Increasing tax transparency: investor reactions to the country-by-country reporting requirement for EU financial institutions

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Abstract

We employ an event study methodology to investigate the capital market reaction to the surprising political decision to adopt a public country-by-country reporting (CbCR) obligation for EU financial institutions. Our results are suggestive of a zero response in our full sample of financial institutions headquartered in the EU. We conduct several sample splits and find that the investor reaction is slightly more negative for banks engaging in selected tax havens and banks with an above-average B2C orientation and slightly more positive for banks with a below-average share of institutional investors. We conclude that investors anticipated a simultaneous reduction in banks' tax avoidance opportunities and in information asymmetries between managers and shareholders, implying both negative and positive stock price reactions which offset each other on average. We relate our findings to previous studies on the introduction of similar tax transparency measures and contend that capital market reactions to increases in tax transparency depend crucially on the exact design and objective of the initiative. Our inferences are of special importance in light of the ongoing debate whether to enact a general public CbCR obligation for large multinational firms in the EU.

Keywords Tax avoidance · Profit shifting · Country-by-country reporting · Financial institutions · Market reaction · Event study

JEL Classification H25 · H26 · G21 · G28

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1 Introduction

A couple of recent studies suggest that investors perceive a mandatory increase in tax transparency as a potent tool in curbing tax avoidance. More precisely, Johannesen and Larsen (2016), Chen (2017) and Hoopes et al. (2018) document negative stock price reactions around key dates of two legislative procedures that introduced new public tax disclosure obligations for certain companies. They interpret their findings as evidence of investors expecting the disclosure of new information to be costly for firms, mainly due to an anticipated increase in scrutiny by the public and by tax authorities, resulting in a potential reduction in profit shifting opportunities under the new disclosure rules. To provide a more general understanding of how tax reporting requirements—and in particular country-by-country reporting (CbCR)—are perceived by investors, we analyze the introduction of the public CbCR obligation for EU financial institutions, enacted in 2013.

Since the tax planning strategies of large multinational firms have moved into the focus of public and political attention, several EU and OECD initiatives have discussed potential measures to limit extensive profit shifting activities. One of these measures aims at improving tax transparency, in particular by mandating companies to disclose a CbCR, which contains certain tax-related information on a per-country basis. The data are supposed to help tax authorities in detecting abusive tax sheltering and—if it is made public—to exert public pressure on the firms inducing them to pay their "fair share of taxes" in the countries where they operate. As one of the first CbCR initiatives, Article 89 of the Capital Requirements Directive IV (Directive 2013/36/EU, abbr.: CRD IV) requires EU financial institutions to publicly disclose reports for the financial year 2014 onwards.

In theory, several channels could drive investors' reaction to adopting this new rule. On the one hand, investors could appreciate the upcoming enhancement in tax transparency. The additional information may serve as a tool to better monitor the tax avoidance activities of managers and to limit their related possibilities to extract private benefits (Desai and Dharmapala 2006; Desai et al. 2007; Bennedsen and Zeume 2018). This potential decrease in information asymmetry could trigger a positive stock price response. On the other hand, investors might react negatively in anticipation of reduced future after-tax profits. As intended by the legislator, banks may cut back their tax planning to some extent due to increased scrutiny by the tax authorities and the general public (Graham et al. 2014; Dyreng et al. 2016). Besides, the new disclosure requirement might come along with substantial direct and implicit costs.

Empirical evidence from similar settings indicates a negative response of the capital market. Hoopes et al. (2018) investigate a new public tax disclosure rule in Australia and document a significant stock price decline for all firms affected by the new rule, which is especially pronounced for firms expected to be disclosed as paying zero taxes. Chen (2017) extends their analysis to additional event dates in the legislative procedure. When accounting for the dividend imputation system in Australia and focusing on a portfolio of firms with clear incentives to minimize their corporate tax burden, Chen (2017) finds a negative and significant investor

reaction aggregated over all event dates. Finally, Johannesen and Larsen (2016) exploit the introduction of the CbCR requirement for EU companies in the extractive industries through the EU Accounting Directive (Directive 2013/34/EU) and observe remarkable stock price declines of about 5–10%.

All these prior findings suggest that the channels of increased scrutiny by the tax authority and by the public dominate investors' perception of the introduction of tax disclosure requirements. Consequently, we also expect a negative reaction in our setting. Early empirical evidence (Joshi et al. 2018; Overesch and Wolff 2019) indicating that banks changed their tax avoidance behavior to some extent after the implementation of the new CbCR requirement corroborates this expectation.

We employ an event study methodology to examine the capital market response around the day of the surprising political decision to include a CbCR obligation in the CRD IV proposal. We can reject a negative reaction larger than 2.1% and a positive reaction larger than 1.4% for the full sample of financial institutions headquartered in the EU. To investigate potential cross-sectional variation in the response to the new disclosure rule, we conduct several sample splits. As expected, we find that banks particularly exposed to the increase in tax transparency (proxied by tax haven usage) and banks more sensitive to reputational concerns (proxied by B2C orientation) exhibit a more negative reaction, while banks characterized by higher information asymmetry (i.e., a low share of institutional investors) show a more positive reaction. However, the effects measured for all subsamples are small in economic terms and statistically insignificant. Our results remain unchanged when considering two additional event dates and throughout various robustness checks.

We conclude that our cross-sectional tests provide some evidence of different channels driving the response to the CbCR introduction for EU financial institutions. The capital market may have perceived the new disclosure rule to result in a simultaneous decline in tax avoidance possibilities and a reduction in information asymmetry, implying both positive and negative stock price effects. This interpretation can explain why we do not observe a pronounced capital market reaction on average, while concurrent studies on banks' reaction to the CbCR requirement (Joshi et al. 2018; Overesch and Wolff 2019) document that banks adjusted their tax avoidance behavior after the implementation of the rule.

We also relate our results to the findings of extant event studies investigating the introduction of similar tax transparency measures. Differences in research question and research design impede a direct comparison with Hoopes et al. (2018). However, the negative stock price reaction of Australian firms featuring tax avoidance incentives which are similar to those in our setting, as documented by Chen (2017), is small in economic terms and lies within the range of our confidence interval. In contrast, we can exclude the occurrence of a reaction as strong as the one observed by Johannesen and Larsen (2016) at the 5% level. While their setting shares several common features with ours, one important difference might explain the results. The reporting obligation in the extractive industries aims at preventing corruption by publishing payments to governments. By contrast, the objective in the banking sector is to increase transparency against the backdrop of the financial crisis and to reveal where profits are generated compared to where real economic activity occurs. These diverging objectives have translated into differences in the selection of items

to be disclosed according to both rules. Consequently, the strong negative stock price reaction observed for the extractive industries might not be due to an anticipated reduction in tax avoidance. It may rather be dominated by investors' belief that this particular kind of CbCR disclosure effectively fights corruption and that companies have to increase their (legitimate) compensation to their host countries for extracted resources. This specific channel is not present in our setting of EU financial institutions.

We make several contributions to the growing literature on tax transparency. First, our paper sheds light on the impact and effectiveness of a particular tax transparency measure, namely CbCR. Up to now, most contributions on possible costs and benefits of the disclosure requirement have been normative (e.g., Cockfield and MacArthur 2015; Evers et al. 2017). Empirical evidence on the impact of the CbCR for EU financial institutions on corporate tax avoidance is scarce and inconclusive. While Overesch and Wolff (2019) document a relative increase in the effective tax burdens of affected banks, Joshi et al. (2018) find a substitution of profit shifting activities between different kinds of subsidiaries but no significant change at the corporate group level. We aim to complement this early research on the effectiveness of CbCR by investigating investors' perspective on this new transparency rule.

Second, our analysis provides evidence on the impact of tax transparency in general (not specifically CbCR) on the capital market. Several studies examine how investors value the publication of tax-related information about companies, focusing on the event of disclosure itself (Hanlon and Slemrod 2009; Gallemore et al. 2014; Brooks et al. 2016; Chen 2017; Huesecken et al. 2017; O'Donovan et al. 2017; Hoopes et al. 2018). However, little is known about how investors react to changes in rules that require the disclosure of additional information, i.e., an increase in tax transparency. Market responses to the actual disclosure of information reflect how specific publications of certain companies are perceived by the capital market. Focusing on legislative procedures on new disclosure requirements instead allows us to assess how investors evaluate the new legislation as a whole and in particular its effectiveness.

While prior studies and our cross-sectional tests are generally in line with increased tax transparency curbing tax avoidance of multinational companies, our results also suggest that the very strong capital market reaction to the CbCR introduction for the EU extractive industries was rather due to its effectiveness in fighting corruption. This inference is of special importance in light of the ongoing discussion about whether to adopt a public CbCR requirement for all EU-based multinational firms with profits above a certain threshold (European Commission 2016; European Parliament 2017, 2019). Compared to the CbCR for EU financial institutions, the current proposal for a general public CbCR (European Parliament 2019) provides for a more salient way of disclosure and a more comprehensive list of items, which could further increase the effectiveness of the CbCR in preventing tax avoidance and thereby affect the perception of the disclosure requirement by investors.

The remainder of this paper is structured as follows: Sect. 2 provides information on the CbCR requirement for EU financial institutions, the legislation procedure and prior literature related to our study. Section 3 describes the data and the research

design. Section 4 presents the results of our analysis which are complemented by robustness checks and further analyses in Sect. 5. Section 6 concludes the paper.

2 Background and hypotheses

2.1 The CbCR requirement for EU financial institutions

The political intention to oblige EU financial institutions to publicly disclose CbCR information emerged quite as a surprise on February 27, 2013, which marks the key event date of our study. In a trilogue between the Presidency of the European Council, the European Parliament and the European Commission on this day, it was decided to incorporate this new reporting obligation in the CRD IV. The main purpose of the CRD IV and the accompanying Capital Requirements Regulation (Regulation EU No 575/2013, abbr.: CRR) was to implement the Basel III standards into EU law, including capital, liquidity and leverage requirements and new provisions regarding corporate governance and remuneration. While the legislative procedure had already started in 2011 (European Commission 2011) and most key features had been publicly debated, the idea of a CbCR obligation did not appear in any of the proposals or public discussions before the trilogue. It was only a spontaneous initiative of some members of the European Parliament which triggered this mandatory increase in tax transparency. Parliamentarians argued that, given the central role of banks and the large amount of public subsidies they have received during the financial crisis, EU citizens should be able to assess whether they are paying their "fair share of taxes" in the countries where they operate. Due to the unpredicted nature of the decision in the trilogue on February 27, 2013, we expect to observe an investor reaction around this date.

On June 26, 2013, the CRD IV was finally signed by the president of the European Parliament and the president of the European Council. The CbCR rule contained in Article 89 requires EU credit institutions and investment firms to publicly disclose turnover, the number of employees, profit or loss before tax, tax on profit or loss and public subsidies received on a per-country basis as well as the name, location and nature of activities of their subsidiaries and branches. The disclosure obligation applies to financial years 2014 onward. Groups headquartered in the EU have to provide a CbCR with respect to the whole group, whereas groups headquartered outside the EU only have to disclose information for their EU entities, including their subsidiaries and branches.

To further examine whether the trilogue decision to include a CbCR obligation was unexpected, we analyze the media coverage of the topic around our event date. Following Hillert et al. (2014) and Chen et al. (2018), we conduct searches in the Factiva and Lexis Nexis databases for news articles addressing the (potential) CbCR introduction for EU financial institutions. The number of relevant articles on each date is depicted in Fig. 1. The figure exhibits a sharp increase directly after the event on February 27, 2013, reflecting that the inclusion of CbCR in the EU directive appears to have come unexpected.
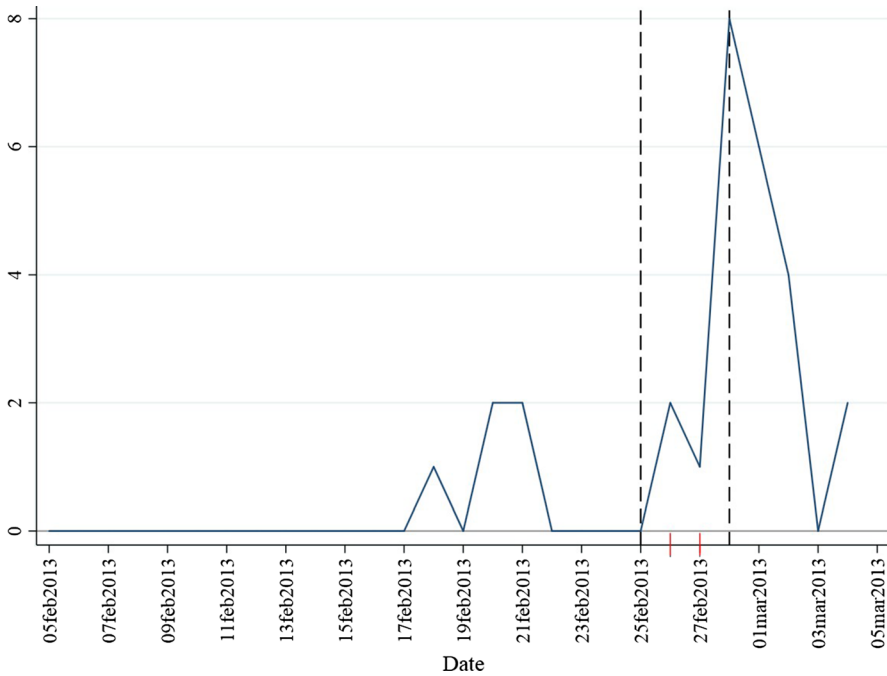
Fig. 1 Trend analysis for news reports on CbCR around the event window. *Notes*: The figure depicts the number of relevant articles on CbCR for each date. We conduct our searches in the Factiva and the Lexis Nexis database for the period February 5 to March 5, 2013, using the following search terms: country-by-country reporting or country-by-country report or cbcr or capital requirements directive or crd iv. After eliminating duplicates (i.e., identical articles contained in both databases), we read through all search results in English language to identify articles that actually address the (potential) CbCR introduction for EU financial institutions by the CRD IV. The dashed lines frame the dates around the event date (February 25, 2013–February 28, 2013). The red marks represent the consecutive days within this window

In addition, on February 26, 2013, the non-governmental organization "Avaaz" launched a petition requesting the inclusion of a CbCR requirement in the CRD IV. They managed to get more than 200,000 signatures by February 27, 2013, among them members of the European Parliament supporting CbCR (The Guardian 2013a). This event underlines the sudden increase in public interest in a CbCR requirement for the banking sector.

Other topics discussed in the trilogue concern additional capital buffer requirements for systemically important institutions, the flexibility for Member States to take country-specific prudential measures, the power of the European Banking Authority to mediate on its own initiative in the event of conflicts between national competent authorities and details of and exemptions from the bonus cap for banks' managers. News articles around the trilogue, though, show that the CbCR requirement and the bonus cap for managers are the only two topics that received substantial public attention. While the 1:1 ratio of the bonus cap had already been agreed upon on February 19, 2013, and only been specified in the

trilogue on February 27, 2013, in more detail, the inclusion of CbCR was completely open until then.

Furthermore, at the date of the trilogue, no other legal initiatives existed on a general CbCR or a CbCR for the financial sector. The confidential CbCR for large multinational firms proposed by the OECD (OECD 2015) dates back to the OECD's initiative against base erosion and profit shifting (OECD 2013a). Though, in February 2013, the concept of a CbCR had not yet been elaborated. In its report "Addressing Base Erosion and Profit Shifting" published on February 12, 2013, the OECD only expresses the "need for increased transparency on effective tax rates of MNEs" (OECD 2013b, p. 6). Thus, we are confident that our event date is characterized by a strong increase in the likelihood of the introduction of a public CbCR for EU financial institutions.

2.2 Prior literature and hypotheses

The CbCR introduction for EU financial institutions constitutes an increase in the volume of publicly available tax-related information. To assess the consequences for the future profits of the companies affected, investors have to predict how managers, the tax authorities, consumers and the public sentiment will react to the new disclosure requirement. From a theoretical point of view, different channels could drive the response of the capital market.

On the one hand, investors might predict a reduction in the costs of capital for the affected banks. The capital market might appreciate the upcoming increase in transparency as the CbCRs could provide more certainty regarding banks' tax positions as well as additional information on the geographical distribution of activities and earnings. Ultimately, these data can help to increase the accuracy of analysts' forecasts. Prior evidence suggests that tax-related information can be useful in forecasting future earnings (Hanlon et al. 2005; Bratten et al. 2017; Demeré 2018). Moreover, the CbCR information might serve as a tool for investors to better monitor managers' tax planning activities. Engaging in tax sheltering does not only allow firms to save taxes, which is in the interest of all shareholders, but can also be exploited by managers and controlling shareholders to divert rents to their own advantage. As Desai and Dharmapala (2006) have found, tax avoidance and the extraction of private benefits by managers are complementary. In the same vein, Desai et al. (2007) have documented that an enhancement in tax enforcement reduces managers' possibilities of rent extraction. Bennedsen and Zeume (2018) provide evidence that an increase in transparency through the signing of tax information exchange agreements (TIEA) between home countries and tax havens increases the cost for managers to engage in expropriation of minority shareholders through the use of tax havens. This positive effect of TIEAs on firm value from reducing the self-serving activities of managers outweighs the negative effect from declining opportunities for pure tax saving via tax havens. In the same vein, the new CbCR requirement might decrease the information asymmetry between managers and shareholders. The information to be disclosed makes the tax avoidance activities of firms more transparent to shareholders, which might impede private rent

extraction by managers. As a consequence, the capital market may react positively to the introduction of the new disclosure obligation.

On the other hand, investors could expect a decrease in banks' future profits. First, banks might reduce their extent of profit shifting since tax authorities have more information at hand to audit tax-aggressive banks more efficiently.[1] As Bozanic et al. (2017) have shown, tax authorities actually make use of tax-related disclosures in financial statements in case they contain incremental information to the tax return data. Second, increased public scrutiny might induce banks to voluntarily pay their "fair share of taxes." Several studies have documented that companies adjust their tax planning activities due to reputational concerns (Graham et al. 2014; Dyreng et al. 2016; Austin and Wilson 2017; Hoopes et al. 2018). Finally, investors might also expect the new disclosure rule to impose additional costs on the companies. Apart from direct costs for an initial adjustment of the reporting system and for the annual compilation of the reports, companies may also face considerable indirect costs in the form of reputational damages from being potentially blamed for aggressive tax planning (Evers et al. 2017).

In summary, there are three potential channels which could drive the response of investors to the new disclosure rule: (1) reduction in information asymmetry, (2) tax authority scrutiny and (3) public scrutiny. While the first channel should result in a relative stock price increase of the affected firms, the latter two channels would lead to a relative decrease. Thus, it remains an empirical question how the capital market actually reacted to the introduction of the CbCR obligation.

Due to the recent nature of the rule, empirical evidence on whether EU financial institutions changed their behavior in response to the CbCR introduction is scarce and preliminary. Two early studies investigate potential behavioral responses with regard to the extent of tax planning activities. Overesch and Wolff (2019) find that European multinational banks reduced their tax avoidance after the implementation of the new disclosure obligation. They document an increase in the effective tax burdens of European-headquartered multinational banks relative to different control groups unaffected by the CbCR requirement. The reaction is especially pronounced for banks with activities in tax havens due to their higher exposure to the increased transparency. In contrast, Joshi et al. (2018) do not find a significant decline in the tax avoidance behavior at the corporate group level, measured by the effective tax rate. They claim that banks are able to substitute profit shifting activities between subsidiaries subject to different degrees of transparency, which leaves the overall level of tax avoidance unaffected. In particular, they document decreases in profit shifting through financial affiliates and increases in profit shifting through industrial affiliates, the latter of which they consider not to be included in the scope of the CRD IV.

While Overesch and Wolff (2019) and Joshi et al. (2018) shed some light on the tax avoidance behavior of banks affected by Article 89 of the CRD IV, their findings are—at least partly—contradictory. Moreover, as shown above, the capital market

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[1] Tax authority scrutiny should only matter if the tax authority's prior information set is inferior to the new set after the disclosure requirement is implemented.

not only might reflect the implications of more tax transparency for tax avoidance, but might also incorporate additional channels in its reaction. Thus, it still remains an open question how investors have assessed the consequences of the upcoming increase in tax transparency.

Three recent event studies examine the stock price reaction in similar settings. Hoopes et al. (2018) and Chen (2017) both exploit a new rule in Australia, issued in 2013. It requires the Australian Taxation Office to publicly disclose certain items from corporate tax returns (i.a., taxable income and income tax payable) of large private and public companies. Hoopes et al. (2018) focus on a major date in the legislative procedure when the details of the intended rule, including the disclosure threshold and the tax return items to be reported, were announced for the first time. They find a negative capital market reaction for all firms affected by the new rule, whereby stock prices of firms expected to be disclosed as paying zero taxes experienced a significantly stronger decline.

Chen (2017) extends their analysis by three additional decisive dates in the legislative procedure that revealed new information and/or increased the probability of the passage of the law. While she also observes a significant (albeit considerably smaller) stock price decline on the event date shared with Hoopes et al. (2018), she documents an overall positive reaction across all four event dates. She concludes that investors adjusted their perception of the new rule in the course of the legislative procedure and that they ultimately anticipated a net benefit of disclosure. Nevertheless, Chen (2017) also takes note of the particularity of the dividend imputation system applicable in Australia. Individual shareholders resident in Australia who receive dividends from Australian corporations can generally credit the corporate tax payment of the corporation against their personal income tax liability. Thus, in contrast to the classical or shareholder relief systems prevailing in most developed countries, resident individual shareholders in Australia should not be as concerned about corporate tax minimization as foreign shareholders. Chen (2017) addresses this difference in corporate tax avoidance incentives in a cross-sectional test. She finds that corporations characterized by a relatively high fraction of foreign shareholders not benefitting from the imputation tax credit exhibit a small but significant negative stock price reaction overall. For this subgroup of firms facing tax avoidance incentives which should be more comparable to our European setting, the market apparently anticipates the costs of disclosure to outweigh the benefits.

Johannesen and Larsen (2016) analyze the capital market response around four key dates in the legislation process of the EU Accounting Directive (Directive 2013/34/EU), which introduced a CbCR requirement for EU companies in the extractive industries. They find significant decreases in firm value around two of their event dates, with a remarkable overall effect amounting to 5–10%. They interpret their result as evidence of tax planning creating additional profits for the firms considered and of financial transparency being a potentially powerful tool to restrict this behavior. Due to the common features of the settings, their study is closely related to ours. Both the Accounting Directive and the CRD IV are EU Directives which mandate companies of a specific industry to publicly disclose a CbCR. They mainly differ insofar as the CRD IV applies to the financial sector whereas Chapter 10 of the Accounting Directive targets companies active in the extractive

industries. However, recent findings by Merz and Overesch (2016) and Langenmayr and Reiter (2017) confirm that banks also engage in tax avoidance and that they exhibit an even higher tax sensitivity compared to other industries.[2] Thus, it is reasonable to assume that additional disclosures revealing tax planning activities are not less relevant for banks than for natural resource companies.

Taking together the findings of Hoopes et al. (2018), Chen (2017) and Johannesen and Larsen (2016), we expect to observe a negative capital market reaction also in the setting of the CbCR introduction for EU financial institutions.

3 Data and methodology

We employ an event study methodology as laid out by Kothari and Warner (2007) and applied by Johannesen and Larsen (2016) to estimate the impact of the CbCR introduction on the stock returns of the institutions affected. In particular, we investigate whether the capital market reacted to the proposed introduction of the new disclosure regulation around our key event date, February 27, 2013. As commonly used in the literature, our event window covers three trading days centered on the event day, i.e., the period February 26–28, 2013 (Austin 1993; Eckbo et al. 2007). Due to the generally quick dissemination of information, we expect to observe a market reaction on the next trading day after the news at the latest. Furthermore, the inclusion of February 28, 2013, accounts for the peak in news articles on CbCR following the trilogue meeting (see Sect. 2.1). The inclusion of 1 day prior to the event allows us to capture any potential effect of information available to the market before the event. It also enables us to take into consideration the starting date of the Avaaz petition for a CbCR requirement.

For our main specification, we use ownership information provided by the Orbis Bank Focus database to construct a sample of listed entities of bank groups whose global ultimate owner is located in the EU. That is, the listed entity can either be a subsidiary of such a bank group or the global ultimate owner itself. For these banks, the CbCR requirement should be of highest relevance since the report must be provided by the global ultimate owner for the whole group, hence revealing all profit shifting opportunities of the group. We limit our sample to banks where at least one shareholder, subsidiary or branch is located in a different country than the bank itself. The underlying reason is that a purely domestic group has no possibility and incentive to shift profits cross-border, and therefore, the CbCR does not provide any incremental information on the appropriateness of taxes paid in light of the economic activity.

We merge the ownership information with daily stock prices from Datastream/ Eikon for the period from January 2012 to December 2014. Banks with insufficient

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[2] These studies document a tax semi-elasticity of banks' overall reported profits of about 2.4 (Merz and Overesch 2016) and of certain trading gains of about 3.4–4.0 (Merz and Overesch 2016; Langenmayr and Reiter 2017). This effect is quite large compared to the consensus estimate by Heckemeyer and Overesch (2017) of 0.8.

Table 1 Descriptive statistics of daily stock returns for different groups of banks

Realized return	N	Mean	Standard deviation	1st percentile	99th percentile
Treated banks	155	0.070	0.706	− 1.755	1.929
Control group	537	0.072	0.437	− 1.172	1.134

Treated banks are entities of bank groups whose global ultimate owner is located in the EU. Banks in the control group are entities of bank groups whose global ultimate owner is located outside the EU. The descriptive statistics are calculated for the period from January 1, 2012, to December 31, 2014. All values, except for the number of banks N, are stated in percent

price information and banks with constant zero returns over time are dropped.[3] To avoid possible distortions by confounding events, we also exclude banks located in countries where a major election took place as well as banks explicitly targeted by major ECB announcements within 1 week before or after the event date.[4] Our final main sample includes 155 listed banks. Table 1 shows descriptive statistics for the treatment group and the control group. The sample mean of the stock returns is 0.070% with a standard deviation of 0.706. Table 2 shows the distribution of the treated banks over countries, and Table A.1 in Online Appendix provides the corresponding information for the control group.

For each treated bank i, we calculate the daily abnormal return $AR_{i,t}$ as the difference between the actual realized return $R_{i,t}^{act}$ and the expected return $R_{i,t}^{exp}$ on trading day t.

$$AR_{i,t} = R_{i,t}^{act} - R_{i,t}^{exp} \tag{1}$$

We use different approaches for calculating the expected return. First, we estimate the market model for a time horizon of 1 year, ending 6 days before the event, where $R_{i,t}^{act}$ denotes the actual firm return, $R_{m,t}$ denotes the market return and $\varepsilon_{i,t}$ is a zero mean disturbance term (MacKinlay 1997).

$$R_{i,t}^{act} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \tag{2}$$

We consider two different market indices, namely S&P Global 1200 (following Johannesen and Larsen 2016) and MSCI World Banks. While S&P Global 1200 proxies the market portfolio, MSCI World Banks is better tailored to the banking sector, hence absorbing industry specific shocks. The estimated coefficients are then applied to the market return on each day of the event period to compute the expected returns for each firm and day. One caveat of the market model event study method

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[3] In particular, we require the price information to be available for at least 80% of the trading days in the event and pre-event period to estimate the expected returns. We keep only banks with a nonzero return in more than 30% of the estimation and event period to capture those firms that are actively traded and thus do not have constant zero returns over time. The sample is very insensitive to any variation of these thresholds.

[4] Due to this restriction, we have to drop one bank located in Cyprus and 21 banks located in Italy.

Table 2 Dispersion of treated banks over countries

Country	Banks		Percent	Country	Banks		Percent
	Number	Thereof parents			Number	Thereof parents	
Argentina	2	0	1.29	Kenya	2	0	1.29
Austria	5	5	3.23	Luxembourg	1	1	0.65
Belgium	3	2	1.94	Malta	2	1	1.29
Brazil	1	0	0.65	Mexico	1	1	0.65
Bulgaria	1	1	0.65	Morocco	1	0	0.65
Canada	1	0	0.65	Netherlands	6	5	3.87
Chile	1	0	0.65	Pakistan	2	0	1.29
Croatia	2	0	1.29	Poland	9	2	5.81
Czech Republic	1	0	0.65	Portugal	2	1	1.29
Côte d'Ivoire	1	0	0.65	Romania	2	1	1.29
Denmark	9	9	5.81	Russian Federation	2	1	1.29
Finland	5	4	3.23	Slovakia	1	0	0.65
France	14	9	9.03	South Africa	3	1	1.94
Germany	14	10	9.03	Spain	9	8	5.81
Ghana	1	0	0.65	Sweden	6	6	3.87
Greece	6	6	3.87	Switzerland	2	0	1.29
Hong Kong	1	0	0.65	Tunisia	2	0	1.29
Hungary	2	2	1.29	UK	30	27	19.35
Ireland	1	1	0.65	Venezuela	1	0	0.65
				Total	155	104	100.00

Treated banks are stock-listed entities of bank groups whose global ultimate owner is located in the EU. These groups are obliged to issue a CbCR for the whole group, revealing all tax haven subsidiaries and branches. Consequently, all affiliates of these groups are fully affected by the CbCR introduction. As some bank groups whose global ultimate owner is located in the EU also have stock-listed subsidiaries in non-EU countries, the sample of treated banks also contains a few bank entities located in non-EU countries. In total, we have 155 treated banks in our main sample. The depicted countries reflect the residence of the listed bank entities, which corresponds to the place of stock issuance. In general, the shares of listed banks are traded in the local currency of their home country, except for the shares of the one bank located in Luxembourg (traded in USD), one bank in Malta (traded in ZAR) and one bank in Sweden (traded in EUR). The column "Banks—Thereof parents" depicts the number of banks in a country that are global ultimate owners ($N = 104$)

is that treated firms may be constituents of the index used for calculating expected returns, which tends to attenuate the estimates of abnormal returns. The treated firms in our sample represent up to 3.86% of the S&P Global 1200 index and up to 32.01% of the MSCI World Banks index.[5] As an alternative, we construct a control group of

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[5] Alternatively, we also computed expected returns based on the Stoxx Europe 600 Ex Financials index, which excludes financial firms. The untabulated estimates are very similar to the case when using the S&P Global 1200 index as the benchmark.
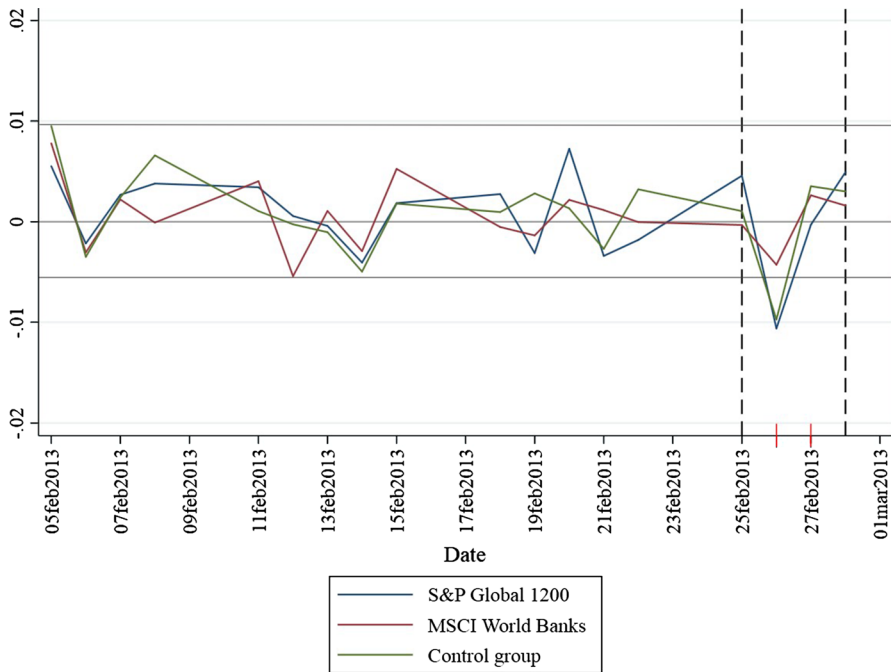
Fig. 2 Average abnormal returns 3 weeks prior to and within the event window. *Notes*: The colored lines indicate the average abnormal returns (in decimal) for all three specifications ($\frac{1}{N}\sum_{i=1}^{N} AR_{i,t}$), where N is the number of banks in the treatment group. The dashed lines frame the dates around the event date (February 25, 2013–February 28, 2013). The red marks represent the consecutive days within this window. The light gray horizontal lines frame the maximal and minimal average abnormal returns for the period 3 weeks prior to the event window. The small variation around zero indicates comparable pre-trends for all three specifications

banks not directly affected by the CbCR requirement, i.e., entities of bank groups whose global ultimate owner is located in a non-EU country.[6] The daily expected returns—which under this alternative are identical across the treatment firms—equal the average realized returns of the control group firms on the respective days. Figure 2 illustrates the average abnormal returns for a period of 3 weeks prior to our event window, using the different control indices and the control group. The small variation around zero indicates comparable pre-trends for all our specifications.

For each abnormal return specification and firm, we then compute the cumulative abnormal return CAR_i over the 3-day event window.

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[6] Strictly speaking, the control group banks may also fall under the scope of Article 89 CRD IV if they have subsidiaries and/or branches in EU countries. Still, in this case, the report covers only the EU entities and their subsidiaries and branches, thus revealing only part of the group structure. This allows groups to structure their operations in such a way that tax haven operations are not evident from the CbCRs of their EU entities. We therefore assume no (or at least a considerably smaller) investor reaction for our control group banks. Besides, we address the issue of the (perceived) scope of the CbCR regulation in the robustness tests in Sect. 5.2.

Table 3 Cumulative average abnormal returns—3-day window centered on event date

Expected return	(1) S&P global 1200	(2) MSCI world banks	(3) Control group
February 26–28, 2013	− 0.006	− 0.000	− 0.003
	(− 0.777)	(− 0.005)	(− 0.354)
	[− 0.021, 0.009]	[− 0.012, 0.012]	[− 0.021, 0.014]

The table displays the cumulative average abnormal returns for a 3-day window centered on the event date. The 155 treated banks are entities of bank groups whose global ultimate owner is located in the EU

t test statistic in parenthesis and 95% confidence interval in square brackets. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively

$$\mathrm{CAR}_i = \sum_{t=1}^{T} \mathrm{AR}_{i,t} \tag{3}$$

Finally, we calculate the cumulative average abnormal return CAAR by taking the average of the cumulative abnormal returns across all firms.

$$\mathrm{CAAR} = \frac{1}{N} \sum_{i=1}^{N} \mathrm{CAR}_i \tag{4}$$

In order to test the statistical significance of the CAARs, we employ a *t* test which is constructed as the ratio of the event CAAR and the standard deviation of the pre-event CAARs. The latter are defined as the CAARs for each 3-day window in the pre-event period (similar to Johannesen and Larsen 2016). In the absence of abnormal returns, the test statistic is typically assumed to follow a unit normal distribution (Kothari and Warner 2007).

4 Results

4.1 Baseline results

Table 3 presents the results of our baseline model. Around the key event date, February 27, 2013, all specifications yield negative cumulative average abnormal returns for the treatment group of banks headquartered in the EU. However, the returns are small in size (between 0.0 and 0.6%) and insignificant throughout all three specifications.[7] This outcome does not provide any statistical evidence of an investor reaction to the proposed disclosure obligation that is different from zero. Instead, the

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[7] The results based on the Stoxx Europe 600 Ex Financials index yield a negative cumulative average abnormal return of 0.5% with a t-statistic of − 0.613. The results are in general similar to the ones when using the S&P Global 1200 index throughout all further specifications.

Table 4 Daily average abnormal returns—around event date

Expected return	(1)	(2)	(3)
	S&P global 1200	MSCI world banks	Control group
February 25, 2013	0.005	− 0.000	0.001
	(0.961)	(− 0.083)	(0.195)
February 26, 2013	− 0.011**	− 0.004	− 0.010*
	(− 2.226)	(− 1.127)	(− 1.788)
February 27, 2013	− 0.000	0.003	0.004
	(− 0.059)	(0.695)	(0.651)
February 28, 2013	0.005	0.002	0.003
	(1.035)	(0.425)	(0.556)

The table displays daily average abnormal returns. The 155 treated banks are entities of bank groups whose global ultimate owner is located in the EU

t test statistic in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively

confidence intervals of our three main specifications indicate that the stock market did show neither a negative reaction larger than 2.1% nor a positive reaction larger than 1.4%.

As described above, the trilogue on February 27, 2013, marks the date of the first political agreement requiring EU financial institutions to publish CbC reports. Since the previous drafts of the CRD IV and CRR did not contain such a rule, it is reasonable to assume that the decision of the co-legislators during the trilogue contains a surprise component for investors. However, the lack of a significant reaction could possibly be due to information being disseminated to the market shortly before the event window. On February 25, 2013, three members of the European Parliament (so-called "shadow rapporteurs") collectively signed an open letter to all ECOFIN ministers calling for support for their initiative to implement a CbCR obligation in the CRD IV (European Parliament 2013). It is possible that this incident already raised investors' expectations of the new disclosure rule and that, consequently, stock prices reacted immediately. To address this concern, the daily abnormal returns from February 25–28, 2013, are depicted in Table 4 and graphically illustrated in Fig. 2. We do not find any evidence of a stock price reaction on the day of the open letter, February 25, 2013. What we do observe is a relative stock price decline on February 26, 2013, ranging from 0.4 to 1.1%, which is significant (marginally significant) in the specification based on the S&P Global 1200 index (based on the control group). However, since February 26, 2013, is already included in our event window, the decline is neither strong enough nor persistent enough to appear as significant in a 3-day window. Thus, the publication of the open letter does not invalidate our choice of the event window.

In addition, we also take account of the concern that the inconclusive result of the Italian general election on February 26, 2013, might influence our results as such an outcome was perceived to be a "turn for the worse" (Financial Times 2013). Italian banks are already excluded due to our sample selection criteria (see Sect. 3).

However, it is still possible that the stock prices of other European banks were also negatively affected due to relatively more exposure to the Italian market, which would introduce a downward bias. To address this issue, we rerun our analysis separately with two modified samples. First, we relax our sample restrictions and do not drop observations due to the occurrence of elections or ECB announcements. This relaxation is largely equivalent to extending the sample by banks located in Italy, which should be affected the most by the election outcome. Second, we use a more restrictive sample and exclude banks located in countries in which the financial sector is reported to have a substantial exposure to Italian sovereign debt.[8]

The daily stock returns and the returns for the 3-day event window for both modified samples are depicted in Table 5. When we include Italian banks, the negative return on February 26, 2013, becomes larger in size and stronger in terms of significance, indicating that stock prices of Italian banks were indeed negatively affected by the election. However, the reaction is still insignificant in the conventional 3-day event window. Conversely, excluding also non-Italian banks with a high exposure to the Italian market leads to results which are very similar to the ones obtained in our main sample. These findings mitigate the concern regarding the impact of the Italian election. In any case, a potentially remaining negative bias despite the exclusion of Italian banks from the benchmark sample would change the interpretation of our estimates to a lower bound for the actual effect, i.e., firm values reacted more positively to the disclosure requirement than implied by our estimates.[9]

In summary, contrary to the expectations derived from the findings by Johannesen and Larsen (2016), Chen (2017) and Hoopes et al. (2018), our results suggest a zero capital market response to the proposed increase in tax transparency for EU financial institutions. More precisely, we can reject that the negative effect of the public CbCR introduction on the stock prices of affected banks was larger than 2.1%.

4.2 Cross-sectional analysis of different channels at work

As theory provides arguments for both positive and negative investor reactions to additional tax disclosure requirements, the absence of an economically meaningful effect on average in the whole sample might be due to the concurrence of both reactions for different kinds of banks canceling each other out. For example, investors may predict a stronger decrease in after-tax earnings due to reduced profit shifting opportunities and additional costs for certain banks, while for other banks, they may place more weight on the expected benefits from reduced information asymmetry. In

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[8] In response to the financial crisis of 2008, the European Banking Authority has analyzed the exposure of banks to sovereign debt. We use these data, provided by The Guardian Data Blog (2013), to examine the country-specific average exposure of banks to Italian sovereign debt and exclude all jurisdictions in which the exposure to Italy exceeds 10% of the gross exposure to government debt. The results are robust to lowering this threshold.

[9] Alternatively, if the effects of the two events are concentrated on the day at which they take place, then they are separable by analyzing the daily average abnormal returns in Table 4 and Panel A and B of Table 5.

Table 5 Average abnormal returns—alternative sample specifications

Expected return	(1)	(2)	(3)
	S&P global 1200	MSCI world banks	Control group
Panel A: Daily average abnormal returns relaxing the sample restrictions—around event date			
February 25, 2013	0.006	0.000	0.001
	(1.047)	(0.035)	(0.213)
February 26, 2013	− 0.015***	− 0.008**	− 0.015**
	(− 2.858)	(− 1.972)	(− 2.361)
February 27, 2013	− 0.001	0.002	0.004
	(− 0.135)	(0.605)	(0.615)
February 28, 2013	0.003	− 0.001	0.001
	(0.599)	(− 0.143)	(0.233)
Panel B: Daily average abnormal returns with additional sample restrictions—around event date			
February 25, 2013	0.004	− 0.001	0.001
	(0.865)	(− 0.155)	(0.142)
February 26, 2013	− 0.010**	− 0.004	− 0.009
	(− 2.039)	(− 0.934)	(− 1.634)
February 27, 2013	0.000	0.003	0.004
	(0.027)	(0.761)	(0.700)
February 28, 2013	0.006	0.002	0.004
	(1.164)	(0.606)	(0.677)
Panel C: Cumulative average abnormal returns relaxing the sample restrictions—3-day window centered on event date			
February 26–28, 2013	− 0.013	− 0.006	− 0.010
	(− 1.448)	(− 0.903)	(− 0.907)
Panel D: Cumulative average abnormal returns with additional sample restrictions—3-day window centered on event date			
February 26–28, 2013	− 0.004	0.002	− 0.001
	(− 0.529)	(0.260)	(− 0.157)

Panel A displays the daily average abnormal returns around the event date after relaxing the sample restrictions as described in Sect. 3. The resulting sample without these adjustments still includes Italian and Cypriot banks in the treatment group ($N = 177$). Panel B displays the daily average abnormal returns around the event date with additional sample restrictions: Countries with banks that have on average above 10% exposure to Italian sovereign debt (in relation to banks' gross exposure to government debt) are excluded from the treatment group ($N = 139$). The exposure of banks to Italian sovereign debt is based on data by the European Banking Authority that depicts the share of exposure to government debt. [The data are provided by The Guardian Data Blog (2013).] For completeness and comparability to our main specification, we additionally provide estimates for a 3-day window centered on the event date for both alternative samples. Panel C displays the cumulative average abnormal returns for a 3-day window centered on the event date after relaxing the sample restrictions ($N = 177$). Panel D displays the cumulative average abnormal returns for a 3-day window centered on the event date for treated banks with a low exposure to Italian sovereign debt ($N = 139$)

t test statistic in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively

Table 6 ETR sample split

Expected return	(1)	(2)	(3)
	S&P global 1200	MSCI world banks	Control group
Banks with ETR below median ETR in the EU			
February 26–28, 2013	0.005	0.010	0.004
	(0.428)	(0.863)	(0.296)
Banks with ETR above median ETR in the EU			
February 26–28, 2013	− 0.012	− 0.005	− 0.007
	(− 1.175)	(− 0.607)	(− 0.549)

The table displays the cumulative average abnormal returns for a 3-day window centered on the event date. We use the 2011 financial statements to calculate the ETR for our event as investors have to rely on the information available on the event date to estimate banks' tax aggressiveness. This approach is consistent with Abernathy et al. (2013). We split all listed banks according to the median ETR and then perform the data cleaning procedure described in Sect. 3. This can lead to slight numerical inequalities between the two ETR groups. The sample adjustment leaves us with 48 (56) treated banks with an ETR below (above) the median ETR. For the specification in column (3), the control group is split accordingly at the median ETR. The *p* value of a paired test on the difference between the estimated cumulative average abnormal returns of the two groups is 0.106, 0.131 and 0.230, respectively

t test statistic in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively

this vein, Chen (2017) and Hoopes et al. (2018) provide some evidence on heterogeneity in the capital market response in the Australian setting.

To examine potential cross-sectional variation in the sample of EU financial institutions, we conduct four sample splits. First, consistent with Hoopes et al. (2018),[10] banks that are perceived to engage strongly in tax planning would need to reduce their tax planning activities to a higher extent or should suffer more reputational costs due to enhanced transparency than banks that are assumed to pay their "fair share of taxes." We calculate the effective tax rate (ETR) for each bank based on the consolidated financial statements and use the median ETR to partition our sample into banks with a high versus a low level of (assumed) tax avoidance.

Table 6 shows the cumulative average abnormal returns for the 3-day window, separately for high and low ETR banks. Surprisingly, the abnormal returns are even slightly positive for the subsample of low ETR banks and negative for the subsample of high ETR banks, albeit none of the coefficients are significant.

However, it has to be noted that annual ETRs can be quite volatile and that a low ETR can result from several reasons other than tax planning. For instance, a low ETR might also follow from the existence of high tax loss carryforwards that are offset against future profits. In this case, the ETR does not adequately reflect the level of tax avoidance. In order to proxy for the extent of tax avoidance via cross-border

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[10] For her sample split based on tax avoidance incentives, Chen (2017) exploits particularities of the Australian imputation system under which domestic shareholders receive credits for the corporate tax paid by the firm. This identification approach is not suitable in the European Union setting because the countries in our sample generally do not discriminate between domestic and foreign shareholders due to EU regulation.

Table 7 Engagement in selected tax havens sample split

Expected return	(1) S&P global 1200	(2) MSCI world banks
Banks not engaging in selected tax havens		
February 26–28, 2013	− 0.003	0.003
	(− 0.412)	(0.374)
Banks engaging in selected tax havens		
February 26–28, 2013	− 0.009	− 0.002
	(− 1.016)	(− 0.329)

The table displays the cumulative average abnormal returns for a 3-day window centered on the event date. Following Overesch and Wolff (2019), banks that have an entity located in either Cyprus, Ireland, Liechtenstein, Luxembourg or Malta are considered to engage in tax havens. We gather the relevant information from hand-collected CbCRs. If we cannot obtain information from the public CbCR, we check annual reports. We employ CbCR and annual report data for the financial year 2014 since this is the first year for which the full CbCR information has to be published. Despite a small time lag between financial year 2014 and our event date, we are confident that the tax haven activity at the time of the CbCR introduction is well reflected in the first wave of published CbCRs since it presumably takes time to react to the increase in tax transparency by withdrawing from tax havens. We reduce the sample to the treated banks for which we could find the relevant information. 66 (78) banks are part of a group without (with) an engagement in the selected tax havens. This test excludes the specification where the expected return is based on a control group of banks because comprehensive CbCRs are generally not available for banks with a global ultimate owner located outside the EU. The *p* value of a paired test on the difference between the estimated cumulative average abnormal returns of the two groups is 0.229 and 0.253, respectively

t test statistic in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively

profit shifting more explicitly, we conduct a sample split that accounts for banks' presence in tax havens. Banks' activities in tax havens are directly revealed in the CbCRs. Hence, banks with subsidiaries and/or branches in tax havens should be more in the focus of the public and of tax authorities after the introduction of the CbCR requirement than banks without any presence in these locations. Therefore, following Overesch and Wolff (2019), we consider bank groups engaging in at least one of five selected European tax havens (namely Cyprus, Ireland, Liechtenstein, Luxembourg and Malta) to be particularly exposed to the increase in tax transparency[11] and split our sample of treated banks accordingly. Information on the banks' activities in the selected tax havens is taken from the banks' CbCRs.

Table 7 shows the cumulative average abnormal returns for the subsample of banks with a presence versus without a presence in the selected tax havens. The abnormal returns are in general negative, and in concordance with our expectations and the findings of Chen (2017) and Hoopes et al. (2018) in Australia, this negative

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[11] Following Overesch and Wolff (2019), the five selected tax havens are characterized by a low population size and a comparably low GDP. In Table A.6. in Online Appendix, we have included an alternative sample split according to the engagement in tax havens based on the broader tax haven classification of Hines (2010).

Table 8 B2B/B2C sample split

Expected return	(1) S&P global 1200	(2) MSCI world banks	(3) Control group
Banks with a below-average B2C orientation			
February 26–28, 2013	− 0.003	0.001	0.001
	(− 0.359)	(0.159)	(0.092)
Banks with an above-average B2C orientation			
February 26–28, 2013	− 0.009	− 0.003	− 0.008
	(− 0.933)	(− 0.305)	(− 0.625)

The table displays the cumulative average abnormal returns for a 3-day window centered on the event date. Banks are classified according to the specialization code in Bank Focus: commercial banks, investment and trust corporations, investment banks, private banking/asset management companies and securities firms are assumed to be mainly B2B oriented. Cooperative banks, finance companies, real estate and mortgage banks, savings banks and specialized governmental credit institutions are regarded to be mainly B2C oriented. Central banks, clearing and custody institutions, group finance companies, Islamic banks, micro-financing institutions, multilateral government banks and other non-banking credit institutions are not considered. Consequently, 178 of 940 entities in the complete sample of banks listed on a stock market are categorized as B2C oriented. At the group level, bank groups are classified to have a high or low B2C orientation depending on the fraction of affiliates with B2C orientation. We split all bank groups at the mean of the B2C fraction (about 20%). Hence, the treatment and control groups are split in accordance. In the complete sample, about 30% of the bank groups are classified to have an above-average B2C orientation. Roughly in line with the ratio in the raw data, we have categorized 78 (43) treated banks as part of a group with a low (high) B2C orientation. The p value of a paired test on the difference between the estimated cumulative average abnormal returns of the two groups is 0.295, 0.358 and 0.249, respectively

t test statistic in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively

effect is more pronounced for banks with a higher exposure to the CbCR obligation. However, the coefficients still lack statistical significance in conventional terms.

Next, we aim to split our sample according to banks' sensitivity to reputational concerns. Graham et al. (2014) and Austin and Wilson (2017) have recently documented the influence of reputational costs on companies' tax planning activities. With regard to financial institutions, a study of IBM (2009) has revealed that bank employees expect their clients to attach a very high value to reputation and integrity. Accordingly, Fiordelisi et al. (2014) describe reputation as a "key asset" for banks. An event study by Hanlon and Slemrod (2009) and survey evidence by Graham et al. (2014) have revealed that firms with more consumer orientation (proxied by firms in the retail industry) are more sensitive to reputational concerns. Consequently, we hypothesize that banks with a higher fraction of their total earnings depending on transactions with private customers should suffer more from a potential consumer backlash than banks that are largely focused on business customers. Thus, we try to distinguish between wholesale (i.e., B2B) and retail banks (i.e., B2C).

We use the "specialization" variable of Orbis Bank Focus as the basis for our sample split since it is sufficiently covered and specified consistently across

different institutions. After inspecting several examples of banks allocated to the different categories of this variable, we uniquely assign each category to either B2C or B2B (see notes to Table 8). This information is stored in a dummy variable taking the value of 1 if classified as B2C and 0 if classified as B2B. As the specialization variable and, consequently, the dummy variable are available at the entity level, we match all entities that belong to the same group according to their global ultimate owner. For each bank group, we then calculate the fraction of B2C orientation as the simple average of the dummy variable of all entities in the same group. This B2C fraction is attributed to each publicly listed entity that belongs to this group. Finally, we partition our sample according to the mean value of the B2C fraction.

Table 8 documents the results of our sample split. While the stock price reaction in the 3-day event window is more negative for the group of banks classified as having a higher B2C orientation, it is still small in size and insignificant. Thus, we find only weak evidence of a more negative investor reaction to the proposed increase in tax transparency for banks that are assumed to face higher reputational risks. However, we note several caveats to our approach. First, the Bank Focus financials database only contains information (including the specialization variable) for those subsidiaries of bank groups which have a bank license (see Merz and Overesch 2016). As this covers only a small fraction of subsidiaries, the actual B2C orientation of a bank group might differ from what we calculate based on the information available. Second, the different categories of the specialization variable do not always allow a clear distinction between B2C and B2B. Thus, several entities might be allocated imprecisely which can add noise to our results.

Finally, we split the sample according to the level of institutional ownership to analyze the channel of a reduction in information asymmetry separately. As Desai and Dharmapala (2006), Desai et al. (2007) and Bennedsen and Zeume (2018) have shown, tax avoidance strategies are regularly used by managers and controlling owners to extract private benefits. CbCRs can reduce information asymmetries between managers and shareholders by making the magnitude of tax avoidance more transparent. It might therefore become more difficult for managers and controlling shareholders to hide expropriation activities from minority shareholders. Hence, the negative capital market reaction to an anticipated reduction in tax avoidance might come along with a positive reaction to the expectation of reduced information asymmetries and limited rent extraction. As stock owners holding a larger percentage of the shares of a company (such as institutional investors) usually have access to private information already, the benefits resulting from increased transparency should be more pronounced for firms with a high fraction of dispersed ownership (see also Bennedsen and Zeume 2018). To examine this effect, we conduct our event study separately for banks with a low share and a high share of institutional ownership.

Table 9 displays the results of our additional cross-sectional analysis. In line with our expectations, the overall reaction is less negative/more positive for the subsample of banks with a below-median share of institutional investors, i.e., for banks whose investors potentially benefit more from the additional disclosure. This finding might indicate that public CbCR can serve to reduce information asymmetries between managers and non-institutional investors. However, the overall results are

Table 9 Ownership concentration sample split

Expected return	(1)	(2)	(3)
	S&P global 1200	MSCI world banks	Control group
Banks with a below-median share of institutional investors			
February 26–28, 2013	− 0.003	0.003	− 0.001
	(− 0.324)	(0.469)	(− 0.075)
Banks with an above-median share of institutional investors			
February 26–28, 2013	− 0.009	− 0.003	− 0.006
	(− 1.251)	(− 0.532)	(− 0.679)

The table displays the cumulative average abnormal returns for a 3-day window centered on the event date. Banks are classified according to the proportion of institutional investors based on the shareholder data obtained from Bureau van Dijk's Orbis database, similar to Chen (2017). We use ownership data from the financial year 2013, which is our best proxy for the group structure at the event date. Based on this information on the investors, we calculate the share of institutional investors and split the sample at the median, which is at about 48%. We classify 71 (80) treated banks to have a below (above)-median share of institutional investors. The p value of a paired test on the difference between the estimated cumulative average abnormal returns of the two groups is 0.190, 0.162 and 0.268, respectively

t test statistic in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively

still relatively small in size and we cannot conclude that the effect is significantly different from zero in conventional terms.

In conclusion, all four approaches to examining potential cross-sectional variation in the investor reaction provide some evidence on how different channels drive the response of the capital market. We conclude that the simultaneous impact of a reduction in tax avoidance possibilities and of a decline in information asymmetry, which might affect heterogeneous groups of banks differently, may explain why our main finding suggests a zero reaction. Due to a relatively small sample size in our study, we might lack the power to obtain statistically significant results in sample splits. We thus leave it to future research to examine these channels in more detail.

4.3 Discussion of results in view of prior evidence

The different channels described and analyzed in detail should also prevail with respect to the new disclosure rule in Australia and the CbCR requirement for EU companies in the extractive industries. Thus, it is surprising that recent findings document significant investor reactions in these settings, whereas we do not observe a significant capital market response in our setting. Besides, the extant literature on Article 89 of the CRD IV provides some evidence that EU financial institutions actually changed their tax avoidance behavior after the introduction of the CbCR obligation. We therefore try to relate our finding to these prior results.

Both Overesch and Wolff (2019) and Joshi et al. (2018) find that EU financial institutions reacted to the new CbCR requirement to some extent by adapting their tax planning behavior. On the one hand, Overesch and Wolff (2019) document a

decline in the extent of tax avoidance at the bank group level. On the other hand, Joshi et al. (2018) observe that banks substitute profit shifting activities between subsidiaries that they consider to be within and outside the scope of the CRD IV, leaving the overall level of tax avoidance unaffected. In light of their findings and of our cross-sectional tests, our overall result should presumably not be interpreted as evidence for investors expecting the CbCR obligation to be ineffective in curbing tax avoidance. Instead, as shown above, the increased transparency due to the CbCR disclosure may simultaneously limit the tax planning behavior of banks and reduce the possibilities of bank managers to extract private benefits. While Overesch and Wolff (2019) and Joshi et al. (2018) focus their analysis on tax avoidance and profit shifting and can therefore clearly separate the first channel, the capital market might incorporate both channels in its reaction.

Next, we try to understand possible reasons for the differing results between our study and prior analyses on the capital market reaction to increases in tax transparency. In the Australian setting, Hoopes et al. (2018) find a significant stock price decline around a decisive date in the legislative procedure. However, their research design differs fundamentally from ours as they are mainly interested in the incremental effect for companies expected to be disclosed as paying zero tax in Australia (compared to other firms also subject to the disclosure). Owing to this research question, they apply a difference-in-differences design as opposed to the event study methodology laid out by Kothari and Warner (2007). Moreover, they do not account for the distinct incentives created by the dividend imputation system. Due to these reasons, it is not feasible to directly compare the stock price effects documented by both studies. Nevertheless, we implement the design of Hoopes et al. (2018) in our setting as an additional robustness test (Table A.5 in Online Appendix).

When considering a portfolio of Australian firms which should—even within the framework of the dividend imputation system—have pronounced incentives to minimize their corporate tax burden, Chen (2017) finds a negative and significant investor reaction aggregated over four event dates. However, the overall effect size of -0.01% observable in this specification is small in economic terms and lies within the range of our confidence intervals, i.e., we cannot exclude a comparably small stock market reaction in our setting. We also apply the design of Chen (2017) in our setting as an additional robustness test (Table A.4 in Online Appendix).

In contrast, Johannesen and Larsen (2016) observe sizeable cumulative average abnormal returns of -2.3 to -6.0% around each of their two major event dates. These results clearly fall outside of our confidence intervals throughout all specifications, i.e., we can reject such a substantial negative stock price reaction for EU financial institutions at the 5% level. To identify the potential drivers of the conflicting findings, it is essential to compare the different settings exploited in our analysis and by Johannesen and Larsen (2016). Both event studies share important common features: The event dates are milestones within an EU legislative procedure which introduced a public CbCR obligation for EU companies in a specific industry. With respect to the geographic coverage, both rules require a full disclosure for all countries worldwide in which the corporate group is active. Moreover, both kinds of reports are published by the companies themselves, allowing for some discretion

about the exact timing and design of the disclosure. These similarities ensure a sufficient degree of comparability between both settings.

A very obvious difference arises from the scope of the rules: While Article 89 of the CRD IV applies to EU financial institutions, Chapter 10 of the Accounting Directive targets companies active in the extractive industries or the logging of primary forests. It is possible that the introduction of public CbCR does not have the same effects across both industries. Since banks have traditionally been in a heavily regulated industry and were already subject to comprehensive disclosure obligations before the implementation of CbCR, investors might have expected that the new CbCR rule for the extractive industry reveals more material incremental information than in the financial industry.

However, despite the disclosure regulations existing before the CbCR enactment, financial companies scored among the worst in studies on transparency in corporate reporting conducted by Transparency International (2012, 2014). The results were extremely poor—and considerably worse than for extractive industry firms—in the category of country-by-country disclosures.[12] Moreover, the extant empirical evidence of banks engaging in tax avoidance (Merz and Overesch 2016; Langenmayr and Reiter 2017; Joshi et al. 2018) is complemented by anecdotal evidence that the media and the general public are actually interested in information on this behavior: The Avaaz petition to enact a CbCR requirement achieved more than 200,000 signatures within less than 2 days. Several NGO studies analyzed small samples of published CbCRs and criticized the extensive tax haven usage of certain banks.[13] Furthermore, there are examples of financial institutions which increased the quality of their tax-related disclosures after being publicly accused of tax avoidance or evasion.[14] Finally, we know from recent literature (Joshi et al. 2018; Overesch and Wolff 2019) that banks adjusted their tax planning behavior in response to the CbCR requirement. Taken together, these considerations do not suggest that the incremental information content of CbCRs or the public attention to tax planning behavior is per se weaker for banks than for companies in the extractive industries.

Instead, the discrepancy between our results and Johannesen and Larsen (2016) can arise from the different objectives of the respective CbCR rules. The idea of

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[12] The reports by Transparency International are based on very large companies and the evidence therefrom may not extrapolate to smaller firms. Kahl and Belkaoui (1981), Lang and Lundholm (1993) and Linsley et al. (2006) provide evidence of a positive relationship between firm size and disclosure adequacy (for banks and non-banks). We hence conclude that smaller banks are no more transparent in their public reporting than larger banks.

[13] Murphy (2015), Aubry et al. (2016) and Aubry and Dauphin (2017). Particularly, the analysis of Aubry and Dauphin (2017) for Oxfam received considerable media attention, causing headlines such as "European Banks Stashing Billions in Tax Havens" (EU Observer 2017).

[14] For example, Barclays was publicly denounced for maintaining a special "tax avoidance division" (The Guardian 2013b; The Guardian 2013c). As a reaction, the bank voluntarily published a complete CbCR (called "Country Snapshot") already for financial year 2013. This report (and all following ones) contains several additional tax items and explanations, trying to present Barclays as a responsible taxpayer.

requiring natural resource companies to publish certain information on a by-country basis dates back to the Extractive Industries Transparency Initiative (EITI) launched in 2003. Its primary goal is to fight corruption, which has been identified as a major problem in the extractive industries and as a key driver of the so-called resource curse. As a consequence, the main focus of these disclosure obligations is on payments between companies and governments (including tax payments).[15] By contrast, the CbCR requirement for EU financial institutions follows the goal of rebuilding trust in these institutions, which received enormous public subsidies in the course of the financial crisis (European Parliament 2013). By imposing a CbCR obligation on banks, the public should be given the opportunity to assess whether they are paying their "fair share of taxes" in the countries where they operate. In this vein, the items to be reported by banks (as described in Sect. 2) contain additional indicators of economic activity in each country.

The distinct objectives and resulting designs of both CbCR rules adopted in the EU provide a plausible explanation for the differences in the empirical findings. The sizeable negative stock price reaction for the extractive industries observed by Johannesen and Larsen (2016) could primarily result from investors' belief that the mandatory disclosure of payments between firms and governments effectively fights corruption and that companies have to increase their (legitimate) compensation to their host countries for extracted resources. This conjecture is also consistent with Rauter (2017) who documents corresponding real effects on payments of EU firms in the extractive industries after the CbCR introduction. This channel is not present in our setting, though, which can explain why the capital market reaction to the enactment of CbCR is more pronounced in the extractive industries than in the financial sector.

5 Further analyses

5.1 Additional event dates

Prior studies have demonstrated the importance of considering multiple event dates, especially when investigating a legislative procedure (Donohoe and McGill 2011; Abernathy et al. 2013; Chen 2017). For this reason, we extend our analysis by two additional events, although noting some caveats regarding these dates.[16]

Our first additional event is the publication of the CRD IV and the CRR in the Official Journal of the EU on June 27, 2013. This marks the final passage of the

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[15] The payment items to be disclosed by natural resource companies are production entitlements; taxes; royalties; dividends; signature, discovery and production bonuses; license fees, rental fees, entry fees and other considerations for licenses and/or concessions; and payments for infrastructure improvements.

[16] Another potential extension of our study would be to exploit the actual disclosure of banks' CbCRs as event date(s). However, they are usually published as part of the banks' annual reports or at least at the same point in time. This makes it difficult to disentangle investor reactions to the CbCR disclosure and to other information published in the annual reports. Hence, we concentrate on different dates in the legislative procedure.

legislative package, removing any potential doubts whether the proposed CbCR rule would actually be incorporated into EU law. Table A.2 in Online Appendix shows the cumulative average abnormal returns for the 3-day window centered on this alternative event date. Again, we do not find a significant stock price reaction for the banks affected by the new disclosure rule. However, as the CRD IV and the CRR contain a multitude of novel regulations for EU financial institutions (i.a., capital, liquidity and leverage requirements), different investor reactions to different kinds of rules might cancel each other out on average. Moreover, the final act of signing and publishing the law was probably not perceived as a surprise by investors as all relevant items had already been agreed upon in the months before.

Second, we exploit the fact that the CbCR obligation in Article 89 of the CRD IV was placed under the proviso that the European Commission conducts an impact assessment regarding potential negative economic consequences of the public disclosure of such information. Global systemically important institutions were required to confidentially report the CbCR items for the financial year 2013 to the Commission, providing a basis for their evaluation. The impact assessment study was prepared in September 2014 by PricewaterhouseCoopers on behalf of the European Commission (PricewaterhouseCoopers 2014). On October 30, 2014, the European Commission reported to the European Council and the European Parliament that the public CbCR obligation was not expected to have a negative economic impact and could thus be implemented as foreseen in the Directive (European Commission 2014). This represents our second additional event. As also depicted in Table A.2 in Online Appendix, we do not observe a significant investor reaction in the 3-day window centered on October 30, 2014. It seems questionable whether the result of the impact assessment was really perceived as a surprise by investors. Investors might have expected that the CbCR rule would actually come into effect once it was included in the CRD IV, irrespective of the proviso.

5.2 Robustness tests

We conduct a series of robustness tests to increase the confidence in our results. First, we modify the event window. We shift the 3-day event window to February 25–27, 2013, to capture potential anticipatory effects, but the results remain similar to our main specification. We also extend the event window and use a 4-day window starting at the event date as well as a 5-day window centered on the event date (Panel A of Table A.3 in Online Appendix).

Second, we vary the abnormal return calculation. We replace the cumulative average abnormal returns by buy-and-hold abnormal returns, calculated as the average returns of a buy-and-hold strategy with geometric growth of returns. As buy-and-hold returns tend to be right-skewed (Kothari and Warner 2007), we apply the skewness-adjusted t test developed by Johnson (1978) as our relevant test statistic for this approach (Panel B of Table A.3 in Online Appendix).

Third, we rerun our analysis with an alternative sample (Panel C of Table A.3 in Online Appendix). Our baseline sample of treated firms described in Sect. 3 contains only entities of bank groups whose global ultimate owner is located in the EU.

Only these institutions are obliged to issue a CbCR for the whole group, revealing all tax haven subsidiaries and branches. In contrast, financial institutions headquartered in third countries only have to publish a report for their EU establishments, which makes it impossible to judge their worldwide tax planning activities. Nevertheless, investors might not have completely comprehended this difference in the scope of the new rule and might just have associated a bank's EU nexus with an upcoming CbCR requirement. We take account of this concern and adjust our sample so that the treatment group contains all banks listed in the EU (irrespective of the location of the global ultimate owner). The control group used to calculate abnormal returns is adapted accordingly.

Furthermore, we replace the event study design as laid out by Kothari and Warner (2007) by alternative event study methods. First, we implement a multivariate regression model similar to Frischmann et al. (2008) and Abernathy et al. (2013). More precisely, we add a dummy variable taking the value one for each day of the event window to the market model. The coefficient estimates on the dummy variable reflect the abnormal returns (Table A.4 in Online Appendix). Second, we replicate the event study conducted by Hoopes et al. (2018) for our event date. In line with our prior setting, we use banks with a global ultimate owner located in the EU as the treatment group and banks whose global ultimate owner is located in a non-EU country as the control group. The results are depicted in Table A.5 in Online Appendix.

Finally, we conduct a series of robustness tests for our main event specification and the heterogeneity analysis in Online Appendix B to D, where we apply more restrictive samples of treated banks. First, we limit the initial treatment group to entities which both belong to an EU-headquartered bank group and are themselves located in an EU country as these entities should have the strongest exposure to the CbCR introduction (Online Appendix B). Second, to exclude potential noise resulting from banks located in countries with only few observations, we restrict the treatment group further to entities located in EU countries with at least ten listed banks (Online Appendix C). The control groups are adjusted accordingly in both sets of tests. Third, to account for potentially differing profit shifting incentives of listed subsidiaries due to the existence of minority shareholders, we only consider treated banks which are the global ultimate owner of a bank group (Online Appendix D).

Throughout all these robustness tests, the results remain qualitatively similar and our main inferences do not change. We do not find a statistically significant overall stock price reaction around the event day that we can trace back to the CbCR introduction.

6 Conclusion

In recent years, several initiatives have proposed and implemented CbCR requirements for multinational firms. These new disclosure obligations are supposed to curb extensive tax avoidance by providing additional information to tax authorities and—if reports are made publicly available—by public pressure being exerted on companies. Due to the recent nature of all CbCR rules, empirical evidence on

the effectiveness of this kind of tax transparency measure is still scarce and inconclusive. In our study, we examine how investors evaluate the enactment of a CbCR requirement for EU financial institutions (Article 89 CRD IV). On the one hand, investors might appreciate the upcoming enhancement in tax transparency, providing them with incremental information about the firms and reducing information asymmetries between shareholders and managers. On the other hand, investors could expect that the affected companies will subsequently reduce the extent of their tax avoidance activities (as intended by the legislator) and/or will face substantial reputational costs.

Prior event studies by Chen (2017), Hoopes et al. (2018) and Johannesen and Larsen (2016) document negative capital market responses to the introduction of similar tax disclosure rules for large Australian firms and for EU firms in the extractive industries, respectively. Their findings suggest that the channels of increased tax authority and public scrutiny dominate investors' perception of new tax disclosure requirements. Consequently, we also expect a negative reaction in our setting. This expectation is corroborated by early empirical evidence indicating that banks changed their tax avoidance behavior after the implementation of the CbCR obligation (Joshi et al. 2018; Overesch and Wolff 2019).

We employ an event study methodology to analyze the stock price reaction around the day of the surprising political decision to introduce a CbCR obligation for EU financial institutions. Our results are suggestive of a zero response in our full sample of financial institutions headquartered in the EU. We conduct several sample splits and find that the reaction is slightly more negative for banks engaging in selected tax havens and banks with an above-average B2C orientation and slightly more positive for banks with a below-average share of institutional investors, albeit still insignificant. Our inferences remain unchanged when considering two additional event dates and throughout various robustness checks.

We link our finding to previous studies on tax transparency. Recent evidence suggests that financial institutions reacted to the new CbCR requirement by adjusting their tax planning behavior (Joshi et al. 2018; Overesch and Wolff 2019). Prior literature has shown that tax avoidance and the extraction of private benefits by managers and controlling owners are complementary (Desai and Dharmapala 2006; Desai et al. 2007; Bennedsen and Zeume 2018). Taking together these findings and our result, we conclude that investors anticipated both a reduction in the tax avoidance opportunities and a decline in managers' expropriation activities due to reduced information asymmetries between managers and shareholders. These expectations might trigger both negative and positive capital market reactions, offsetting each other on average.

While the modest negative stock market reactions documented by Chen (2017) and Hoopes et al. (2018) in response to a new disclosure requirement in Australia still lie within our confidence intervals and/or can potentially be traced back to the different research design, we can exclude the occurrence of a reaction as strong as observed by Johannesen and Larsen (2016) for the EU extractive industries at the 5% level. Comparing the settings analyzed by Johannesen and Larsen (2016) and in our study, we conjecture that differences in the list of disclosure items due to the distinct objectives of both transparency rules explain the different perceptions by the

capital market. Investors expected the CbCR of EU extractive industries to effectively fight corruption, while this channel is not at work in our setting.

Overall, we provide more insights into the expectations that go along with the CbCR requirement for EU financial institutions. Our findings are especially relevant for policymakers deciding upon the implementation of additional tax disclosure rules. For instance, the European Commission and the European Parliament have recently drafted proposals to adopt a public CbCR requirement for all multinational firms with profits above a certain threshold (European Commission 2016; European Parliament 2017, 2019). So far, no final decision has been made.

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