total industry turnover in 2018) - 1	Turnover, industry classification, and industry peer information retrieved from Orbis.
5yr competitor growth	(Number of identified industry peers in 2019 / Number of identified industry peers in 2014) - 1	Industry classification and industry peer information retrieved from Orbis.
5yr turnover growth	(Total industry turnover in 2019 / Total industry turnover in 2014) - 1	Turnover, industry classification, and industry peer information retrieved from Orbis.
B2C	Dummy variable indicating observations from firms operating in the B2C sector (value = 1), respectively in the B2B sector (value =0).	SIC codes are retrieved from Orbis. The classification into B2C vs. B2B sector industries follows Boyd and Kannan (2018).
Cash ETR	Income taxes paid as stated in the cash flow statement / pretax income * 100.	Income taxes paid and pretax income are retrieved from Worldscope.
CR10	Market share of the top ten firms in focal firm's industry.	Turnover, industry classification, and industry peer information retrieved from Orbis.
Event	Dummy variable indicating observations that fall into the respective event window.	-
GAAP ETR	Income taxes as stated in the profit and loss statement / pretax income * 100.	Income taxes and pretax income are retrieved from Worldscope.
HHI	Herfindahl-Hirschman Index, computed as follows: $\boldsymbol{HHI = 10,000 * \sum_{i=1}^{N} a_i^2}$, where $\boldsymbol{a_i}$ represents the individual market share of industry peer $\boldsymbol{i}$.	Turnover, industry classification, and industry peer information retrieved from Orbis.
High-1yr competitor growth	Dummy variable indicating observations in the 4th and 5th quintile in terms of *1yr competitor growth*.	See *1yr competitor growth*.
High-5yr competitor growth	Dummy variable indicating observations in the 4th and 5th quintile in terms of *5yr turnover growth*.	See 5*yr competitor growth*.
High-Haven	Dummy variable indicating observations in the 4th and 5th quintile in terms of *Relative share of tax haven subsidiaries.*	Ownership information is retrieved from Orbis.
High-Int	Dummy variable indicating observations in the 4th and 5th quintile in terms of *Intangible-to-total assets ratio.*	See *Intangible-to-total assets ratio*.
Intangible-to-total assets ratio	Intangible assets / Total assets * 100.	Intangible and total asset figures are retrieved from Worldscope.
Low-1yr turnover growth	Dummy variable indicating observations in the 1st and 2nd quintile in terms of *1yr turnover growth*.	See *1yr turnover growth*.
Low-5yr turnover growth	Dummy variable indicating observations in the 1st and 2nd quintile in terms of *5yr turnover growth*.	See 5*yr turnover growth*.
Low-CR10	Dummy variable indicating observations in the 1st and 2nd quintile in terms of *CR10*.	See *CR10*.

Low-EBTR	Dummy variable indicating observations in the 1st and 2nd quintile in terms of *GAAP ETR*.	See *GAAP ETR*.
Low-ECTR	Dummy variable indicating observations in the 1st and 2nd quintile in terms of *Cash ETR*.	See *Cash ETR*.
Low-HHI	Dummy variable indicating observations in the 1st and 2nd quintile in terms of *HHI*.	See *HHI*.
Market Return	Daily stock return stated in percent, based on the Total Return Index (RI). Contingent on the specification, the market return either depicts the return of the MSCI World or the S&P Global 1200.	Datastream.
MSCI World Return	Daily stock return of the MSCI World stated in percent, based on the Total Return Index (RI).	Datastream.
Relative share of tax haven subsidiaries	Number of subsidiaries located in tax haven jurisdictions / Total number of subsidiaries * 100.	Ownership information is retrieved from Orbis. The classification of jurisdictions into tax havens and non-tax havens follows Fuest et al. (2021).
Total Return Index (RI)	The Total Return Index (RI) represents a theoretical value growth by assuming that dividends are reinvested to purchase additional units of the respective stock. It is calculated using a method in which the discrete quantity of dividend paid is added to the price on the ex-dividend date. That is, RI is computed as follows: $\boldsymbol{RI_t = RI_{t-1} * \frac{p_t}{p_{t-1}}}$ where $\boldsymbol{p_t}$ equals the price on date $\boldsymbol{t}$ and $\boldsymbol{p_{t-1}}$ equals the price on the previous date. If $\boldsymbol{t}$ equals the ex-date of dividend payment $\boldsymbol{D_t}$, the method adjusts as follows: $\boldsymbol{RI_t = RI_{t-1} * \frac{p_t + D_t}{p_{t-1}}}$.	Datastream.
S&P Global 1200 Return	Daily stock return of the S&P Global 1200 stated in percent, based on the Total Return Index (RI).	Datastream.
Stock Return	Daily stock return of our sample firms stated in percent, based on the Total Return Index (RI).	Datastream.
Total number of subsidiaries	Indicates a firm's total number of controlled subsidiaries, as disclosed in the Orbis database.	Orbis.
Turnover in last available year	Turnover or operating revenue in the last available accounting period of the respective firm.	Orbis.

Note: This table lists all variables used for analyses in this paper, including a description and the respective data sources.

Figure 1 – Media Coverage Analysis



Note: The figure depicts the number of search results in the Dow Jones Factiva database, using the search term "country by country reporting" for the period from January 1, 2021, to July 31, 2021. Our search query results in 912 publications. 301 search results are identified as duplicates in Factiva and therefore excluded, leaving 611 publications. We manually inspect all 611 articles to determine if an article actually deals with the EU's public CbCR proposal or its legislative process. The remaining 325 relevant articles are depicted in the figure. The graph displays two extraordinary spikes, on February 25 and June 2, respectively. We note that the spike in June starts building up on June 1. However, given that the major stock exchanges were either already closed or about to close after the announcement on June 1, the graph confirms our expectation that June 2 represents a suitable event date.

Figure 2 – Guardian headline on February 26

EU states back plan to expose big companies' tax avoidance

Majority of member states back proposal to bring in country-by-country tax reporting

▲ Country-by-country reporting is designed to highlight how companies such as Apple, Facebook and Google avoid paying an estimated $500bn a year in taxes by shifting their profits. Photograph: Justin Tallis/AFP/Getty Images

https://www.theguardian.com/world/2021/feb/26/eu-states-back-plan-to-expose-big-companies-tax-avoidance (13.10.2021)

Figure 3 – Guardian headline on June 02

EU agrees to force multinationals to disclose tax, piling pressure on UK

Companies with revenues above €750m will be required to publish a country by country breakdown

▲ German finance minister Olaf Scholz welcomed the agreement struck late on Tuesday. Photograph: Wolfgang Kumm/AP

https://www.theguardian.com/business/2021/jun/02/eu-agrees-to-force-multinationals-to-disclose-tax-piling-pressure-on-uk (13.10.2021)

Download ZEW Discussion Papers from our ftp server:

http://ftp.zew.de/pub/zew-docs/dp/

or see:

https://www.ssrn.com/link/ZEW-Ctr-Euro-Econ-Research.html
https://ideas.repec.org/s/zbw/zewdip.html

IMPRINT

ZEW – Leibniz-Zentrum für Europäische Wirtschaftsforschung GmbH Mannheim
ZEW – Leibniz Centre for European Economic Research

L 7,1 · 68161 Mannheim · Germany
Phone +49 621 1235-01
info@zew.de · zew.de