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Anticipatory Effects of Corporate Tax Shaming: Evidence from the European Union *

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Abstract

Offshore wealth is estimated at 10% of global GDP. To curb tax avoidance, policymakers have adopted tax transparency reforms. We analyze anticipatory effects associated with the EU's Directive on Public Country-by-Country Reporting, which mandates that large multinational corporations disclose key financial data starting in 2026. Firms subject to higher media scrutiny and with ESG scores increased their effective tax rates by 5-8 percentage points (pp) after the announcement of the Directive in 2021. In contrast, we find that banks, which are exempt from the Directive, decreased their tax rates by more than 7 pp. We point to changes in the media spotlight and NGO scrutiny to explain, in part, the heterogeneity in responses across industries.

Keywords: Taxation; transparency; public shaming; corporate governance; regulation

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1 Introduction

In the wake of the 2008 Financial Crisis, governments have become increasingly pro-active on tackling global tax avoidance by multinational enterprises (MNEs). Recent estimates suggest that firms shift approximately $850 billion in profits to tax havens each year (Garcia-Bernardo and Janskỳ, 2024), with the total amount of offshore wealth held by individuals and firms amounting to 10% of global GDP (Alstadsæter et al., 2018; Zucman, 2013). Despite global efforts to strengthen the legal framework against tax avoidance, including the adoption of general anti-avoidance rules, recent studies suggest that profit shifting nevertheless persists (Tørsløv et al., 2023a). This is all in the wider context of higher taxes on labor, ballooning deficits, and governments facing difficult decisions on cutting public services (Avi-Yonah, 2001).

As economic and political pressures grow, policymakers have turned to transparency and "name and shame" initiatives to add public scrutiny to firms that shift taxes offshore (Hoopes et al., 2024). The European Union, one of the "prime losers" of global profit shifting as compared to the US and developing countries, is leading efforts on this front (Tørsløv et al., 2023b). Notably, by the end of 2026, some 6,000 multinational firms with a presence in Europe will be compelled to publicly release previously private data on their tax affairs under the EU Directive on Public Country-by-Country Reporting (PCbCR). The Directive targets large multinationals with revenues exceeding €750 million; recent estimates suggest that firms of this size account for approximately 95% of profits shifted to tax havens (Clifford et al., 2025). The only industry exempt from the reform is the banking sector, which was subject to a more limited form of public reporting after the Financial Crisis.

We investigate how the announcement of the EU Directive on PCbCR in 2021 affected corporate tax behavior. Using firm-level data from S&P Capital IQ Pro and Moody's Orbis databases for all publicly listed firms headquartered in Europe and a difference-in-differences estimation strategy, we examine changes in tax avoidance behavior by large firms as compared to firms under the revenue threshold from FY2019 through FY2023. Our primary outcome of interest is the cash effective tax rate (worldwide cash taxes over pre-tax income), a ratio commonly used in the accounting literature to measure for corporate tax avoidance. While our estimates at the aggregate level are null, we find significant heterogeneity across industries. In particular, we find evidence that firms in the energy and utilities and real estate industries started increasing their effective tax rates by 5-8 percentage points (pp) after 2021, with these

effects concentrated among "reputation-sensitive" firms (as proxied by the reporting of ESG scores). We point to heightened media scrutiny of both these sectors in the lead up to the reform to explain their vulnerability to the threat of public shaming. The intuition behind the movements in effective tax rates, which correspond with real increases in cash tax payments, is that firms worried about the threat of public shaming may be paying more in taxes now, so that when the data is released in 2026, their baseline tax rate appears higher.

Next, we analyze the banking sector, which was made exempt from PCbCR. We find that large banks started decreasing their effective tax rates after 2021 by more than 7pp. This suggests that banks may be taking advantage of reduced civil society scrutiny on their tax affairs because a) they do not have to release more comprehensive breakdowns on their tax payments and b) the public release of the PCbCR data for all other industries crowds out civil society's resources to cover the banking sector. We document how NGO scrutiny has shifted away from the sector toward other industries, notably energy & utilities and real estate, since the announcement of the EU Directive. Across specifications, the effects are strongest for banks above the €750 million revenue threshold (and not thresholds that are lower), suggesting we are indeed capturing spillover effects associated with PCbCR. Financial markets also reflect this pattern – banks over the €750 million threshold experienced a statistically significant increase in their stock prices around the announcement of the Directive's exemption. Finally, we observe weaker effects for the very largest banks in our sample and banks that are consumer rather than business facing, suggesting that banks with higher ex ante exposure to public shaming continue to hedge against the risk of shaming on their tax affairs.

2021 marked a "new era" of international tax reform in more ways than one. A couple of days after the EU's announcement on PCbCR, the finance ministers of the G7 agreed to global minimum tax (GMT) of 15%, with over 130 jurisdictions signing onto the agreement by the year end. The EU subsequently instructed its Member States via a Directive to implement the GMT from 2025 onward. Importantly, this reform applied the same revenue threshold as the EU's Directive on public reporting. Both EU Directives have the potential to reduce the incentives for large MNEs to engage in tax avoidance practices such as profit shifting for the following reasons. On one hand, public reporting increases the risk of public shaming, especially for reputation-sensitive firms. On the other hand, the GMT reduces the incentive for corporations to engage in profit shifting and other forms of aggressive tax planning (Johannesen, 2022). We work to separate out the effect of public disclosure from the minimum tax in a number of ways.

For firms subject to PCbCR, we study heterogeneity across industries in exposure to media and NGO scrutiny as well as firm-level variation in reputational vulnerability. This builds on the assumption that any effects associated with the GMT operate mechanically through the minimum tax and do not vary with firms' exposure to reputational pressures. With regards to the banking sector, we are able to fully able to isolate effects associated with public reporting as banks are only exempt from PCbCR, not the GMT.

Our results are robust to multiple specifications, firm types, and control groups. We lower bound our control group of small firms to those with at least €50 million in revenue, but find that our results hold with or without the bounding. We look across various subsets of firms, from those headquartered in the EU to those based in the wider European area. We also test robustness to different control groups, from (1) European firms under the threshold to account for geography-specific shocks; to (2) a broader set of United States-based firms to account for firm-size-specific dynamics or shocks related to the GMT. Across subsets and control groups, we find the same pattern of large European energy & utilities and real estate firms reporting increases in effective tax rates after 2021 while banks exempt from public country-by-country reporting see decreases in effective tax rates. One limitation of our study is that we focus exclusively on publicly listed firms, even though PCbCR also applies to private firms. However, this restriction allows for more accurate and complete data coverage, particularly with respect to ESG scores. We do not expect the effects observed for public firms to generalize to private firms, as publicly listed firms are typically more exposed to media scrutiny and public pressure.

This study makes several contributions. First, it provides evidence of anticipatory effects associated with tax transparency initiatives targeted at firms. We show that these effects are concentrated in industries under the media spotlight and among reputation-sensitive firms, suggesting that the threat of public shaming is an important mechanism motivating companies to proactively adjust their tax avoidance behavior. Additionally, our results suggest that tax transparency initiatives can have spillover effects for firms in exempt industries. Our study builds on a rich literature examining the effectiveness of public shaming in changing real behavior of both individuals and firms, including in the context of tax delinquency and regulatory compliance (Gerber et al., 2008; Perez-Truglia and Troiano, 2018; Dwenger and Treber, 2022; Johnson, 2020). On tax avoidance specifically, scholars have also found firms to respond to public criticism. A public pressure campaign in the U.K. compelling companies to disclose subsidiary information led affected firms to increase their effective tax rates by about 2.7 pp

(Dyreng et al., 2016). Firms in "sin" or public-facing industries have been found to be more conscious of their tax avoidance behavior and responsive to tax transparency reforms (Wang et al., 2022; Akamah et al., 2018). Investors, too, are sensitive to reputational and financial risks associated with tax avoidance (Rusina, 2020), especially for consumer-facing firms (Hanlon and Slemrod, 2009).

Second, we contribute to the emerging literature on corporate tax disclosures (Hoopes et al., 2024), with a particular focus on country-by-country reporting. Private CbCR disclosures for large multinational corporations have been in place since 2016.[1] Recent work has found that these disclosures to tax authorities changed firm behavior in terms of tax avoidance activity and investment decisions (Joshi, 2020; Simone and Olbert, 2022). Importantly, as private disclosures applied the same revenue threshold as public country-by-country reporting, our results do not capture effects associated with increased enforcement risk as tax authorities are already perfectly informed. On public reporting, scholars have investigated the impact of an earlier and more limited form of public country-by-country reporting for banks,[2] finding a positive effect on effective tax rates (Overesch and Wolff, 2021) and the delisting of tax haven affiliates (Eberhartinger et al., 2025).[3] Specific to the EU Directive on public country-by-country reporting, Müller et al. (2024) documents a negative market response around the announcement of the Directive but does not break the analysis down by industry. There are also a number of studies tracking early releases of public country-by-country reports (EU Tax Observatory, 2021; Fair Tax, 2025b). Critically, disclosure in of itself does not constitute public shaming. The effectiveness of tax transparency reforms largely depends on civil society involvement, notably to collect, interpret, and present data in ways that make it accessible to the public, often in the form of rankings. The public shaming dimension of tax transparency reforms, therefore, does not arise from the initial release of data but from the its wider dissemination by activists, the media, and NGOs.

Finally, this study holds important implications for public policy. While statutory tax rate changes are typically regarded as the primary policy lever affecting corporate tax payments, we find that transparency reforms can also induce large changes in effective tax rates for EU-headquartered public companies, although these effects are limited to reputation-sensitive firms.

[1] Under Action 13 of the OECD's Base Erosion Profit Shifting (BEPS) initiative.

[2] Under the 2013 Capital Requirements Directive (CRD IV).

[3] Joshi et al. (2020) report more mixed results for European banks: while PCbCR appears to deter tax-motivated income shifting, there is limited evidence that the reform reduced overall tax avoidance.

Higher overall tax burdens may also affect firm real economic behavior, for example in location and investment decisions and capital allocation, although this moves beyond the scope of our paper (Devereux and Griffith, 1998; Grubert and Slemrod, 1998; Becker and Riedel, 2012; Fatica, 2013; Suárez Serrato, 2018; Jacob, 2021; Simone and Olbert, 2022). Public policymakers that are interested in minimizing tax avoidance practices across the board may want to keep in mind how disparities in public and media attention can distort responsiveness. Moreover, our results suggest that tax transparency initiatives can have unintended consequences if applied unequally across industries, with exempt firms more incentivized to engage in tax avoidance behavior.

The next section provides an overview of the EU regulatory landscape including the move to public country-by-country reporting as well as a global minimum tax for large multinational corporations. Section 3 summarizes the data and sample selection while Section 4 presents our estimation strategies. Section 5 presents and discuss our empirical results.

2 Context

The European Union introduced two major Directives on international tax reform in 2021: (1) public country-by-country reporting (PCbCR), and (2) a global minimum corporate tax (GMT). Both apply a revenue threshold in which only firms with revenue above €750m are subject to the reforms. As our paper focuses on the anticipatory effects associated with PCbCR, we work to separate out its effect from GMT in several ways. One approach we take is to exploit heterogeneity in reputation-sensitivity by industry and at the firm-level. Since the effect of the GMT is largely mechanical, it is unlikely to disproportionately affect reputation-sensitive firms. This contrasts to large-scale tax disclosures which leave such firms particularly exposed. We can also fully isolate the effects of PCbCR from GMT in the banking sector, where some banks were exempt from PCbCR but remain subject to GMT.

Several European states applied digital service taxes to large digital companies in 2019, with some countries such as France and Italy also setting the same €750m revenue threshold for the digital service tax. However, digital service taxes were rolled back in 2021 as part of wider efforts to unify international tax rules (Tax Foundation, 2025). We subsequently exclude firms in the technology and media industry from our analysis below to avoid capturing effects associated with digital service tax roll backs.

2.1 Public country by country reporting

Since 2016, all large MNEs located in the EU or with operations in the EU have been required to report country-by-country breakdowns of key financial data to tax authorities. These reports include information such as revenue, profit before income tax, income tax paid and accrued, and number of employees for every tax jurisdiction the corporation does business in.[4] The Commission presented a proposal for the public release of the country-by-country data but the measure saw "substantial disagreement among member states" and negotiations remained deadlocked for half a decade. A "surprise" breakthrough came in 2021 with new leadership under the Portuguese Presidency of the Council (Müller et al., 2024, p. 1897). Firms became aware that public country-by-country tax reporting might become a reality in February, when a Council consensus emerged, and had their suspicions confirmed in June, when the provisional political agreement with the Parliament was announced. Figure 1 shows that media coverage in Europe of public country-by-country reporting peaks in 2016 and 2021, with most 2021 articles concentrated in February and June, consistent with the timeline described above.

Under PCbCR, multinational corporations with global revenues exceeding €750 million are required to publicly publish country-by-country tax data for each Member State, as well as for jurisdictions either deemed "non-cooperative" for tax purposes or that have been on the EU's "grey list" of tax havens for at least two years.[5] Some 6,000 multinationals active in the EU are expected to start publicly disclosing tax-related information starting in 2026.[6] The Directive has received significant attention, with global accounting firms referring to PCbCR as "a new era of tax transparency" (PwC UK, 2024). Civil society groups are also gearing up for what will

[4] County-by-Country Report includes information on "every tax jurisdiction in which the MNE group does business" notably the amount of revenue, the profit before income tax, the income tax paid and accrued, the number of employees, the stated capital, the retained earnings and the tangible assets (European Commission, 2016)

[5] Formally, in-scope PCbCR multinationals include those with consolidated revenues over €750m and operations in multiple EU member states. MNEs can be both large EU-parented groups or large non-EU parented groups. Data needs to be disclosed for all medium to large sized subsidiaries and branches in the EU, as well as a specified number of jurisdictions outside of the EU. A subsidiary or branch is medium sized if it satisfies two or more of the following criteria: (1) Total assets: EUR 5 million; (2) Net turnover: 10 million; and (3) Average number of employees: 50. If a branch meets the revenue threshold, the MNE automatically falls under scope. (Council Directive 2021/2101/EU; Deloitte (2025))

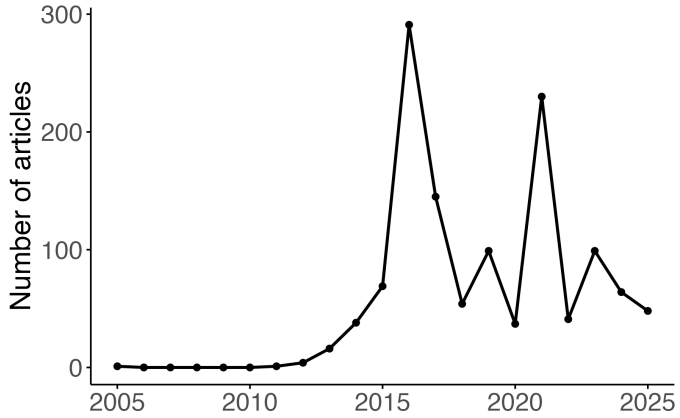
Companies in the oil, gas, mining or logging sectors have specific country-by-country reporting requirements where the following must be disclosed: production entitlements; taxes on income; production or profits; royalties; dividends; signature, discovery and production bonuses; license fees, rental fees, entry fees and other considerations for licences and/or concessions; and payments for infrastructure improvements (European Commission). While extractive and logging industries were subject to reporting requirements under Chapter 10 of the EU Accounting Directive (extractive industry), the EU PCbCR does not apply an exemption to these firms as the earlier reporting requirements were "different and less extensive" (KPMG, 2025).

[6] In contrast to other member states, Romania opted to impose PCbCR from FY2024 onwards. Specifically, multinational corporations with significant presence in Romania but headquartered outside of the EU started reporting in 2025. Some 75 firms have already published their reports publicly (Fair Tax, 2025b).

amount to be one of the biggest corporate data reveals in history (Fair Tax, 2025c; Tax Justice Network, 2024b), with NGOs referring to the PCbCR Directive as the new "hottest topic in financial reporting."[7] (Fair Tax, 2025c)

Banks headquartered in the EU are exempt from PCbCR due to pre-existing requirements to report country-by-country breakdowns of economic activities, profits and tax payments (Directive 2013/36/EU).[8] The data release from these banking reporting requirements in 2015 saw activists, NGOs and research institutions publish firm rankings and extensive analysis on the effect of the tax transparency reform on corporate tax avoidance (Tax Research LLP, 2015). Those banks exposed to the reform were found to have increased their effective tax rates by approximately 3.6 pp in the years following mandatory CbCR (Aliprandi et al., 2021). However, since the announcement of PCbCR in 2021, attention on the banking sector has notably subsided. For example, Transparency International's website tracking the tax affairs of Europe's largest banks now instead links to a gaming platform (see www.taxtracker.eu).

Figure 1: PCbCR Media Coverage in Europe



Note: Figure 1 plots the number of articles mentioning either "public country by country" or "public country-by-country" over time. Peaks correspond with the initial PCbCR proposal (2016) and the break in negotiations' deadlock (2021). Articles are sourced from the Nexis Uni database and cover all major media outlets in Europe. Monthly figures for 2021 are presented in Table C1.

[7]The CRD IV reporting requirements are considered limited in detail and leave "many points open to different interpretations" (PwC, 2014). PCbCR is generally considered to be more comprehensive in its demands of multinational firms. For example, whereas the CRD IV reporting requirements are summarized in just five paragraphs, the EU Public CbCR extends over 14 pages.

[8]Under the EU Capital Requirements Directive IV (Directive 2013/36/EU), multinational credit institutions and investment firms headquartered in the EU (plus Iceland, Liechtenstein, and Norway) with at least one foreign subsidiary must publish breakdowns of their economic activities, profits and tax payments. Banks headquartered outside the EU report breakdowns only for their European subsidiaries.

2.2 Global minimum tax

In October 2021, more than 135 countries reached an agreement on a global minimum corporate tax rate of 15% (known as "Pillar 2"). The EU formalized this agreement for their Member States through the EU Minimum Tax Directive. Under the GMT, firms pay a top-up tax if one or more of their entities fails to meet the minimum rate of 15% on profits for a given jurisdiction.[9] This will lead to a "mechanically increase in tax payments from firms that pay lower tax rates in certain jurisdictions" (Johannesen, 2022).[10] While global implementation of Pillar 2 has slowed following President Trump's decision to withdraw the United States from the agreement, many jurisdictions began adopting the reform in FY2024. Consequently, the "vast majority" of large U.S. multinationals remain exposed to the GMT through their operations in foreign jurisdictions (Fair Tax, 2025a).

There is no immediate reason why EU-headquartered firms that are reputation-sensitive would be more or less exposed to the GMT. Any heterogeneity on this dimension, therefore, is likely attributed to PCbCR. Furthermore, while the GMT applies the same revenue threshold as PCbCR, there are no industry exemptions (unlike PCbCR) and the GMT is applied globally. Later, we exploit this distinction by focusing on the tax avoidance behavior of the banking sector after receiving its exemption from PCbCR.

3 Data and sample selection

We obtain firm-level data from S&P Capital IQ Pro and Moody's Orbis databases for all publicly listed firms globally from financial years 2019 to 2023.[11] We rely on publicly listed firm data because the availability and quality of data is higher for public firms when compared to private firm data, and collect the following firm-level covariates: revenue, cash taxes paid, earnings before interest and taxation, interest payments, industry, and subsidiary information (names and ISOs).[12] Only firms with complete revenue entries for the pre-period FY2019-2021 are

[9] Member States are obliged to transpose the Directive's provisions into national law by 31 December 2023, with the tax rules applying for Financial Years starting 2024. For example, Hellenic Bank in Cyprus reported a EUR 6.4 million top-up tax payment for FY2024 Q4 (Ekathimerini Newsroom, 2025)

[10] More completely, (Johannesen, 2022) finds that a minimum corporate tax rate may also have the following three effects in countries "adversely affected by profit shifting": (1) mechanically increase in tax payments from firms that pay lower tax rates in certain jurisdictions; (2) reduce the incentives to engage in profit shifting; and (3) address the "race to the bottom" problem in international tax law competition.

[11] Variable names and descriptions are provided in Table A8

[12] The financial variables are sourced from S&P Capital IQ Pro while information on subsidiaries is from Moody's Orbis (S&P Global Market Intelligence, 2026; Moody's, 2026). We successfully match 91% of all firms in the S&P dataset to their corresponding entries in Orbis.

kept to avoid capturing newly listed public firms. We also collect stock market data from S&P Capital IQ Pro for publicly listed firms headquartered in Europe, specifically the daily closing prices around the PCbCR announcement date.

For our primary outcome variable, we calculate each firm's cash effective tax rate in a given year, where ETRs are considered an "ex post measure of tax avoidance" (Overesch and Wolff, 2021). Low (high) ETRs are generally associated with more (less) tax avoidance. More formally, cash ETR is defined as worldwide cash taxes paid over worldwide earnings income before taxation (EBT)[13] and captures the current tax expense of firms:

$$\text{Cash ETR} = \frac{\text{Cash Taxes}}{\text{EBT}}{}^{14}$$

While the country-by-country breakdowns of cash tax payments are not yet publicly available (these will be released under the EU PCbCR Directive), we can observe cash ETRs at the consolidated worldwide level. The assumption here is that any notable changes in cash tax payments at the jurisdictional level may well be visible on the aggregate. ETRs can be measured in several ways, with the Generally Accepted Accounting Principles approach including both current and deferred tax expenses. Cash ETR is our preferred measure as it is regularly used by tax scholars to measure tax behavior of corporations, especially in corporate social responsibility research.[15] We take two steps—both standard practice in the accounting scholarship studying similar trends in ETR (Overesch and Wolff, 2021, see p.1622)—to address potential outliers and non-plausible ETR value concerns in our firm-year dataset. First, before calculating the ETR, we delete all firm-year observations with negative EBT values.[16] Second, we truncate ETRs outside of the 0–100 per cent range. Table A1 shows descriptive statistics by industry for the cash ETR variable.[17] Among all industries, European real estate firms record the lowest mean ETR, at approximately 14 per cent, which is at least six pp below that of any other sector.

We exclude two industries from our main analysis. First, we drop firms in the technology and media industry given the wider context of digital service tax roll backs. Second, we exclude

[13] Items of non-recurring nature before provision for income tax are excluded from EBT measure

[14] We rely on S&P's EBT variable which excludes "all items of non-recurring nature before provision for income tax."

[15] See Dyreng et al. (2008) and Dyreng et al. (2017) for research on tax behavior of corporations and Huseynov and Klamm (2012), Zeng (2016), and Binhadab (2025) for research on corporate social responsibility.

[16] We delete all firm-year observations with negative EBT values as to avoid negative values on the denominator of the ETR. Replacing negative EBT values avoids the following two scenarios: (1) a negative ETR is entered even though income taxes were positive; or (2) a positive ETR is entered because both income taxes and EBT are negative. This sampling decision also mirrors Overesch and Wolff (2021)'s approach.

[17] Table A7 shows industry and subindustry classifications as published by S&P Global.

firms in the "Consumer" industry which was severely disrupted by the Covid-19 pandemic. Predominantly in hospitality, tourism, and retail, these firms experienced sharp declines in revenue and profitability (Ozdemir et al., 2021), and governments responded with targeted tax relief and credits for these hard-hit sectors (UK Gov, 2020; Ministry of Economy and Finance of Italy, 2020). Table 1 presents the sample selection step-by-step and associated number of firms and firm-year observations.

Table 1: Sample-Selection Procedure

Selection Procedure	Firm-years	Unique Firms
European public firms covered in S&P Global, FY2019–2023	48,450	9,708
Delete:		
Exclude Consumer and Technology industries	31,005	
Incomplete revenue coverage for FY2019-2021	19,750	
Exclude firm-years with non-positive EBT	13,708	
Exclude ETR % values below 0 or above 100	9,704	
Final Sample	9,704	2,598

We run our analysis on multiple subsets of public firms. First, in order to focus on large firms, we subset to firms with revenue over €50 million. As our empirical strategy relies on a revenue threshold (over €750 million in revenue) to define treatment, this lower bound ensures that our control group does not contain incomparable small and medium enterprises.[18] Second, we run our analysis on samples with and without full panel coverage i.e., complete Cash ETR coverage for FY2019–2023. The balanced-panel subset captures firms with consistent reporting and accounting behavior which, by extension, may imply greater control over tax planning. Third, we examine the following regional subgroups of publicly listed firms: (1) those headquartered in the EU; (2) those headquartered in the EU or the UK; (3) those headquartered in the EU or Switzerland; and (4) those headquartered in the broader European region, including the Balkans, Eastern Europe, and Turkey. We assume that EU-headquartered firms with revenues above €750 million are almost certainly subject to PCbCR. Moreover, because the PCbCR Directive applies to all large MNEs operating in the EU—regardless of their headquarter location—we also expect large UK, Swiss, and other proximate European firms to be effectively covered. We therefore include these additional firms to increase sample size and improve the precision of our estimates. Table A2 reports the jurisdictions classified under EU and Europe, while Table A4

[18]The European Commission defines firms with a turnover under €50 million as small and medium enterprises (European Commission, 2024).

provides the number of firms in each subgroup dataset by industry. In our largest European sample we have a total of 735 firms defined as "treated."[19] The number of treated firms in our analysis is lower than the roughly 6,000 firms (public and private) expected to be subject to PCbCR because we restrict attention to firms headquartered in Europe. While economic presence alone can also trigger applicability, this restriction ensures that we almost certainly capture firms subject to the Directive. Further restricting our analysis to publicly listed firms narrows the group even more, but ensures better data comparability and quality (Bernard et al., 2016).

Next, we classify how sensitive firms are to their public reputation using two different metrics: (1) ESG scores; and (2) and whether firms are consumer facing. ESG scores are sourced from S&P Global.[20] Roughly 13,000 publicly listed companies worldwide have ESG Scores calculated by S&P.[21] These companies are selected based on their market relevance and collectively make up nearly 99 per cent of global market capitalization.[22] Thus, if a firm has an S&P Global ESG Score, this can be seen as a proxy for market and reputation sensitivity. We define a binary variable equal to 1 if a firm has an ESG score, and 0 otherwise. Next, to classify firms as either business-to-business (B2B) or business-to-consumer (B2C), we utilized a locally run Meta Llama 3 70B large language model (LLM). Firm business descriptions from S&P were supplied to the model along with clear task instructions and example classifications (i.e., few-shot prompting). The model then returned categorical labels ("B2B" or "B2C") for each firm. This procedure allowed us to classify firms consistently at scale.[23] As an additional step, we identify industries more exposed to public shaming risk, as proxied by media attention over time. This involves examining changes in media coverage on crises, scandals, regulation, and tax avoidance across

[19]Table A6 shows descriptive statistics for the firm-level difference-in-difference samples across treatment and control in FY2021. We focus on profitability and leverage ratios rather than raw variables such as total assets and total debt which are naturally correlated with total revenue. We find leverage ratios are mostly balanced across treatment and control firms, while profitability is generally lower. This is consistent with the literature that smaller firms have a higher profit rate (Dhawan, 2001).

[20]S&P Global ESG Scores measure "companies' exposure to and performance on key ESG risks and opportunities, the quality and completeness of their public disclosures, and their awareness of emerging but under-reported ESG issues" and are measured on a $0-100$ scale. Data is available at Wharton Research Data Services (Wharton Research Data Services, 2026).

[21]S&P Global calculates ESG Scores as part of the S&P Global Corporate Sustainability Assessment ("CSA"). Some 13,000 publicly listed companies are part of the CSA "research universe" which covers approximately 18% of all publicly listed firms in the S&P Capital IQ Pro dataset. Companies are invited to voluntarily participate in the CSA. As of March 2022, more than 2,250 companies voluntarily participated in the CSA. If a company does not engage, their ESG Scores are calculated based on publicly available data and by a team of experts at S&P Global. Non-invited but interested companies are also permitted to take part in the CSA.

[22]S&P Global typically selects companies that form part of S&P Dow Jones Indices benchmark indices and the Dow Jones Best-in Class Indices. S&P Global Market Index and market capitalization are also referenced.

[23]Additional details—including the full text of the classification prompt—are provided in Table C2.

industries. We source media data covering all major media outlets in Europe from the Nexis Uni.[24]

Finally, we subset firms by characteristics associated with tax avoidance: tax haven status; and pre-treatment profitability measures. Multinational firms with foreign subsidiaries in tax havens are associated with tax avoidance. We rely on the Tax Justice Network's Corporate Tax Haven Index to classify subsidiaries in tax havens. Countries are considered "tax havens" if they are in the top 15 entries of the Index.[25] We create a binary variable equal to 1 if a firm has one or more subsidiaries located in a tax haven, and 0 otherwise. One limitation of this measure is that tax haven status—particularly in the banking sector—is itself associated with heightened reputational risk and potential exposure to public shaming (Eberhartinger et al., 2025). Profitability provides an alternative and arguably cleaner proxy for firms' incentives to engage in profit-shifting activities (Dunbar et al., 2010). We construct an indicator variable for profitability based on Return on Assets (ROA): firms are coded as ROA=1 if their ROA is above the sample median by industry, and ROA=0 if it is at or below the median, for FY2021.[26] Subsetting firms by tax haven status or pre-treatment profitability allows us to separate out firms more or less likely to be affected by PCbCR or GMT. More specifically, we hypothesize that firms with tax haven presence or higher *ex ante* profitability will be more likely to respond to changing incentives on global tax avoidance.

4 Estimation Strategy

Multinational corporations with revenues exceeding €750 million for two consecutive financial years will have to publicly report their country-by-country tax data from FY2025 and may be subject to the GMT from FY2024. We consider a firm to be at risk of being subject to PCbCR (or the GMT) if they fall above the revenue threshold. To avoid capturing direct effects associated with the GMT's implementation, we exclude FY2024 from our analysis. More

[24]Nexis Uni includes full coverage of national, regional and international news across 17,000 sources including newswires.

[25]The Tax Justice Network's Corporate Tax Haven Index is based on two components: the Haven Score, which assesses how a country's laws and regulations enable corporate tax avoidance; and the Global Scale Weight, which reflects the volume of financial activity flowing through the country (Tax Justice Network, 2024a).

In the 2024 Index, the top 15 corporate tax havens are: British Virgin Islands, Cayman Islands, Bermuda, Switzerland, Singapore, Hong Kong, Netherlands, Jersey, Ireland, Luxembourg, The Bahamas, Isle of Man, Guernsey, Cyprus, and Mauritius. We stop at the Top 15, as the Tax Justice Network's rankings beyond that point begin to include major G20 economies—such as China (ranked 16th), the United Kingdom, France, and others.

[26]Researchers generally default to using ROA when measuring the effect of profitability on tax avoidance (e.g., Kartikaningdyah (2019/12); Hendayana et al. (2024))

formally, we define a firm as "treated" if their reported revenue exceeds €750 million at least once between FY2019 and FY2021, and control otherwise. We also include firms "at risk" of growing into the reporting requirement within the next 3 years (based on FY2019-2021 revenues), assuming a fixed annual growth rate of 6%. This rate corresponds to the median growth rate observed in our sample of EU firms and is in the same ballpark as the average year-over-year revenue growth for the S&P 500 (see Table A3; Butters (2026)). Of the 735 firms defined as treated in our Europe sample of firms, 51 firms are at risk of growing into the reporting requirement.[27] With PCbCR announced in 2021, we consider FY2019, FY2020 and FY2021 as the pre-treatment period, and FY2022 and FY2023 as the post-treatment "anticipatory" period.

To investigate anticipatory effects associated with the EU Directive on PCbCR, we employ a differences-in-differences (DiD) estimation strategy. We compare publicly listed firms that are likely to fall under the EU Directive to those unlikely to fall under the mandate. We estimate

$$ETR_{it} = \beta_0 + \beta_1 RevenueThreshold_i \times Post2021_t + Year_t + Firm_i + \epsilon_{it} \tag{1}$$

where i indexes the firm and t the financial year. The outcome ETR_{it} is effective tax rate, that is, cash taxes over EBT, and is a percentage value bounded between 0 and 100 percent. $RevenueThreshold_i$ is a binary variable where firms with revenue exceeding (or expected to exceed) €750 million based on FY2019-2021 revenue figures are "treated" (coded as "1"), and "control" (coded as "0") otherwise. $Post2021_t$ is a binary variable for the period before (coded as "0") and after (coded as "1") the announcement of the EU Directive on PCbCR, where the post period includes FY2022 and FY2023. β_1 measures the relative change in ETRs of the firms likely to be subject to the EU Directive relative to the change in ETRs of the firms not affected by the reform.

Additionally, large multinational banks headquartered in the EU are exempt from PCbCR. We take a similar estimation approach as in Equation 1 when studying the banking sector, except we run several difference-in-differences varying the (strict) revenue threshold from €250 million to €5 billion based on reported revenue figures in FY2019-2021. The purpose of this empirical

[27] We avoid using firm-specific growth rates for projections, as the Covid-19 period introduces significant error into forecasting financials (e.g., Anglin et al. (2021)). In effect, we lower the revenue threshold to €630 million ($750/1.06^3$), applied uniformly to FY2019–2021 when studying anticipatory effects for firms subject to PCbCR. We consider the full pre-period [to include FY2019, FY2020, and FY2021] because FY2020 and FY2021 may have lower than expected revenues during Covid-19. Under Robustness, we present and compare results under various treatment definitions.

strategy is to investigate spillover effects associated with the exemption and the relevance of the €750 million revenue threshold. If those large banks exempt from the Directive are moving their ETRs after 2021 relative to smaller banks, this would be evidence that the PCbCR exemption is changing firm tax behavior.

We conduct our analysis separately for industries with high and low exposure to public shaming. Specifically, we separately analyze energy and utilities, real estate, pharmaceuticals, and banking as sectors with high exposure to shaming. As observed in the next section, the energy and utilities and real estate sectors have been subject to increased scrutiny from the mass media and NGOs in recent years, while scrutiny surrounding banks has subsided. We identify additional firm characteristics that proxy for exposure to public shaming and for differential exposure to reforms targeting tax avoidance. To capture reputation-sensitivity, we subset firms by ESG score availability and by business-to-consumer status. We also subset firms by tax haven status and by ex ante profitability to examine whether pre-announcement tax avoidance behavior predicts subsequent changes in ETRs. We re-run the above DiD estimation strategy by these subsets. In some cases, limited within-industry variation prevents us from reporting results across all sectors. For example, we are only able to run the ESG heterogeneity analysis for the energy & utilities and real estate sectors, and the business-to-consumer analysis for the banking sector.

Next, we estimate cumulative abnormal returns surrounding the PCbCR announcement for firms headquartered in Europe. We rely on a market-model event study approach, which measures the stock valuation effects of a corporate event at the time of the event (i.e. a local average treatment effect). This is an interrupted time series model

$$R_{it} = \alpha_i + \delta_i R_{Mt} + \epsilon_{it}$$

where R_{it} captures the returns to firm i at time t, R_{Mt} is the return on the market portfolio (here the MSCI world index) at time t, and ϵ_{it} captures returns to firm i at time t that can be considered "abnormal" (above and beyond changes in the market porfolio R_{Mt}). α_i is a firm-specific intercept term. The key quantities of interests are therefore the cumulated ϵ_{it} time series, conventionally referred to as "cumulative abnormal returns" (CARs), and specifically the CAR on the day of the Directive announcement. Abnormal returns are then cumulated over an event window of either 5 or 7 days, and aggregated across firms to produce average CARs by

sector.

Finally, we examine the relationship between a firms receiving a positive or negative shock to their share price around the announcement of PCbCR and changes in their ETRs in later financial years (relative to FY2019-2021). While the set-up we employ is similar to a difference-in-difference strategy, we do not consider changes in share price to define "treatment" or our estimates to be causal. On one hand, a positive or negative stock price movements can inform firms about their exposure to the EU Directive and subsequently affect management decisions on tax governance (Roy et al., 2024). On the other hand, stock price movements also capture investor awareness on how the reform will differentially affect firms. Specifically, we estimate for example,

$$ETR_{it} = \gamma_0 + \gamma_1 StockUp_i \times Post2021_t + Year_t + Firm_i + \epsilon_{it} \tag{2}$$

where i indexes the firm and t the financial year. $StockUp$ is a binary variable defined as 1 if a firm-level CAR is positive around a five or seven day event window of the announcement date of PCbCR, and 0 otherwise.[28] γ_1 measures the relative change in ETRs of the firms that received a positive shock to their share price around the announcement of PCbCR relative to firms that did not see a positive increase in their share price.

All of our DiD estimates are derived from the fixed effect counterfactual estimator (FEct) which accommodates heterogeneous treatment effects and accounts for negative weighting issues highlighted in recent literature (Liu et al., 2024; de Chaisemartin and d'Haultfoeuille, 2020; Goodman-Bacon, 2021; Borusyak et al., 2024). Although our setting does not involve staggered treatment timing, negative weights can still arise due to panel imbalance.

5 Results

In the following section, we document (1) which industries were most subject to negative media spotlight over the period of our analysis as a measure of threat of public shaming, as well as decreasing NGO scrutiny on the banking sector. We report our estimates of changes in effective tax rates for (2) firms subject to PCbCR; and (3) firms exempt from PCbCR following the announcement of the Directive. And finally, we analyse (4) the market response surrounding

[28] More precisely, we estimate firm-level CARs over event window $[-h, +h]$ around the announcement date t_0 (June 1st 2021), defined as $\text{CAR}_i(h) = \sum_{t=t_0-h}^{t_0+h} r_{it}$, varying $h \in \{5, 7\}$. The variance of abnormal returns is estimated from the pre-event window $[-30, -6]$.

the announcement of the PCbCR and its relationship with firm-level tax avoidance behavior, according to the estimation strategies outlined above.

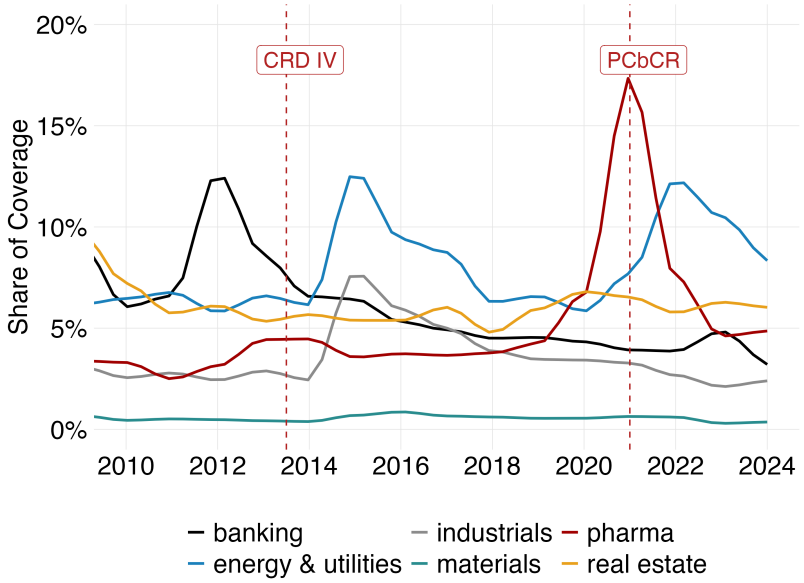
5.1 Media Spotlight

Not all industries are sensitive to public shaming. For public shaming to alter firm behavior, firms must (a) believe that there is a high likelihood their behavior will become public information, and (b) believe that public shaming will materially impact their business. The media spotlight is one way to trace the reputation of industries over time, and the likelihood that a firm in a given industry will be exposed to public criticism. Figure 2 shows how media coverage on scandals across key industries has changed over time, with the y-axis measuring each industry's share of total scandal-related articles in a given year.[29] We observe how coverage on scandals has been particularly high for the energy & utilities, real estate, and pharmaceutical industries in recent years, likely driven by the energy and housing crises and the Covid-19 pandemic. These industries, therefore, had higher ex ante exposure to the threat of public shaming around the announcement of PCbCR. By contrast, the banking sector has seen coverage on scandals steadily decrease since its post-Financial Crisis peak in 2012. It's worth noting that media scrutiny on banking sector was high relative to other industries around the announcement of the industry's own public reporting requirements under CRD IV. Media trends, therefore, could also help explain the effectiveness of CRD IV in changing bank tax avoidance behavior in the earlier period (Overesch and Wolff, 2021; Eberhartinger et al., 2025).

We can also think of civil society as having a limited "carrying capacity," which constrains the amount of attention that can be allocated across issue areas and, in our case, industries (Hilgartner and Bosk, 1988). If one set of industries receives a significant increase in attention, this can "crowd out" coverage on other industries. Thus, the public reveal of corporate tax data under PCbCR may generate positive spillovers for exempt industries. In fact, we can observe this crowding-out effect already. Figure 3 reports the number of industry-specific reports on

[29] Media data is sourced from Nexis Uni, with data coverage spanning all major media outlets in Europe. Table C3 lists the subindustry labels under each industry classification from Figure 2. Where relevant, NexisUni attaches industry and subindustry labels to articles. We are careful to limit our scope for the banking & finance sector to credit and lending institutions, which maps closely to the coverage of CRD IV. Additionally, some industry classifications such as "Consumer Products" are so broad that they overlap significantly with other industries. For this reason, we focus on industries and subindustries with clearly defined labels. Note, classifications are not mutually exclusive: articles that mention the banking sector may also mention the energy sector etc. and can be included in multiple time series.

Figure 2: Media Coverage on Scandals by Industry, 2010-2024



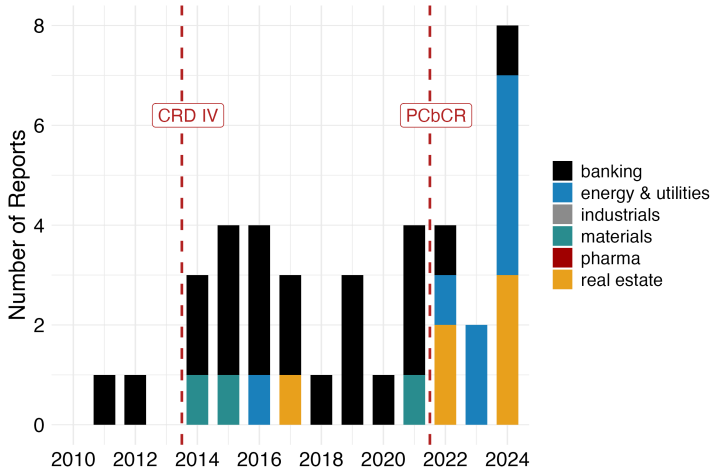
Note: Figure 2 shows the share of total media coverage on scandals that references the following industries: energy & utilities, banking, pharmaceuticals and biotechnology, real estate, industrials, and materials. Media data is sourced from Nexis Uni, with data coverage spanning all major media outlets in Europe. We identify relevant articles by searching for those containing the words "scandal," "outrage," "uproar," or "controversy," and then use NexisUni's industry and subindustry tags to determine sector classifications (see Table C3 for more information). The dashed red line at 2021 marks the announcement of EU Directive on PCbCR while the second line at 2014 marks the Capital Requirements Directive IV.

international tax reform published over time by key civil society groups.[30] In the years following CRD IV and prior to 2022, the vast majority of reports focused on the banking sector. This composition changed significantly once PCbCR was announced, with civil society's attention turning to the energy and real estate sectors. In addition, all of the reports specific to banking after 2021 are published by the EU Tax Observatory which was itself only founded and started publishing in 2021.

While positive spillovers are observed for exempt industries, we do not expect positive spillovers to occur for smaller firms falling below the €750 million threshold for several reasons. First, smaller firms generally avoid media and wider civil society attention by virtue of their size. Larger firms, considered "institutions in their own right", attract the bulk of attention and are the likely beneficiaries of any diversion of attention away from their industry (Fombrun and Shanley, 1990). Second, research suggests that firms above the threshold account for

[30]Specifically, we collect and code reports published by the following six organizations: Eurodad, EU Tax Observatory, Fair Tax Foundation, Financial Transparency Coalition, Oxfam, and Tax Justice Network. We consider reports to be industry-specific when a single industry is the main object of study, either directly or as a mechanism. In one instance where a report included equal substantive attention to two sectors, we code it as having two industries of focus. For banking, we include reports on financial secrecy reform where the sector is the main focus. For energy & utilities, we include reports on energy transition, fossil-fuel financing, climate finance, or ecological impacts directly tied to the energy sector. For real estate, we include reports on ownership transparency and investment related to real estate.

Figure 3: Research Reports by Industry, 2010-2024



Note: Figure 3 presents the number of industry-specific research reports on international tax reform over time, as well as reports on PCbCR more broadly. The reports are sourced from six leading civil society organizations active in tax transparency reform in Europe: Eurodad, the EU Tax Observatory, the Fair Tax Foundation, the Financial Transparency Coalition, Oxfam; and the Tax Justice Network. Prior to 2021, almost all industry-specific reports included in our sample concerned the banking sector. After the announcement of PCbCR in 2021, NGO focus has shifted away from the banking sector and now increasingly focuses on energy & utilities and real estate markets.

approximately 95% of profits shifted to tax havens (Clifford et al., 2025). Even if smaller firms benefited from reduced scrutiny relative to larger firms, they are likely to be much less responsive to changes in incentives to engage in profit shifting.

5.2 Subject to PCbCR

When aggregating across all industries, we find little evidence that firms likely to fall under PCbCR experienced changes in their ETRs following the announcement of the Directive. Table 2 reports DiD estimates aggregated across industries for multiple subsets of firms by location and with bounding on revenue, and shows that while DiD estimates are weakly positive, they are largely insignificant across specifications.

Significant heterogeneity in the observed changes in ETR begin to emerge when subsetting by industry. Overall, we find large DiD estimates for industries with heavy amounts of media and civil society scrutiny around 2021, while those industries with relatively lower coverage, such as industrials and materials, see null effects across the board. Specifically, Table 2 reports DiD estimates for firms subject to PCbCR by industry, across different subsets of firms by headquarter location. Both Table 2 and Figure 4 show that energy & utilities firms under the EU Directive saw an average increase in ETR of 9.4 pp relative to energy & utilities firms not subject to the reform. Later, we discuss how these estimates, which are quite large, may

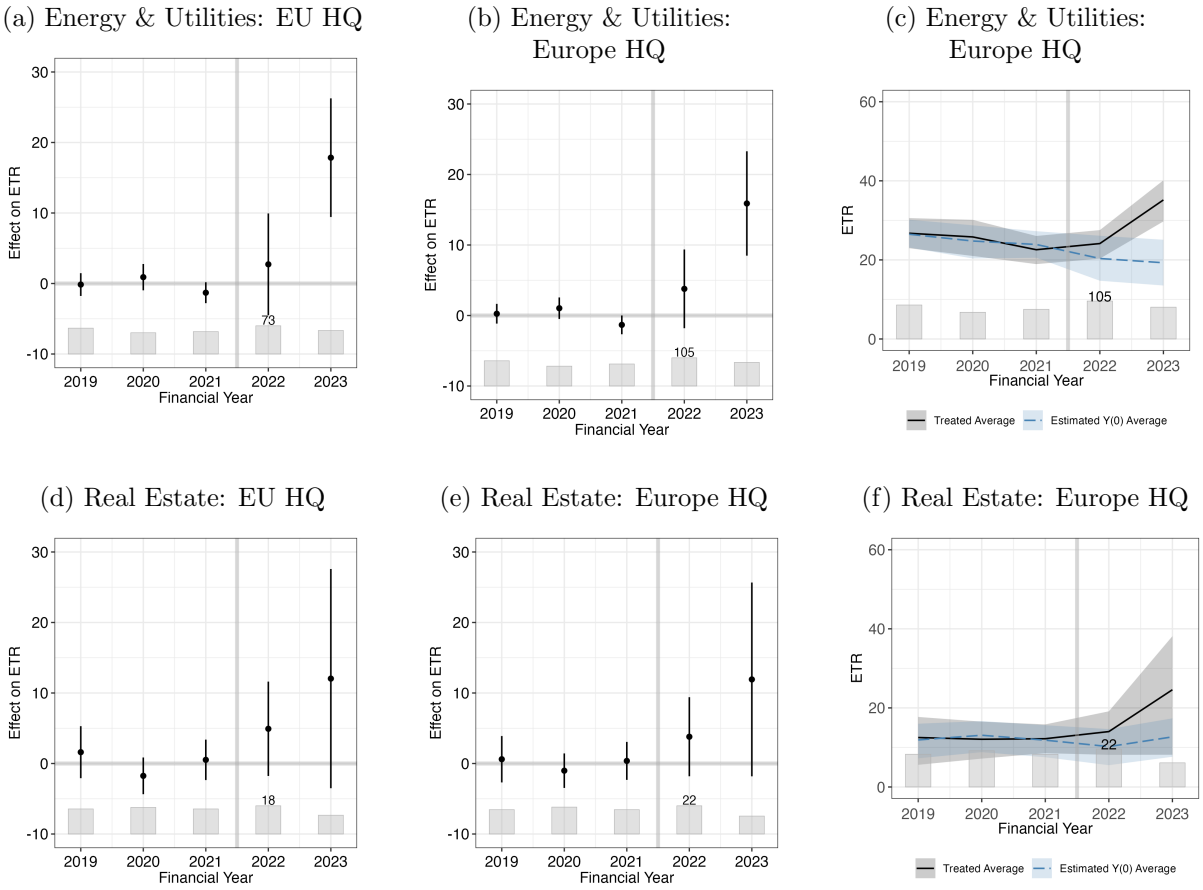
Table 2: Subject to PCbCR - Revenue Threshold and Effective Tax Rate, FY2019–2023

	Dependent Variable: Effective Tax Rate (ETR)			
	European HQ (≥€50M)			
	EU (1)	+ CH (2)	+ UK (3)	Europe (4)
Revenue ≥€750M × Post2021				
All Industries	1.55	1.64*	1.50	1.16
	(1.04)	(0.93)	(0.92)	(0.84)
Energy & Utilities	9.61***	8.80***	9.80***	9.30***
	(3.14)	(2.95)	(2.77)	(2.67)
Real Estate	7.77**	7.37**	7.36**	6.96**
	(3.70)	(3.41)	(3.27)	(3.10)
Health	3.54	3.55	0.15	1.31
	(2.58)	(2.24)	(2.86)	(2.57)
Health (Pharma only)	9.18***	8.86***	0.12	0.93
	(2.96)	(2.58)	(5.36)	(4.66)
Industrials	-0.86	-0.51	-0.24	-0.25
	(1.53)	(1.47)	(1.30)	(1.20)
Materials	0.56	0.20	1.98	-1.55
	(3.18)	(2.96)	(2.87)	(2.70)
Other Finance	1.82	3.28	1.01	1.88
	(3.42)	(3.10)	(2.77)	(2.30)
All Industries: baseline ETR	25.28	25.22	25.17	24.74
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	Yes	Yes	Yes	Yes

Note: Table 2 reports counterfactual estimates of the treatment effect on the effective tax rate, obtained using the FEct estimator with a two-way fixed-effects specification (Liu et al., 2024). The reported average ATT estimates correspond to the coefficients on the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator, by industry. Firms are also considered treated if projected to grow into the reporting requirements based on a pre-treatment average growth rate. Each entry is a separate regression. For concerns surrounding multiple hypothesis testing, we report Benjamini-Hochberg adjusted p-values in Table B1. Samples consist of publicly listed firms headquartered in (1) EU; (2) EU or Switzerland; (3) EU or UK; or (4) Europe. All samples impose a lower revenue bound of €50 million, with number of firms presented in Table A4. Period covered is FY2019-FY2023. Standard errors in parentheses, clustered at the firm level, computed via bootstrap ($n_{\text{boots}} = 1000$). Significance levels: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

be capturing a "perfect storm" of pressures in the wider context of the Covid-19 pandemic and Russia's invasion of Ukraine. We do, however, also observe large positive and statistically significant DiD estimates for the real estate industry too, averaging approximately 7.4 pp across specifications. The real estate estimates are somewhat less precise than the energy & utilities estimates as they rely on a smaller number of treated firms, as evidenced in Figure 4. For the pharmaceutical sub-sector, we observe large DiD effects but only for firms headquartered in the EU and Switzerland. By contrast, we observe null effects across other industries such as materials and industrials, and finance firms that fall outside of the exemption for banks.

Figure 4: Subject to PCbCR - Event Study



Note: Figure 4 (a)-(b) and (d)-(e) plots two-way fixed effects counterfactual (FEct) dynamic ATT estimates of changes in effective tax rates (ETR) for publicly listed energy & utilities and real estate firms headquartered in the EU or Europe. Following Li and Strezhnev (2025), these event study plots utilize leave-one-out for the pretreatment estimates, not an in-sample model fit. Figure 4a and Figure 4d, and Figure 4b and Figure 4e are based on specifications in Table 2's Columns (1) and (4), respectively. Figure 4c and Figure 4f plots the period-wise average treated and counterfactual outcomes for European headquartered firms in each industry. The black solid line is the average outcome of the treated firms while the blue dashed line is the average predicted outcome of the firms in the absence of the treatment. Confidence intervals in all figures are based on non-parametric bootstrap standard errors. Bar plots indicate the number of treated firms (i.e., based on €750 million revenue threshold) in each financial year.

Next, we check whether Table 2's results for the energy & utilities, real estate, and pharmaceutical sectors are associated with increases in cash tax payments (the numerator of the ETR ratio) or decreases EBT (the denominator). This helps determine whether the observed variation in the ETR reflects genuine changes in tax liabilities or instead arises from movements in accounted profit. Table B2 presents DiD estimates with log cash taxes or log EBT as dependent variables. For energy & utilities and real estate sectors, the increases in ETRs as reported in Table 2 correspond with real changes in tax payments which are statistically significant at the 0.1 level for most specifications. Both industries see remarkably similar increases (in percentage terms), corresponding to, on average, a 45 per cent increase in tax payments relative to

pre-2022 period. This is equivalent to an annual average increase in cash tax payments of €8 to 15 billion for energy & utilities and €350 to 400 million for real estate.[31] Later, in Section 5.5, we discuss how the energy & utilities result may well capture a "perfect storm" of pressures from the Covid-19 pandemic and invasion of Ukraine, as well as the GMT. We must therefore interpret the revenue effects with some caution. In contrast to the energy and real estate results, we find that the increases in ETRs for the pharmaceutical sector only partly correspond with increases in cash tax payments and more likely driven by decreases in EBT instead. This, coupled with the additional observation that Table 2's pharmaceutical results are null once the UK is included (despite many large UK firms being subject to PCbCR), suggests that shifts in pharmaceutical ETR may be associated with broader macro trends, such as a return to normal profit levels for large pharmaceuticals after the peak of the Covid-19 pandemic. For these reasons, our subsequent analysis of anticipatory effects associated with PCbCR focuses on the energy & utilities and real estate sectors.

As discussed earlier in the paper, both PCbCR and the GMT apply the same revenue threshold. While the energy & utilities and real estate sectors have higher levels of ex ante media scrutiny, they may also have lower baseline ETRs (relative to other industries). This, in turn, could imply that these industries are more exposed to the global minimum tax of 15%. Figure 4c and Figure 4f plots the average treated and counterfactual outcomes for large EU-headquartered firms over time. We find that the energy & utilities industry has a high baseline ETR of about 27 per cent prior to the announcement of PCbCR, while the baseline ETR for the real estate sector sits much lower at 12 per cent. While real estate's lower baseline might imply higher exposure to the GMT, it also likely increases the industry's exposure to tax shaming upon public disclosure.

To further investigate the role played by PCbCR, we exploit heterogeneity in firm-level sensitivity to public shaming within the energy & utilities, and real estate industries. We run this heterogeneity analysis on our largest samples of firms with no revenue lower bound to preserve sample size. Specifically, we present DiD estimates separately for firms with and without ESG scores, as MNEs most exposed to market and reputational pressures are also the ones most likely to receive ESG scores. Table 3 shows that for both the energy & utilities and real estate industries, those firms that are reporting ESG scores have consistently positive, larger,

[31] We apply point estimates from Table B2 to the baseline (pre-2021) average cash taxes for large firms for each respective specification and industry.

and statistically significant DiD estimates than firms that do not report ESG scores. These results suggest that large, market-sensitive firms are contributing to the observed increase of ETRs between FY2022 and FY2023 in Table 2. When aggregating across all other industries subject to PCbCR, we do not observe such a stark difference in ETR estimates by ESG status, suggesting there is an important interactive effect between industry and firm-level exposure to public shaming.

Table 3: Subject to PCbCR – By ESG Scores, FY2019–2023

	Dependent Variable: Effective Tax Rate (ETR)			
	EU + UK Headquartered		Europe Headquartered	
	ESG Score (1)	No ESG Score (2)	ESG Score (3)	No ESG Score (4)
Revenue ≥€750M × Post2021				
All industries	1.45	1.80	2.32**	1.44
	(1.33)	(1.74)	(1.18)	(1.62)
Energy & Utilities	8.38**	3.95	9.74**	3.50
	(3.87)	(4.68)	(3.97)	(4.38)
Real Estate	12.14***	3.17	10.47**	3.29
	(4.27)	(4.07)	(4.19)	(4.09)
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	Yes	Yes	Yes	Yes

Table 3 reports counterfactual estimates of the treatment effect on the effective tax rate (ETR), obtained using the FEct estimator with a two-way fixed-effects specification (Liu et al., 2024). The reported average ATT estimates correspond to the coefficients on the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator, by industry. Firms are also considered treated if projected to grow into the reporting requirements based on a pre-treatment average growth rate. Samples are split by ESG Score status, coded as 1 if a firm has ever had its ESG Score reported by S&P Global (and 0 otherwise). Samples consist of publicly listed firms headquartered in (1) EU or UK; or (2) Europe. We do not lower bound our samples to preserve sample size. Period covered is FY2019-FY2023. Standard errors in parentheses, clustered at the firm level, computed using bootstrap ($n_{\text{boots}} = 1000$). Significance levels: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

5.3 Exempt from PCbCR

When examining estimates separately for the banking sector, we find that large banks started decreasing their ETRs after 2021 (see Table 4 and Figure 5), consistent with the idea that banks may be taking advantage of public attention and reporting requirements shifting away from their industry. We support our argument that we are capturing effects associated with PCbCR by varying the revenue threshold from €250 million to €5 billion. The estimates based on the €750 million revenue threshold are largest and most precise, suggesting we are indeed capturing effects specific to the PCbCR exemption. Interestingly, we observe weaker effects for the very largest banks in our sample (over €5 billion in revenues). One reason for this is that

the Deutsche Banks and Crédit Agricoles of this world continue to be subject to high amounts of public scrutiny and are therefore less likely to benefit from, and take advantage of, the reporting exemption.

For the €750 million threshold specification, we find that the coefficient of interest is negative (ranging from 6.8 to 9 pp) and statistically significant at the 1% level. These estimates are predominantly driven by a decline in cash tax payments of approximately 18 per cent, on average (see Table B3). Conducting back of the envelope calculations,[32] we find that the percentage decreases correspond with at least a €3.9 to €6.9 billion annual reduction in cash tax payments. This suggests that the EU has incurred an unintended but substantial tax revenue loss as a consequence of the PCbCR exemption for the banking sector.

We capture firm sensitivity to public shaming for the banking sector by separately examining consumer-facing and business-facing banks. Table B4 presents separate DiD estimates for the banking sector for B2B and B2C firms, based on the €750 million threshold specification. Across specifications, B2C banks have negative DiD estimates that are consistently smaller in magnitude than banks that are B2B. In other words, B2B banks have decreased their ETRs more than B2C banks. Since public facing banks continue to have ex ante exposure to the risk of public shaming, our results suggest that these banks hedge their response to changing incentives under the PCbCR exemption. We are unable to conduct an ESG score analysis for the banking sector as almost all large banks have ESG scores.[33]

5.4 Stock Market Event Study

We estimate cumulative abnormal returns surrounding the PCbCR announcement on June 1st 2021 for publicly listed firms headquartered in Europe. Across specifications, we find that large banks headquartered in Europe experienced positive and statistically significant increases in their share prices around the announcement of the exemption (see Figure 6). There is also evidence of information leakage in the 2-3 days preceding the announcement. The positive CARs suggest that investors did not perceive PCbCR as damaging to banks' future profitability; rather, investors responded positively to the announcement, likely due to the exemption granted to banks. We do not find any significant reactions in the market for energy & utilities and real

[32] We apply point estimates from Table B3 to the baseline (pre-2021) average cash taxes for large banks for each respective specification. We suspect our estimates are likely to be conservative as we capture only a subset of the total number of the banks exempt from PCbCR.

[33] We also lack sufficient variation in B2B and B2C status for a heterogeneity analysis of the energy & utilities firms, and have too few observations for the real estate industry.

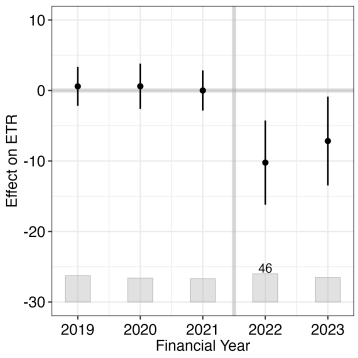
Table 4: Exempt from PCbCR - Revenue Threshold and Effective Tax Rate, FY2019–2023

	Dependent Variable: Effective Tax Rate (ETR)			
	European HQ (≥€50M)			
	EU	+ CH	+ UK	Europe
	(1)	(2)	(3)	(4)
Banking Sector				
Revenue ≥€250M × Post2021	-3.74	-3.58	-4.74*	-1.43
	(3.28)	(3.39)	(2.83)	(3.06)
Revenue ≥€750M × Post2021	-8.80***	-8.68***	-8.99***	-6.76***
	(2.62)	(2.67)	(2.37)	(2.47)
Revenue ≥€1B × Post2021	-6.91***	-6.92***	-7.90***	-5.99**
	(2.58)	(2.61)	(2.34)	(2.41)
Revenue ≥€5B × Post2021	-4.23	-4.37	-4.98**	-4.93**
	(2.90)	(2.93)	(2.43)	(2.41)
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	Yes	Yes	Yes	Yes

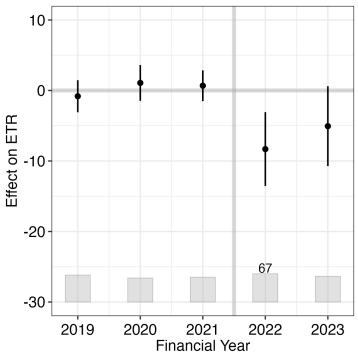
Note: Table 4 reports counterfactual estimates of the treatment effect on the ETR, obtained using the FEct estimator with a two-way fixed-effects specification (Liu et al., 2024). The reported average ATT estimates correspond to the coefficients on the interaction between the revenue threshold and the post-2021 indicator. Each entry is a separate regression and each line corresponds with a different revenue threshold ranging from €250 million to €5 billion, where revenue thresholds are based on pre-treatment revenues. Samples consist of publicly listed firms headquartered in (1) EU; (2) EU or Switzerland; (3) EU or UK; or (4) Europe. All samples impose a lower revenue bound of €50 million, with number of firms presented in Table A5. Period covered is FY2019-FY2023. Standard errors in parentheses, clustered at the firm level, computed via bootstrap ($n_{\text{boots}} = 1000$). Significance levels: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Figure 5: Exempt from PCbCR - Event Study

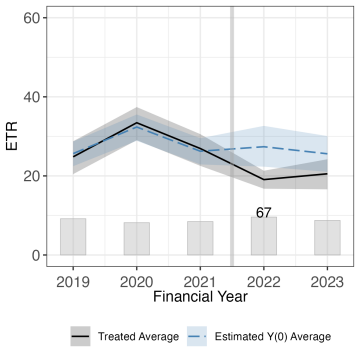
(a) Banks: EU HQ



(b) Banks: Europe HQ



(c) Banks: Europe HQ



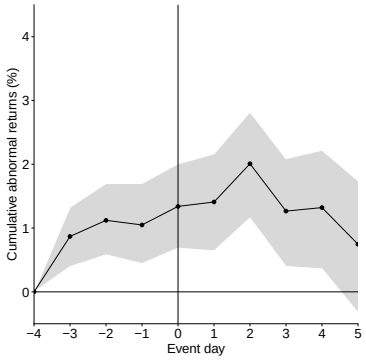
Note: Figure 5a and Figure 5b plot two-way fixed effects counterfactual (FEct) dynamic ATT estimates of changes in effective tax rates (ETR) for publicly listed banks headquartered in the EU or Europe from Table 4. Following Li and Strezhnev (2025), these event study plots utilize leave-one-out for the pretreatment estimates, not an in-sample model fit. Figure 5c plots the period-wise average treated and counterfactual outcomes for European headquartered banks. The black solid line is the average outcome of the treated firms while the blue dashed line is the average predicted outcome of the firms in the absence of the treatment. Confidence intervals in all figures are based on non-parametric bootstrap standard errors. Bar plots indicate the number of "treated" firms (ie., exceeding €750 million revenue threshold) in each financial year.

estate firms subject to PCbCR, as presented in Figure B1. One reason for this is that PCbCR had been discussed across various media outlets from February 2021 onward, making it difficult to pinpoint the exact date firms became aware of the new reporting requirements. This contrasts to the exemption for the banking sector, which was only formally confirmed on June 1st. We do, however, find evidence of negative cumulative abnormal returns for energy and utilities and real estate firms overall, suggesting that investors in smaller firms—who, up until June 1, may have been less informed about PCbCR—updated their expectations regarding the broader reputational exposure these industries face under public disclosure.

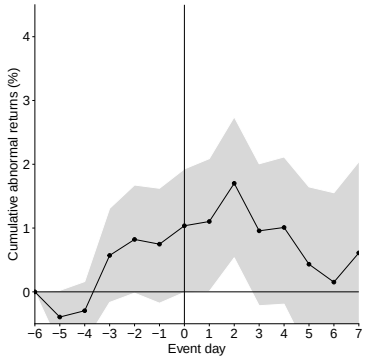
Next, we examine the relationship between an increase in share price around the announcement of PCbCR and movements in ETRs after 2021 for the banking sector. Table B5 reports coefficients on the interaction between an increase in stock price and the post 2021 period. We find across specifications that estimates are large (approximately 4 pp) and negative and statistically significant at the 0.01 level for the FY2023 period. In other words, those banks that experienced positive stock price shocks at the time of the PCbCR announcement later record decreases in their ETRs. Figure 7 plots the results for EU and Europe-headquartered firms over time, showing a similar post-2021 trend in ETRs for the banking sector as in our causal estimates presented in Table 4. Importantly, the estimates from the stock analysis cannot be considered as causal. Rather than firms learning about their exposure to the reform, it is likely that investors anticipated which firms would benefit from the exemption (e.g., larger firms). Consistent with this interpretation, we find a positive correlation of approximately 0.26 between banks experiencing a positive share price shock and those over the PCbCR revenue threshold. We re-run the above analysis but just for banks that are B2B, and find that the estimates double in size, further supporting the earlier finding in Subsection 5.3 that less public facing banks appear to be more likely to take advantage of decreasing attention by the media and NGOs on their sector.

Figure 6: PCbCR Announcement and Cumulative Abnormal Returns

(a) Banks: 5-day window



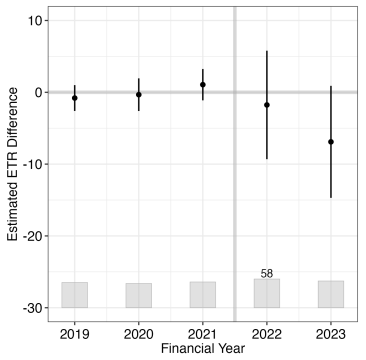
(b) Banks: 7-day window



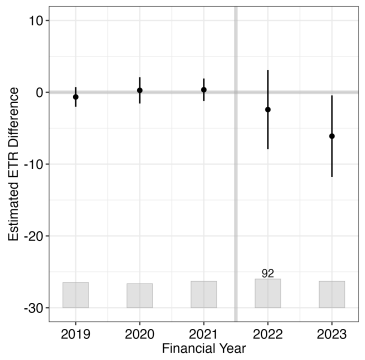
Note: Figure 6 reports estimates of cumulative abnormal returns surrounding the announcement on June 1st 2021 of an agreement on public country-by-country reporting by EU bodies. Reported estimates are specific to large banks headquartered in Europe, which were informed about their exemption from PCbCR on the same date. Estimates are based on market-model event study approach, which measures the stock valuation effects of a corporate event at the time of the event (i.e. a local average treatment effect) above and beyond changes in the MSCI Europe Index. Figure 6a and Figure 6b are based on event study windows of 5 and 7 days, respectively. 95% confidence intervals are calculated using bootstrap.

Figure 7: Stock Price Increase and ETR

(a) Banks: EU HQ



(b) Banks: Europe HQ



Note: Figure 7b and Figure 7a plot estimates of the association between a positive share price shock around the announcement of PCbCR and subsequent changes in effective tax rates (see Table B5, Columns (1) and (4)). Note, these effects are not causal. Confidence intervals are based on non-parametric bootstrap standard errors. Bar plots indicate the number of banks that received a positive share price shock around PCbCR announcement.

5.5 Robustness

To investigate the plausibility of the parallel trends assumption holding for our key energy & utilities, real estate and banking estimates, Figure B2 and Figure B3 presents results for a leave-one-out pre-trend test based on DiD ETR estimates reported in Table 2 and Table 4, respectively. The estimates for the placebo years prior to 2021 are smaller in magnitude and statistically insignificant at conventional levels across key specifications for the energy & utilities, real estate and banking sectors. Reported F-test p-values are generally large and equivalence

test p-values small, suggesting a lack of evidence of pre-trends.

We present adjusted p-values in Table B1 for the industry-specific results in Table 2 to account for multiple hypothesis testing. We rely on the Benjamini-Hochberg procedure, which controls for the false discovery rate and addresses concerns surrounding false positives. With some of our specifications relying on a small number of firms, we find that other methods to control for multiple hypothesis testing such as the Romano-Wolff correction exhibit poor finite-sample performance. Our headline results for the energy & utilities and real estate industries remain statistically significant at the 0.1 level under the Benjamini–Hochberg adjustment.

Additionally, we run various robustness checks for our key industry results, varying selected subsamples and estimators. Table B6 presents estimates for our energy & utilities and real estate with no lower bound, or imposing full panel coverage. We find similar point estimates and levels of precision as in Table 2. We run similar checks for the banking sector and find similar results to our core findings in Table B7. We also re-run Table 2 and Table 4's specifications using a standard linear TWFE model. Again, we find point estimates and levels of precision that are approximate to our main estimates (see Table B8 and Table B9). For concerns on design-based uncertainty and the number of clusters, we apply a cluster wild bootstrap to our TWFE specification, clustered at the firm level, and find our key energy & utilities and real estate estimates remain robust (see Table B10 and Table B11).

For firms subject to PCbCR, we consider a definition of treatment that only applies a strict threshold of €750 million and does not include firms at risk of growing into the reporting requirement based on a fixed growth rate of 6% . We find our estimates for energy & utilities and real estate are positive and large, although our real estate estimates become less precise (see Table B12). This is due to panel imbalance in FY2023 under the strict threshold definition, as illustrated in Figure B4 which plots event-study estimates by definition of treatment. However, if we were to restrict our sample under the strict definition of treatment to firms with complete panel coverage, we find similar point estimates and improved precision (see Table B13). We further observe that the treatment definition based on the fixed revenue growth is informative of true treatment status.[34] For example, the property company Castellum AB recorded revenues of €870 million in FY2024, but under the strict revenue threshold classification would be classified under "control" as revenues fell just below €750 million in financial year 2021.

[34] In total (under EU specification), four real estate firms were classified as "at risk" of growing into the PCbCR requirements. Of these four, three have revenues comfortably exceeding €750 million by FY2024 (Aedas Homes, S.A.; Castellum AB; CPI Property Group).

As discussed earlier, European firms subject to PCbCR are also likely subject to GMT. Table B14 expands the control group of firms to include large U.S. firms, which, up until President Trump's decision to pull out of the agreement, believed themselves subject to GMT, as well as smaller American firms. Critically, we exclude large American firms with any subsidiary presence in the EU to avoid capturing American multinationals that are also subject to PCbCR. We focus our attention on our primary definition of treatment: firms headquartered in EU that exceed the revenue threshold. Table B14 continues to show large, positive and statistically significant estimates for the energy & utilities industry although the magnitude of the effect falls to approximate 5 pp suggesting that the GMT may be contributing to some of the observed variation in Table 2. We find similarly large, positive, and statistically significant results for the real estate across specifications. Overall, based on results in Table 2 and this robustness check, as well as a robustness check conducted below on energy levies, we estimate changes in ETR associated with the announcement of PCbCR to be between 5-8 pp for energy & utilities and the real estate industries.

Next, we consider the relationship between *ex ante* tax avoidance behavior and our key industry results. Table B15 shows that there is a positive and statistically significant relationship between tax haven status (a measure of *ex ante* tax avoidance behavior), revenue threshold, and post-2021 period for energy & utilities firms, while we find null effects for energy & utility firms with no tax havens. This suggests that our energy & utilities estimates from Table 2 are likely capturing effects associated with changing incentives on tax avoidance. We are unable to conduct a similar analysis for real estate firms or the banking sector as we have insufficient variation across the subsets (e.g., almost all large banks have tax havens). To more clearly identify *ex ante* tax avoidance behavior, we instead exploit variation in firm profitability before the announcement of the EU Directives. Table B16 and Table B17 present ETR estimates separated by *ex ante* profitability, for industries subject or exempt from PCbCR, respectively. Profitability is defined by whether firms had a high or low ROA in FY2021 (relative to their industry medium in FY2021). Across all specifications, the results indicate that highly profitable firms are contributing more to the observed increases in ETR in the energy & utilities and real estate industries, and the observed decreases in ETR in the banking sector. Collectively, our results suggest that the movements in ETR and cash tax payments captured after 2021 are likely attributed to global changes in incentives to tax avoid.

On the energy & utilities result, we also consider the importance of the introduction of

European windfall taxes on energy providers in 2022. These taxes targeted excess profits in the wake of the Covid-19 pandemic and Russia's invasion of Ukraine. The schemes varied significantly by their tax type and rate, scope and exemptions, base, and date of implementation. Recent research also found that large firm stock prices had a stronger negative market reaction to the announcement of windfall taxes in the U.K. (Allee et al., 2024). Consequently, we recognize that Table 2's results for the energy & utilities industry may capture a combination of changes in international tax law and energy taxes, which collectively create a "perfect storm" for changes in tax avoidance behavior. For example, ERG S.p.A discussed energy levies alongside changes in international tax reform in its FY2023 annual report. Table 2 estimates for FY2023 are also large and correspond with the timing of the EU-wide "solidarity contribution" imposed that year. As an extreme robustness check, we drop all energy & utilities firms that we identify as directly subject to windfall taxes from our analysis (see Table B18).[35] We find that our headline results of large positive estimates hold across all specifications both in terms of magnitude and precision. In short, Table B18 provides supportive evidence that our results are not solely explained by firms that had windfall tax exposure. However, due to the complexity of the tax environment in FY2022 and FY2023, it remains difficult to fully separate the effects of international tax reform from energy levies.

On the banking result, we might be concerned that our DiD estimates are capturing effects associated with the Covid-19 pandemic which had a significant effect on the sector's profitability in FY2020 (European Banking Federation, 2024). This disruption is evident in Figure 5c's counterfactual plots, which saw lower EBT levels drive up cash ETRs for both small and large banks in FY2020. However, we find that even when we drop FY2020 from our sample, our DiD estimates remain large and negative, and highly statistically significant as evidenced in Table B19. If we were to interpret the estimates from this robustness check as a lower bound, we find that exempt banks saw reductions in their ETRs of at least 7 pp after 2021.

Finally, we check if statutory corporate tax rates changed over the period of interest. Figure C1a and Figure C1b plot the combined statutory corporate income tax rates in the five largest European economies and tax havens, respectively. Statutory tax rates remained unchanged in years 2022 and 2023, except for the United Kingdom which increased its statutory rate in 2023 by 6 pp. For the Europe sample (but not EU sample which excludes the UK), this

[35] We searched for the following terms across all firm reports, transcripts, and other documents in the S&P database: "levy" OR "windfall" OR "solidarity contribution" OR "levies" OR "supplementary charge". If we identified a firm as having paid any windfall tax in either FY2022 or FY2023, we drop them from the analysis.

statutory rate change could explain part of the increase in ETRs observed for the energy & utilities and real estate firms in FY2023, but not FY2022. There is also a robust literature on how large multinational corporations are less bound by domestic corporate tax rates in major European economies (Dowd et al., 2017; Bratta et al., 2024). Rather, MNEs are more sensitive to statutory tax rate changes in tax havens, which has seen little to no movement over the past 5 years. We therefore find little evidence that changes in domestic corporate tax rates might explain the changes in firm level ETRs after 2021.

6 Concluding remarks

By 2026, some 6,000 multinational firms with a presence in Europe will be compelled to publicly release previously private data on their tax affairs. As civil society gears up for what will be the single largest release of corporate tax data in history, many firms will suddenly be exposed to a high risk of public shaming, while others exempt from the Directive are likely to benefit from reduced media and public attention.

In this paper, we have studied anticipatory effects associated with PCbCR, documenting substantial heterogeneity across industries. Large firms in the energy and real estate sectors record substantially higher effective tax rates after the announcement of the EU Directives, and these effects are particularly strong for reputation-sensitive firms. We observe how these industries have been increasingly under the media spotlight in recent years, leaving them particularly exposed to the threat of public shaming. In contrast, we find that banks exempt from PCbCR are reporting significantly lower effective tax rates. These effects are weaker for the very largest banks in our sample and for those that are consumer facing, suggesting that banks with higher ex ante exposure to public shaming are more cautious in taking advantage of positive spillovers associated with the reporting exemption.

Our study strikes a cautionary tone about the effectiveness of public transparency initiatives for multinational corporations. While the threat of public shaming alone can motivate behavioral change, this effect appears conditional on a firm's prior exposure to public and media scrutiny. At the same time, when transparency reforms are not applied uniformly across industries, they risk generating unintended spillover effects for exempt firms. In particular, the PCbCR exemption appears to have incentivized tax avoidance in the banking sector. Transparency may therefore drive intended change mainly in image-conscious firms subject to report-

ing requirements, while others act counter to policy goals as scrutiny shifts away. As a result, the net effect of public reporting on tax revenue remains ambiguous.

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Part I
Supporting Information

A Summary Statistics

Table A1: Summary Statistics for Cash ETR by Industry

		Cash ETR						
Sample	Observations	Mean	Median	SD	Min	1st Qu.	3rd Qu.	Max
All Industries								
EU HQ (≥€50M)	4,905	24.8	22.2	17.7	0.0	12.8	32.4	99.7
EU HQ (full panel)	3,855	23.9	22.0	15.7	0.0	13.5	31.0	98.6
Europe HQ (≥€50M)	7,285	24.3	21.7	17.5	0.0	12.7	31.5	99.7
Europe HQ (full panel)	5,725	23.7	21.7	15.2	0.0	14.0	30.3	99.0
Banking (CRD IV)								
EU HQ (≥€50M)	423	21.8	18.6	15.5	0.2	10.8	29.3	94.5
EU HQ (full panel)	350	21.9	18.4	14.8	0.3	12.0	29.0	94.5
Europe HQ (≥€50M)	651	22.8	19.9	15.7	0.1	12.3	29.5	94.5
Europe HQ (full panel)	570	22.9	19.9	14.3	0.3	14.0	28.6	94.5
Other Finance								
EU HQ (≥€50M)	468	24.2	21.6	17.9	0.0	12.4	31.6	99.6
EU HQ (full panel)	385	21.9	20.0	14.1	0.0	12.6	29.2	77.9
Europe HQ (≥€50M)	873	23.5	21.2	16.4	0.0	13.2	30.8	99.6
Europe HQ (full panel)	830	22.0	20.5	12.8	0.0	13.6	28.3	87.7
Energy & Utilities								
EU HQ (≥€50M)	472	25.9	20.7	19.3	0.0	13.1	36.3	97.7
EU HQ (full panel)	335	25.7	21.0	17.0	0.4	15.2	33.6	97.7
Europe HQ (≥€50M)	700	25.2	20.1	20.5	0.0	9.9	35.8	99.7
Europe HQ (full panel)	420	24.1	19.9	17.1	0.1	12.9	32.3	97.7
Health								
EU HQ (≥€50M)	521	26.1	23.9	16.1	0.0	15.2	33.4	94.6
EU HQ (full panel)	465	26.0	23.5	14.6	0.0	16.4	33.4	87.3
Europe HQ (≥€50M)	696	25.4	22.7	16.4	0.0	14.4	32.5	99.7
Europe HQ (full panel)	600	25.5	22.7	14.6	0.0	15.7	32.2	99.0
Health - Pharma								
EU HQ (≥€50M)	222	23.3	21.5	14.2	0.0	13.3	31.1	86.4
EU HQ (full panel)	195	24.0	22.0	13.0	1.2	14.8	30.3	70.5
Europe HQ (≥€50M)	308	23.1	21.1	14.7	0.0	13.4	30.2	99.0
Europe HQ (full panel)	265	23.4	21.3	13.2	0.9	14.5	29.3	99.0
Industrials								
EU HQ (≥€50M)	1,922	27.6	25.2	17.4	0.0	16.3	34.3	99.7
EU HQ (full panel)	1,380	26.8	24.9	15.3	0.0	17.2	32.9	98.6
Europe HQ (≥€50M)	2,750	26.4	24.1	17.0	0.0	15.7	33.0	99.7
Europe HQ (full panel)	2,005	25.8	24.1	14.9	0.0	16.9	31.8	98.6
Materials								
EU HQ (≥€50M)	501	24.9	22.3	17.0	0.0	13.8	31.2	98.0
EU HQ (full panel)	345	24.4	23.0	14.7	0.1	14.8	30.6	94.6
Europe HQ (≥€50M)	847	25.3	22.0	17.7	0.0	13.9	31.8	99.3
Europe HQ (full panel)	585	25.4	23.2	15.4	0.1	15.6	31.3	94.6
Real Estate								
EU HQ (≥€50M)	448	13.6	8.1	16.9	0.0	2.7	17.5	98.3
EU HQ (full panel)	475	14.6	9.8	15.9	0.0	3.3	20.1	98.3
Europe HQ (≥€50M)	590	13.5	8.4	16.0	0.0	2.6	19.2	98.3
Europe HQ (full panel)	575	15.3	11.2	15.8	0.0	3.6	21.6	98.3

Note: Table A1 reports summary statistics for the cash effective tax rate (ETR), defined as current tax expense divided by pre-tax income. Summary statistics include the number of firm-year observations, mean ETR, median ETR, standard deviation, and quartile range variables for ETR, calculated over FY2019-23. Samples are either filtered by a lower revenue bound of €50 million or by complete ETR coverage for FY2019-23.

Table A2: EU and Europe Country Classifications

EU: Member States as of 2025	**Europe (wider Europe)**
Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, Serbia, Moldova, Belarus, Ukraine, Armenia, Azerbaijan, Georgia, United Kingdom, Switzerland, Liechtenstein, Norway, Iceland, Turkey.

Note: Table A2's left column lists current EU-27 Member States (as of 2025). The right column lists countries and territories associated with wider continental Europe.

Table A3: Average Revenue Growth Rate - Summary Statistics (EU Sample)

N	Mean	Median	SD	p10	p25	p75	p90
1,437	9.30	5.97	18.2	-7.79	-0.662	15.9	31.4

Notes: Table A3 reports the distribution of firm-level average growth rates in revenue, from FY2019-2021. The statistics are based on the sample of EU publicly listed firms with revenues above €50 million. We use the median value of 5.97% (rounded to 6%) to project revenues for FY2024 for each firm i based on their pre-treatment revenues.

Table A4: Number of Firms by Location and Industry

	Headquartered							
	EU		EU + UK		EU + CH		Europe	
	Total	≥€750M	Total	≥€750M	Total	≥€750M	Total	≥€750M
All firms								
All Industries	1,602	498	1,929	617	1,702	558	2,354	735
Energy & Utilities	152	78	189	96	156	80	240	113
Real Estate	267	19	307	22	277	20	346	23
Industrials	640	222	768	275	676	247	904	323
Materials	155	62	187	77	166	72	270	100
Health	183	65	208	74	203	75	242	85
Pharma	74	30	86	35	84	35	101	40
Other Finance	206	52	271	73	225	64	353	91
€50M lower bound								
All Industries	1,135	498	1,399	617	1,228	558	1,705	735
Energy & Utilities	120	78	154	96	123	80	194	113
Real Estate	134	19	157	22	141	20	177	23
Industrials	492	222	603	275	527	247	708	323
Materials	127	62	155	77	138	72	218	100
Health	134	65	152	74	154	75	181	85
Pharma	60	30	69	35	70	35	82	40
Other Finance	128	52	178	73	145	64	227	91
Full panel								
All Industries	677	312	834	379	747	362	1,003	454
Energy & Utilities	67	46	75	51	71	48	84	56
Real Estate	95	10	106	11	101	11	115	12
Industrials	276	144	347	176	302	165	401	210
Materials	69	32	89	44	76	39	117	55
Health	93	48	106	53	105	56	120	61
Pharma	39	23	46	27	46	28	53	32
Other Finance	77	32	111	44	92	43	166	60

Note: Table A4 reports the number of firms and number of treated firms underlying key specifications in Table 2. The ≥€750M columns report the number of firms treated under the revenue threshold condition.

Table A5: Banks: Number of Firms by Location and Threshold

	Headquartered							
	EU		EU + UK		EU + CH		Europe	
	Total	≥€750M	Total	≥€750M	Total	≥€750M	Total	≥€750M
€50M lower bound								
Banks	100	47	119	56	103	48	151	68
		≥€250M		≥€250M		≥€250M		≥€250M
		74		87		77		111
		≥€1B		≥€1B		≥€1B		≥€1B
		43		50		43		61
		≥€5B		≥€5B		≥€5B		≥€5B
		17		22		17		26

Note: Table A5 reports the number of banks and number of "treated" banks underlying key specifications in Table 4. The revenue threshold columns report the number of firms defined under treatment.

Table A6: Ratio Summary Statistics by Treatment Status

Variable	All	Control	Treated
Profitability Ratios			
Return on average assets (ROAA)	5.89	6.18	5.38
	(6.03)	(6.43)	(5.26)
EBITDA Margin	0.34	0.41	0.24
	(1.99)	(2.50)	(0.39)
Basic Earning Power (BEP)	0.09	0.09	0.08
	(0.09)	(0.09)	(0.07)
Leverage Ratios			
Debt-to-EBITDA	5.51	6.36	4.12
	(38.38)	(48.38)	(6.84)
Debt-to-Equity	0.97	0.89	1.10
	(2.12)	(2.45)	(1.41)
Debt-to-Asset	0.24	0.23	0.26
	(0.19)	(0.20)	(0.16)

Note: Table A6 reports the mean and standard deviation (in parentheses on the row below) of firm profitability and leverage ratios in FY2021. Results are shown separately for European headquartered firms in control (under €750M threshold) versus treatment (over €750M threshold). Profitability is generally lower in the pre-treatment period for treated firms, while leverage is more balanced.

Table A7: S&P Global Industry and Subindustry Classification

Industry	**Subindustry**
Financials	Banking; Insurance; Mortgage Banks and Brokers; Specialty Finance; Investment and Business Development Companies; Mortgage REIT; Asset Management; Investment Banks, Brokers and Capital Markets; Financial Exchanges; Credit Rating and Reporting; Financial Technology; Payments; Holding Companies, Patent Owners, and Trusts or Estates
Real Estate	Equity REIT; Real Estate Management and Development
Energy & Utilities	Oil, Gas and Coal; Utilities; Independent Power Producers and Energy Traders; Renewable Electricity
Materials	Chemicals; Metals and Mining; Construction Materials; Containers and Packaging: Metal, Glass, and Plastic; Packaging and Materials: Paper and Plastic; Forest Products; Paper Products
Health Care	Health Care Equipment; Health Care Supplies; Health Care Providers and Services; Health Care Technology; Pharmaceuticals, Biotechnology and Life Sciences
Health Care - Pharma	Pharmaceuticals, Biotechnology; Life sciences firms
Industrials	Capital Goods; Commercial and Professional Services; Transportation
Consumer	Retail; Producers; Hotels, Restaurants and Leisure; Education Services; Specialized Consumer Services
Tech/Media/Tele	Information Technology; Media and Entertainment; Telecommunication Services
Unclassified	—

Note: Table A7 displays industry and subindustry classifications as labeled by S&P Global.

Table A8: Financial Variable Definitions

Variable Name	**Acronym**	**Definition**
Total Assets	–	Universal assets owned by the company as of the date indicated, as carried on the balance sheet and defined under the indicated accounting principles
Total Equity	–	Universal equity as defined under the indicated accounting principles. Includes par value, paid in capital, retained earnings, and other adjustments to equity.
Total Debt	–	Universal aggregate unpaid principal balance owed under financial obligations to other parties, required to be paid by a specified date or on demand
Total Revenue	–	Universal revenue attributable to the ongoing operations
Cash Taxes	–	Cash flows towards income tax payments or refunds received by the company
Interest Expense	–	Universal interest on debt and other borrowings, on an incurred basis. Includes the amortization of discount or premiums and interest on capital leases.
EBT	–	Earnings of the company excluding all items of non-recurring nature before provision for income tax
Net Income	–	Universal net income after taxes, minority interest, and extraordinary and other after-tax items
Ratio Name		
Cash effective tax rate*	ETR	A firm's cash taxes divided by EBT
Return on average assets	ROAA	Return on average assets; net income as a percent of average assets. Profitability ratio that shows the ability of a firm's assets to generate net income
EBITDA Margin*	–	EBITDA divided by revenue. Measures how much operating profit a firm generates for every euro of revenue
Basic Earning Power*	BEP	A firm's EBIT divided by its total assets. Measures firm's operating profitability
Debt-to-EBITDA*	–	Measures a firm's ability to service its debt with EBITDA. The ratio reveals how many years of earnings it would take the firm to repay its debt
Debt-to-Equity	D/E	All debt, senior and subordinated, as a multiple of equity. Measures the proportion of debt a firm is using to finance its assets relative to the value of total shareholders' equity
Debt-to-Asset*	D/A	Measures the percentage of a firm's assets financed by debt

Note: Table A8 lists variable names, associated acronyms and definitions. Variables (and definitions) are pulled directly from S&P Global except for those marked with asterisck (*) which are constructed using S&P Global variables but not provided directly.

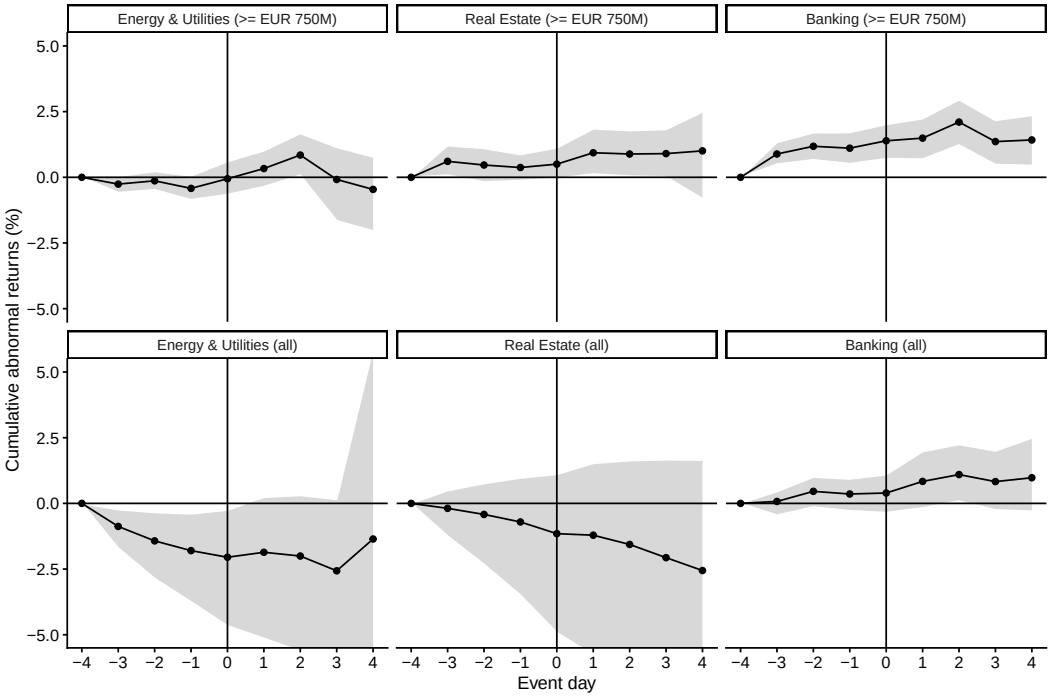
B Estimates and Robustness

Table B1: Benjamini–Hochberg Adjusted p-values by Industry and Sample

Industry	Dependent Variable: Effective Tax Rate (ETR)							
	EU (1)		EU + CH (2)		EU + UK (3)		Europe (4)	
	p_{raw}	p_{BH}	p_{raw}	p_{BH}	p_{raw}	p_{BH}	p_{raw}	p_{BH}
Energy & Utilities	0.002	0.010	0.004	0.013	0.000	0.003	0.000	0.003
Real Estate	0.031	0.073	0.027	0.063	0.028	0.099	0.020	0.069
Health	0.188	0.328	0.126	0.220	0.959	0.980	0.600	0.839
Pharma	0.003	0.010	0.001	0.004	0.980	0.980	0.838	0.839
Industrials	0.569	0.704	0.711	0.829	0.851	0.980	0.839	0.839
Materials	0.861	0.861	0.946	0.946	0.500	0.980	0.580	0.839
Other Finance	0.603	0.704	0.286	0.400	0.707	0.980	0.388	0.839

Note: Table B1 reports raw and Benjamini–Hochberg (1995) false discovery rate–adjusted p-values for industry-specific treatment effects of exposure to the EU Public Country-by-Country Reporting Directive (revenue threshold $\geq$ €750 million $\times$ Post2021). Adjustments are applied *within each column* across industries. Raw p-values are computed under specifications from Table 2.

Figure B1: PCbCR Event Study - Stock Movements by Revenue Threshold and Industry



Note: Figure B1 reports estimates of cumulative abnormal returns surrounding the PCbCR announcement for publicly listed firms headquartered in Europe. Estimates are based on market-model event study approach, which measures the stock valuation effects of a corporate event at the time of the event (i.e. a local average treatment effect) above and beyond changes in the MSCI Europe Index. The first row reports industry estimates for firms over €750 million in revenue and the second row reports industry estimates for all firms regardless of threshold. Estimates are based on an event study window of 5 days and 95% confidence intervals are calculated using bootstrap.

Table B2: Subject to PCbCR and Log Cash Taxes/Log EBT

	European HQ ≥€50M			
	EU	+ CH	+ UK	Europe
	(1)	(2)	(3)	(4)
Revenue (≥€750M) × Post2021				
PANEL A: Dependent Variable – Log Cash Taxes				
Energy & Utilities	0.463**	0.421*	0.325	0.264
	(0.232)	(0.225)	(0.212)	(0.198)
Real Estate	0.414*	0.410*	0.344*	0.333*
	(0.226)	(0.212)	(0.205)	(0.189)
Pharma	0.132	0.196	0.038	0.105
	(0.148)	(0.157)	(0.131)	(0.140)
PANEL B: Dependent Variable – Log EBT				
Energy & Utilities	0.025	0.034	-0.061	-0.095
	(0.148)	(0.142)	(0.153)	(0.148)
Real Estate	0.090	0.062	0.044	0.024
	(0.116)	(0.109)	(0.102)	(0.097)
Pharma	-0.263	-0.265*	-0.069	-0.093
	(0.171)	(0.153)	(0.182)	(0.167)
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	No	No	No	No

Note: Table B2 reports linear two-way fixed effects (fixest) estimates of the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator on logged cash taxes in Panel A and logged EBT in Panel B. Treated firms include those that surpass the revenue threshold in the pre-treatment period or are at risk of growing into the reporting requirements based on a pre-treatment average growth rate. We do not rely on the FEct estimator for log-transformed outcomes due to concerns about interpretability and structural assumptions imposed. The underlying samples across columns consist of publicly listed firms headquartered in European Union; European Union or Switzerland; European Union or the United Kingdom; or Europe more broadly. Columns (1)-(4) are lower bounded at €50 million. Period covered is FY2019-FY2023. Standard errors are clustered at the firm level. Significance: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table B3: Exempt from PCbCR and Log Cash Taxes/Log EBT

	European HQ ≥€50M			
	EU	+ CH	+ UK	Europe
	(1)	(2)	(3)	(4)
Revenue (≥€750M) × Post2021				
PANEL A: Dependent Variable – Log Cash Taxes				
Banks	-0.191	-0.218	-0.262*	-0.140
	(0.153)	(0.150)	(0.147)	(0.148)
PANEL B: Dependent Variable – Log EBT				
Banks	0.120	0.099	0.096	0.154*
	(0.090)	(0.089)	(0.082)	(0.083)
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	No	No	No	No

Note: Table B3 reports linear two-way fixed effects (fixest) estimates of the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator on logged cash taxes in Panel A and logged EBT in Panel B. Treated firms include banks that were made exempt from PCbCR upon announcement in 2021. We do not rely on the FEct estimator for log-transformed outcomes due to concerns about interpretability and structural assumptions imposed. The underlying samples across columns consist of publicly listed firms headquartered in European Union; European Union or Switzerland; European Union or the United Kingdom; or Europe more broadly. Columns (1)-(4) are lower bounded at €50 million. Period covered is FY2019-FY2023. Standard errors are clustered at the firm level. Significance: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table B4: Exempt from PCbCR - By B2B vs. B2C

	Dependent Variable: Effective Tax Rate (ETR)			
	EU + UK Headquartered		Europe Headquartered	
	B2B	B2C	B2B	B2C
	(1)	(2)	(3)	(4)
Revenue ≥€750M × Post2021				
Banks	-14.73***	-7.10***	-13.78***	-4.40*
	(4.53)	(2.56)	(3.95)	(2.48)
Other finance	0.15	2.23	0.55	2.51
	(2.33)	(4.09)	(2.14)	(2.92)
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	Yes	Yes	Yes	Yes

Note: Table B4 reports counterfactual estimates of the treatment effect on the ETR, obtained using the FEct estimator with a two-way fixed-effects specification Liu et al. (2024). The reported average ATT estimates correspond to the coefficients on the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator. Samples are split by B2B/B2C classification. The underlying sample for Columns (1)-(2) and Columns (3)-(4) consist of publicly listed firms headquartered in European Union and Europe, respectively. We do not lower bound our samples to preserve sample size. Period covered is FY2019-FY2023. Standard errors in parentheses, clustered at the firm level, computed using bootstrap ($n_{\text{boots}} = 1000$). Significance levels: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

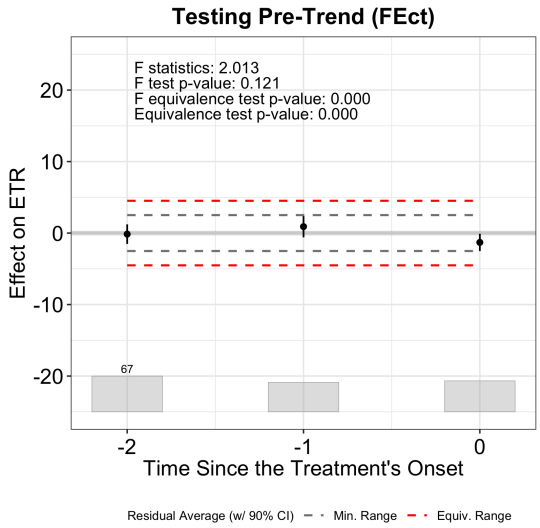
Table B5: Exempt from PCbCR - Stock Price Increase

	Dependent Variable: Effective Tax Rate (ETR)			
	European HQ			
	EU	+ CH	+ UK	Europe
	(1)	(2)	(3)	(4)
Stock Increase × *Post2021*				
PANEL A				
Banking Sector				
Avg Estimate	-4.23	-4.30	-4.27	-4.19
	(3.42)	(3.19)	(2.96)	(2.67)
FY2022	-1.59	-1.83	-2.03	-2.40
	(3.96)	(3.70)	(3.41)	(3.00)
FY2023	-7.07*	-7.04*	-6.64*	-6.12**
	(3.93)	(3.62)	(3.40)	(3.09)
PANEL B				
Banking Sector (B2B only)				
Avg Estimate	-9.39	-8.31	-8.08	-8.66*
	(7.73)	(6.99)	(6.26)	(4.93)
FY2022	-1.81	-2.29	-0.93	-5.22
	(7.34)	(6.79)	(5.57)	(5.24)
FY2023	-16.97	-15.32	-15.23*	-12.59*
	(10.93)	(10.03)	(9.03)	(6.81)
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes
Fect Estimator	Yes	Yes	Yes	Yes

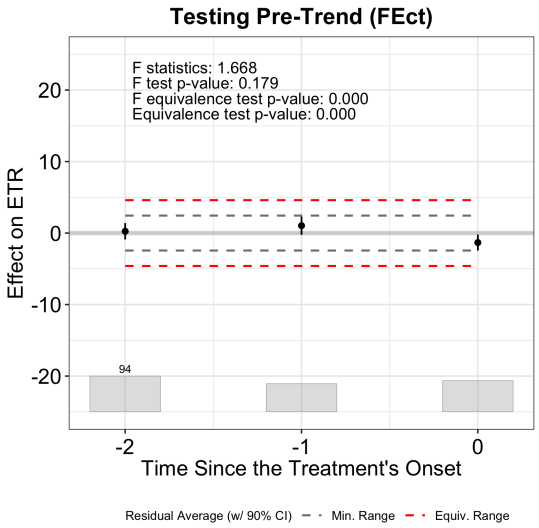
Note: Table B5 reports average and period-specific "treatment" effects on ETR of a positive stock price reaction around a 5-day window of the EU Public Country-by-Country Reporting announcement. Samples are specific to the banking sector overall for Panel A and business-to-business banks for Panel B. We rely on the FEct estimator with a two-way fixed-effects specification (Liu et al., 2024). The reported point estimates correspond to the coefficients on the interaction between a positive stock price increase and the post-2021 indicator. Each entry is a separate regression. Samples consist of publicly listed firms headquartered in (1) EU; (2) EU or Switzerland; (3) EU or UK; or (4) Europe. Period covered is FY2019-FY2023. Standard errors clustered at the firm level and obtained via bootstrap ($n_{\text{boots}} = 1000$). Significance levels: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Figure B2: Subject to PCbCR - Leave-one-out Pre-Trend Test

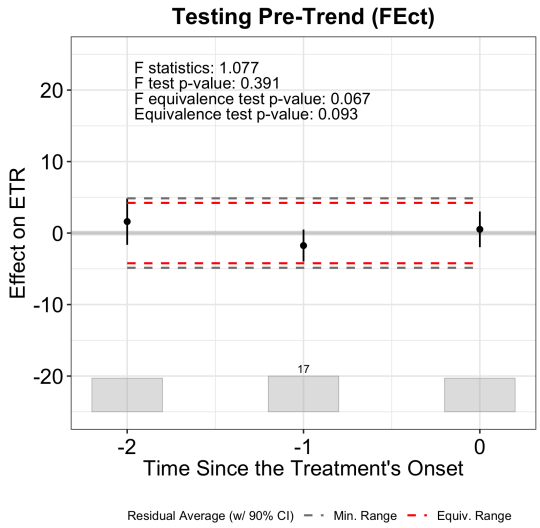
(a) Energy & Utilities (EU HQ)



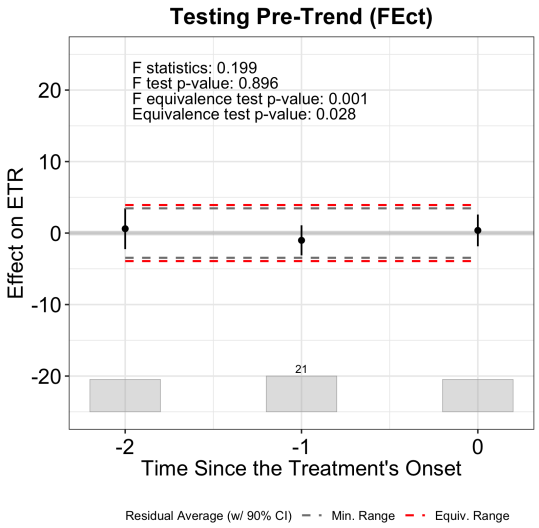
(b) Energy & Utilities (Europe HQ)



(c) Real Estate (EU HQ)



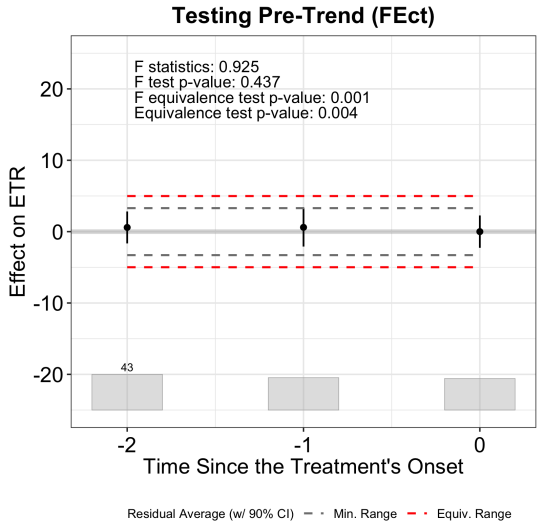
(d) Real Estate (Europe HQ)



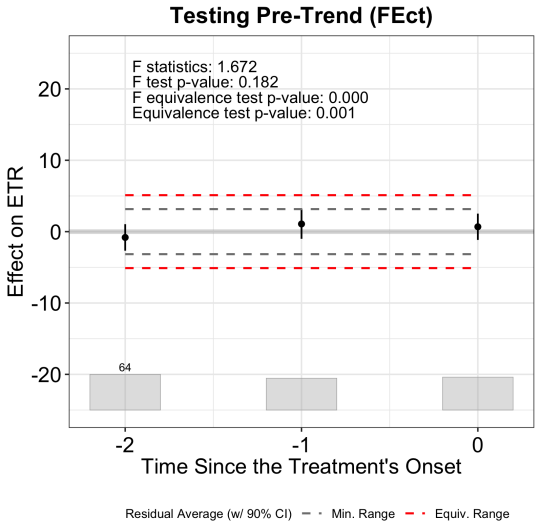
Note: Figure B2a, Figure B2b, Figure B2c and Figure B2d present results from Liu, Wang and Xu (2024)'s leave-one-out pre-trend test for the Energy & Utilities and Real Estate specifications in Table 2's Columns (1) and (4). The F test reports a goodness-of-fit test where a larger p-value suggests a better pre-trend fitting. The equivalence test checks whether the 90% confidence intervals for estimated ATTs in the pretreatment periods exceed an equivalence range (0.36 times the standard deviation of the outcome variable — ETR – after "two-way fixed effects are partialed out"). The smaller the equivalence p-value, the better the pre-trend fitting. All plots report a large F-test p-value and small equivalence test p-value suggesting a lack of evidence of pre-trends.

Figure B3: Exempt from PCbCR - Leave-one-out Pre-Trend Test

(a) Banking (EU HQ)



(b) Banking (Europe HQ)



Note: Figure B3a and Figure B3b present results from Liu, Wang and Xu (2024)'s leave-one-out pre-trend test for the Banking specifications (€750 million threshold) in Table 4's Columns (1) and (4). The F test reports a goodness-of-fit test where a larger p-value suggests a better pre-trend fitting. The equivalence test checks whether the 90% confidence intervals for estimated ATTs in the pretreatment periods exceed an equivalence range (0.36 times the standard deviation of the outcome variable — ETR – after "two-way fixed effects are partialed out"). The smaller the equivalence p-value, the better the pre-trend fitting. All plots report a large F-test p-value and small equivalence test p-value suggesting a lack of evidence of pre-trends.

Table B6: Subject to PCbCR - Alternative Specifications

	Dependent Variable: Effective Tax Rate (ETR)							
	European HQ (no lower bound)				European HQ (complete panel and ≥€50M))			
	EU (1)	+ CH (2)	+ UK (3)	Europe (4)	EU (5)	+ CH (6)	+ UK (7)	Europe (8)
Revenue ≥€750M × Post2021								
Energy & Utilities	7.25***	6.56**	7.39***	7.22***	7.91***	6.81**	6.74**	6.24**
	(2.81)	(2.67)	(2.47)	(2.45)	(2.95)	(2.71)	(2.74)	(2.55)
Real Estate	6.60*	6.24*	6.59**	6.37**	10.82**	9.97**	11.00**	10.07**
	(3.48)	(3.18)	(3.04)	(2.87)	(4.94)	(4.40)	(4.33)	(4.14)
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FEct Estimator	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Table B6 reports estimates from alternative specifications to Table 2. The reported average ATT estimates are obtained using the FEct estimator with a two-way fixed-effects specification (Liu et al., 2024) and correspond to the coefficients on the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator. Samples consist of publicly listed firms headquartered in (1) EU; (2) EU or Switzerland; (3) EU or UK; or (4) Europe. Columns (1)-(4) are on the overall sample of firms with no lower bound on revenue and Columns (5)-(8) mirror the specifications in Table 2 except only firms with full panel coverage (i.e., complete ETR entries) are kept. Period covered is FY2019-FY2023. Standard errors in parentheses, clustered at the firm level, computed via bootstrap ($n_{\text{boots}} = 1000$). Significance levels: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table B7: Exempt from PCbCR - Alternative Specifications

	Dependent Variable: Effective Tax Rate (ETR)							
	European HQ (no lower bound)				European HQ (complete panel and ≥€50M))			
	EU (1)	+ CH (2)	+ UK (3)	Europe (4)	EU (5)	+ CH (6)	+ UK (7)	Europe (8)
Banking Sector								
Revenue ≥€250M × Post2021	-5.63*	-5.00	-5.35**	-2.97	-4.25	-4.14	-4.68	-4.30
	(2.98)	(3.05)	(2.58)	(2.51)	(3.84)	(3.79)	(3.27)	(2.71)
Revenue ≥€750M × Post2021	-9.43***	-9.02***	-9.09***	-6.97***	-8.70***	-8.54***	-8.87***	-7.34***
	(2.59)	(2.47)	(2.23)	(2.25)	(3.04)	(3.20)	(2.72)	(2.68)
Revenue ≥€1B × Post2021	-7.78***	-7.52***	-8.21***	-6.34***	-7.63**	-7.55**	-8.66***	-7.15***
	(2.48)	(2.53)	(2.18)	(2.19)	(3.23)	(3.09)	(2.75)	(2.61)
Revenue ≥€5B × Post2021	-5.35*	-5.30*	-5.71**	-5.57***	-5.11	-5.16	-6.37**	-6.57**
	(2.92)	(2.76)	(2.40)	(2.15)	(3.49)	(3.42)	(3.05)	(2.71)
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FEct Estimator	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Table B7 reports estimates from alternative specifications to Table 4. The reported average ATT estimates are obtained using the FEct estimator with a two-way fixed-effects specification (Liu et al., 2024) and correspond to the coefficients on the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator. Samples consist of publicly listed firms headquartered in (1) EU; (2) EU or Switzerland; (3) EU or UK; or (4) Europe. Columns (1)-(4) are on the overall sample of firms with no lower bound on revenue and Columns (5)-(8) mirror the specifications in Table 4 except only firms with full panel coverage (i.e., complete ETR entries) are kept. Period covered is FY2019-FY2023. Standard errors in parentheses, clustered at the firm level, computed via bootstrap ($n_{\text{boots}} = 1000$). Significance levels: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table B8: Subject to PCbCR - Linear TWFE

	Dependent Variable: Effective Tax Rate (ETR)			
	European HQ (≥€50M)			
	EU (1)	+ CH (2)	+ UK (3)	Europe (4)
Revenue ≥€750M × Post2021				
Energy & Utilities	9.54***	8.70***	9.39***	8.89***
	(3.09)	(3.01)	(2.68)	(2.55)
Real Estate	7.70**	7.31**	7.19**	6.81**
	(3.67)	(3.48)	(3.24)	(3.05)
Firm & Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	No	No	No	No

Note: Table B8 reports specifications from Table 2 using linear two-way fixed effects model (lm_robust), rather than the FEct estimator Liu et al. (2024). The reported average ATT estimates correspond to the coefficients on the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator. Each entry is a separate regression. Samples consist of publicly listed firms headquartered in (1) EU; (2) EU or Switzerland; (3) EU or UK; or (4) Europe. Columns (1)-(4) have a lower bound on revenue of €50 million. Period covered is FY2019-FY2023. Standard errors are in parentheses, clustered at the firm level, and heteroscedasticity-robust. Significance levels: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table B9: Exempt from PCbCR - Linear TWFE

	Dependent Variable: Effective Tax Rate (ETR)			
	European HQ (≥€50M)			
	EU (1)	+ CH (2)	+ UK (3)	Europe (4)
Banking Sector				
Revenue ≥€250M × Post2021	-3.760	-4.764	-3.575	-1.492
	(3.358)	(2.876)	(3.329)	(3.135)
Revenue ≥€750M × Post2021	-8.814***	-9.020***	-8.695***	-6.787***
	(2.789)	(2.414)	(2.694)	(2.436)
Revenue ≥€1B × Post2021	-7.000**	-8.021***	-7.029**	-6.082**
	(2.793)	(2.390)	(2.687)	(2.425)
Revenue ≥€5B × Post2021	-4.359	-5.164**	-4.499	-5.092**
	(2.964)	(2.491)	(2.925)	(2.353)
Firm & Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	No	No	No	No

Note: Table B9 reports specifications from Table 4 using linear two-way fixed effects model (lm_robust), rather than the FEct estimator Liu et al. (2024). The reported average ATT estimates correspond to the coefficients on the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator. Each entry is a separate regression. Samples consist of publicly listed firms headquartered in (1) EU; (2) EU or Switzerland; (3) EU or UK; or (4) Europe. Columns (1)-(4) have a lower bound on revenue of €50 million and Columns (5)-(8) also filter by full panel coverage (i.e., complete ETR entries). Period covered is FY2019-FY2023. Standard errors are in parentheses, clustered at the firm level, and heteroscedasticity-robust. Significance levels: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table B10: Subject to PCbCR - Firm-Level Cluster Wild Bootstrap Results

	EU	EU + UK	EU + CH	Europe
Real Estate				
$\hat{\beta}$	7.70	7.19	7.31	6.81
(Bootstrap S.E.)	(3.39)	(3.07)	(3.32)	(2.91)
Energy & Utilities				
$\hat{\beta}$	9.53	9.39	8.70	8.89
(Bootstrap S.E.)	(3.19)	(2.68)	(2.99)	(2.50)

Notes: Table B10 reports treatment effect estimates from a linear TWFE model, where coefficients correspond to the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator. Standard errors are computed using a firm-level cluster wild bootstrap with 1,000 replications.

Table B11: Exempt from PCbCR - Firm-Level Cluster Wild Bootstrap Results

	EU	EU + UK	EU + CH	Europe
Banking Sector				
$\hat{\beta}$	-8.81	-9.02	-8.70	-6.79
(Bootstrap S.E.)	(2.77)	(2.40)	(2.59)	(2.40)

Notes: Table B10 reports treatment effect estimates from a linear TWFE model, where coefficients correspond to the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator. Standard errors are computed using a firm-level cluster wild bootstrap with 1,000 replications.

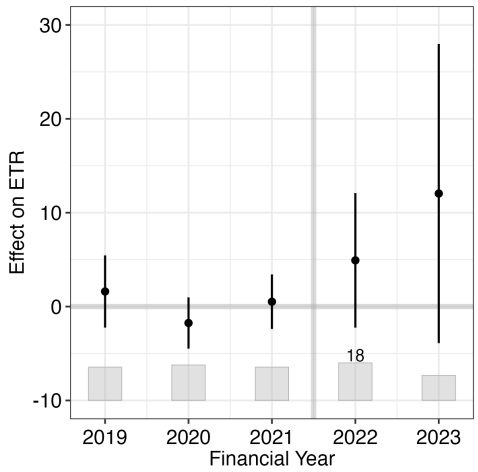
Table B12: Subject to PCbCR - Strict Threshold Definition

	Dependent Variable: Effective Tax Rate (ETR)			
	European HQ (≥€50M)			
	EU	+ CH	+ UK	Europe
	(1)	(2)	(3)	(4)
Revenue ≥€750M × Post2021				
Energy & Utilities	8.34***	7.60**	8.82***	8.62***
	(3.09)	(2.99)	(2.58)	(2.58)
Real Estate	5.63	5.33	5.43	5.15*
	(3.82)	(3.50)	(3.42)	(3.01)
Health (Pharma only)	8.63***	8.35***	-0.08	0.64
	(3.06)	(2.57)	(4.61)	(4.05)
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	Yes	Yes	Yes	Yes

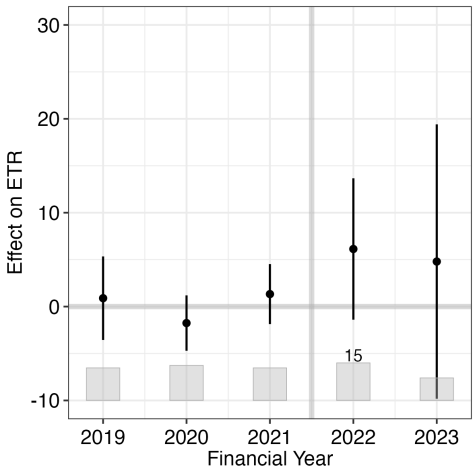
Note: Table B12 reports counterfactual estimates of the treatment effect on the effective tax rate (ETR), obtained using the FEct estimator with a two-way fixed-effects specification (Liu et al., 2024). The reported average ATT estimates correspond to the coefficients on the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator. We do not include firms projected to meet the revenue threshold into the definition of treatment. Samples are split by industry. Each entry is a separate regression. Samples consist of publicly listed firms headquartered in (1) EU; (2) EU or Switzerland; (3) EU or UK; or (4) Europe. All samples impose a lower revenue bound of €50 million. Period covered is FY2019-FY2023. Standard errors in parentheses, clustered at the firm level, computed via bootstrap ($n_{\text{boots}} = 1000$). Significance levels: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Figure B4: Real Estate - ATT Event Study by Treatment Definition

(a) Strict Threshold + Projected to Grow



(b) Strict Threshold Only



Note: Figure B4a and Figure B4b plot two-way fixed effects counterfactual (FEct) dynamic ATT estimates of changes in effective tax rates (ETR) for publicly listed real estate firms headquartered in the EU, pulling from Table 2 and Table B12, respectively. Confidence intervals are based on non-parametric bootstrap standard errors. Bar plots indicate the number of "treated" firms in each year.

Table B13: Subject to PCbCR - Strict Threshold Definition (Full Panel Coverage)

	Dependent Variable: Effective Tax Rate (ETR)			
	European HQ (complete panel and ≥€50M)			
	EU (1)	+ CH (2)	+ UK (3)	Europe (4)
Revenue ≥€750M × Post2021				
Energy & Utilities	7.62***	6.57**	6.49**	6.04**
	(2.95)	(2.88)	(2.61)	(2.50)
Real Estate	8.81*†	7.90†	9.19*†	8.26*†
	(5.30)	(4.91)	(4.72)	(4.24)
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	Yes	Yes	Yes	Yes

Note: Table B13 reports counterfactual estimates of the treatment effect on the ETR, obtained using the FEct estimator with a two-way fixed-effects specification (Liu et al., 2024). The reported average ATT estimates correspond to the coefficients on the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator. Table B13 presents results only for firms with complete coverage of ETRs over FY2019-FY2023 period based on specifications in Table B12. Each entry is a separate regression. The underlying samples across Columns (1)-(4) consist of publicly listed firms headquartered in (1) European Union; (2) European Union or Switzerland; (3) European Union or the United Kingdom; or (4) Europe more broadly. All samples have a lower revenue bound of €50 million. Standard errors in parentheses, clustered at the firm level, computed using bootstrap ($n_{\text{boots}} = 1000$). Significance levels: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. † marks average ATT estimates where number of treated (or control) units are below 10 firms.

Table B14: Subject to PCbCR - Alternative Control Group (EU + US firms)

	Dependent Variable: Effective Tax Rate (ETR)	
	European Union and United States Firms	
	≥€50M (1)	complete panel and ≥€50M (2)
EU HQ × Revenue (≥€750M) × Post2021		
Energy & Utilities	4.75**	5.48**
	(2.24)	(2.47)
Real Estate	6.58**	10.26**
	(3.33)	(4.55)
Firm and Year Fixed Effects	Yes	Yes
FEct Estimator	Yes	Yes

Note: Table B14 reports counterfactual estimates of the treatment effect on the ETR, obtained using the FEct estimator with a two-way fixed-effects specification (Liu et al., 2024). The reported average ATT estimates correspond to the coefficients on a three-way interaction between an EU headquarters, a revenue threshold of €750 million, and the post-2021 indicator. The underlying sample consists of all publicly listed firms in either the European Union or the United States of America, although we exclude American firms that have a subsidiary in the EU. Each entry is a separate regression. Column (1) imposes a lower revenue bound of €50 million and Column (2) further requires complete panel coverage (i.e., complete ETR entries) across full period, where the period covered is FY2019-FY2023. Standard errors in parentheses, clustered at the firm level, computed via bootstrap ($n_{\text{boots}} = 1000$). Significance levels: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table B15: Energy & Utilities and Tax Havens

	Dependent Variable: Effective Tax Rate (ETR)			
	EU Headquartered		Europe Headquartered	
	Tax Haven	No Tax Haven	Tax Haven	No Tax Haven
	(1)	(2)	(3)	(4)
Revenue ≥€750M × Post2021				
Energy & Utilities	15.65***	7.20*	14.56***	6.58*
	(4.35)	(3.94)	(4.13)	(4.00)
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	Yes	Yes	Yes	Yes

Note: Table B15 reports counterfactual estimates of the treatment effect on the ETR, obtained using the FEct estimator with a two-way fixed-effects specification (Liu et al., 2024). The reported average ATT estimates correspond to the coefficients on the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator. Each entry is a separate regression. Samples are split by Tax Haven subsidiary status, coded as 1 if a firm has at least one tax haven subsidiary (0 otherwise). We rely on Tax Justice Network's Corporate Tax Haven Index to classify tax havens. Samples consist of publicly listed firms headquartered in (1) EU or (2) Europe. The broader sample consists of publicly listed firms headquartered in Europe. We do not lower bound our samples to preserve sample size. Period covered is FY2019-FY2023. Standard errors are clustered at the firm level. Significance: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table B16: Subject to PCbCR - By Profitability

	Dependent Variable: Effective Tax Rate (ETR)			
	EU Headquartered		Europe Headquartered	
	ROA (High)	ROA (Low)	ROA (High)	ROA (Low)
	(1)	(2)	(3)	(4)
*Revenue (≥€750M) * Post2021*				
Energy & Utilities	10.24**	8.23**	14.75***	4.81*
	(4.62)	(3.68)	(4.16)	(2.91)
Real Estate	7.66*	5.64	7.26*	5.30
	(4.57)	(4.51)	(3.94)	(4.16)
Firm & Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	Yes	Yes	Yes	Yes

Note: Table B16 reports counterfactual estimates of the treatment effect on the ETR, obtained using the FEct estimator with a two-way fixed-effects specification (Liu et al., 2024). The reported average ATT estimates correspond to the coefficients on the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator. Each entry is a separate regression. Samples are split by firm ex ante profitability (above or below industry median ROA for FY2021). Estimates are presented across regional and industry-specific samples, using observations from FY2019 through FY2023. Samples consist of publicly listed firms headquartered in (1) EU or (2) Europe. We do not lower bound our samples to preserve sample size. Period covered is FY2019-FY2023. Standard errors are clustered at the firm level. Significance: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table B17: Exempt from PCbCR - By Profitability

	Dependent Variable: Effective Tax Rate (ETR)			
	EU Headquartered		Europe Headquartered	
	ROA (High) (1)	ROA (Low) (2)	ROA (High) (3)	ROA (Low) (4)
*Revenue (≥€750M) * Post2021*				
Banks	-9.08*†	-5.89**	-7.75**	-3.26
	(4.93)	(2.81)	(3.66)	(2.91)
Firm & Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	Yes	Yes	Yes	Yes

Note: Table B17 reports counterfactual estimates of the treatment effect on the ETR, obtained using the FEct estimator with a two-way fixed-effects specification (Liu et al., 2024). The reported average ATT estimates correspond to the coefficients on the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator. Samples are split by firm ex ante profitability (above or below industry median ROA for FY2021). Estimates are presented across regional and industry-specific samples, using observations from FY2019 through FY2023. Samples consist of publicly listed firms headquartered in (1) EU or (2) Europe. We do not lower bound our samples to preserve sample size. Period covered is FY2019-FY2023. Standard errors are clustered at the firm level. Significance: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table B18: Energy & Utilities - Excluding Windfall Firms

	Dependent Variable: Effective Tax Rate (ETR)			
	European HQ (≥€50M)			
	EU (1)	+ CH (2)	+ UK (3)	Europe (4)
Revenue (≥€750M) × Post2021				
Energy & Utilities	8.77**	8.38**	9.85***	9.35***
	(3.46)	(3.39)	(3.03)	(3.06)
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	Yes	Yes	Yes	Yes

Note: Table B18 reports counterfactual estimates of the treatment effect on the ETR, obtained using the FEct estimator with a two-way fixed-effects specification (Liu et al., 2024). We run the same estimation strategy as in Table 2 except the energy & utilities sample now excludes firms identified as paying a windfall tax in FY2022 and/or FY2023. Standard errors are clustered at the firm level. Significance: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table B19: Banking Sector - Excluding FY2020

	Dependent Variable: Effective Tax Rate (ETR)			
	European HQ (≥€50M)			
	EU	+ CH	+ UK	Europe
	(1)	(2)	(3)	(4)
Revenue (≥€750M) × Post2021				
Banks	-7.58***	-7.51***	-7.12***	-5.44**
	(2.80)	(2.64)	(2.38)	(2.46)
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes
FEct Estimator	Yes	Yes	Yes	Yes

Note: Table B19 reports counterfactual estimates of the treatment effect on the ETR, obtained using the FEct estimator with a two-way fixed-effects specification (Liu et al., 2024). The reported average ATT estimates correspond to the coefficients on the interaction between the EU Directive Public Country-by-Country revenue threshold of €750 million and the post-2021 indicator. Each entry is a separate regression. The estimates are specific to the banking sector and drop FY2020 from the pre-period, so the observations cover FY2019, FY2021, FY2022, and FY2023. Samples consist of publicly listed firms headquartered in (1) EU; (2) EU or Switzerland; (3) EU or UK; or (4) Europe. Standard errors in parentheses, clustered at the firm level, computed using bootstrap ($n_{\text{boots}} = 1000$). Significance levels: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

C Additional Figures

Table C1: No. Media Articles, on Public Country-by-Country Reporting, Monthly for 2021

Month (2021)	No. Articles
Jan	12
Feb	49
Mar	36
Apr	5
May	10
Jun	62
Jul	3
Aug	2
Sep	13
Oct	10
Nov	20
Dec	8

Note: Table C1 lists the number of articles mentioning either "public country by country" or "public country-by-country" by month for 2021. Articles are sourced from the Nexis Uni database and cover all major media outlets in Europe.

Table C2: Classifying business-to-business (B2B) vs. business-to-consumer (B2C)

Firm classifications into business-to-business (B2B) or business-to-consumer (B2C) were generated using the Meta Llama 3 70B model. The model was run locally on an Apple MacBook Pro (M3 Max, 96 GB RAM) and implemented in Python. Business descriptions were first obtained from S&P, cleaned to remove rows with missing descriptions, and stored in a standardized CSV file for reproducibility. Each business description was then passed to the model as part of a structured prompt that included explicit task instructions and few-shot examples of B2B and B2C classifications. The model output was constrained to short categorical labels through the use of stop sequences and token limits. Classification was executed in batches of 100 descriptions at a time, with results written to disk after each batch to allow the task to be paused and resumed without reprocessing completed rows. This setup ensured that a dataset with roughly 10,000 descriptions could be processed efficiently while maintaining transparency and reproducibility of the classification procedure. On this hardware, full classification of the approximately 10,000 firms required roughly 20 hours of computation time.

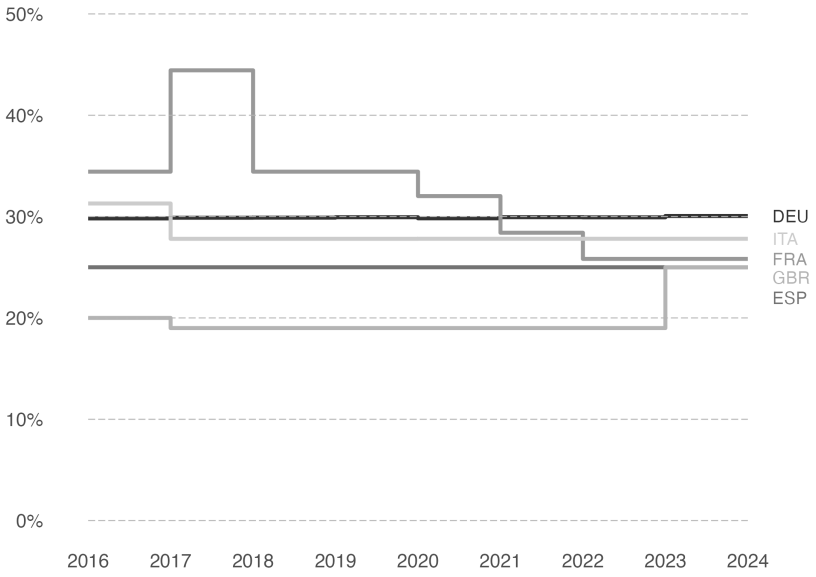
The classification prompt was as follows:

```
Classify the following companies as either B2B or B2C based on its
description.  A B2B company sells primarily to other businesses.  A
B2C company sells primarily to consumers.  If a company has any B2C
business, classify it as B2C. Here are some examples to help you
classify:
```

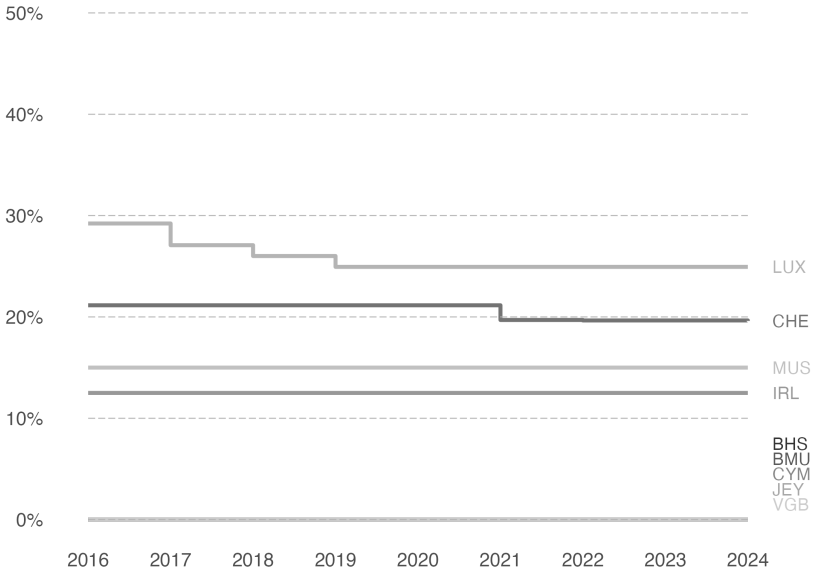
[Note: script then provides 24 examples of classifications randomly selected from the broader corpus of firms]

Figure C1: Combined Statutory Corporate Tax Rates, 2016-2024

(a) Top 5 European Economies



(b) Tax Havens



Note: Figure C1 data on combined (central and sub-central government) statutory corporate income tax rates sourced from OECD Tax Database table "Corporate income tax statutory and targeted small business rates". Labels correspond with country Alpha-3 ISO code. For European Economies: France (FRA); Germany (DEU); Italy (ITA); Spain (ESP); United Kingdom (GBR). For Tax Havens: Bahamas (BHS); Bermuda (BMU); British Virgin Islands (VGB); Cayman Islands (CYM); Ireland (IRL); Jersey (JEY); Luxembourg (LUX); Mauritius (MUS); Switzerland (CHE).

Table C3: Media Analysis: Sectors and Corresponding Subsectors

Sector	**Subsector Labels**
Banking & Finance (Banks)	Bank Deposit Insurance; Bank Failures; Banking Institutions & Systems; Banking, Lending & Credit Services.
Energy & Utilities (Energy)	Alternative & Renewable Energy; Coal Industry; Energy & Environment; Energy & Utilities Equipment; Energy & Utility Construction; Energy & Utility Regulation & Policy; Energy & Utility Sector Performance; Energy & Utility Trade; Fossil Fuels; Nuclear Energy; Offshore Energy; Oil & Gas Industry; Smart Energy; Utilities Industry.
Industrials	Construction Materials Manufacturing; Defense Manufacturing; Electrical Appliance & Equipment Manufacturing; Fabricated Metal Product Manufacturing; Industrial Robots; Iron & Steel Industry; Machine Tools; Machinery & Equipment Manufacturing; Manufacturing Facilities; Nonmetallic Mineral Product Manufacturing; Primary Metal Manufacturing; Transportation Equipment Manufacturing.
Materials	Chemicals Manufacturing; Construction Materials Manufacturing; Fabricated Metal Product Manufacturing; Iron & Steel Industry; Nonmetallic Mineral Product Manufacturing; Paper Manufacturing; Plastic & Rubber Products Manufacturing; Primary Metal Manufacturing; Wood Products Manufacturing.
Pharmaceuticals & Biotechnology (Pharma)	Bioelectronic Medicine; Biotechnology Industry; Counterfeit Drugs; Drug Safety, Efficacy & Availability; Pharmaceutical Chemistry; Pharmaceuticals & Biotechnology Patents; Pharmaceuticals & Biotechnology Regulation & Policy; Pharmaceutical Agents & Products; Pharmaceuticals Industry; Pharmacists; Polypharmacy.
Real Estate	Abandoned Real Estate; Blighted Properties; Building & Housing Inspections; Capital Improvements; Commercial & Residential Property; Foreign Owned Real Estate; High Rise Buildings; Mortgage Banking & Finance; Property Escrow & Title; Property Management; Real Estate Agents; Real Estate Appraisals; Real Estate Auctions; Real Estate Bubble; Real Estate Contracts; Real Estate Development; Real Estate Fraud; Real Estate Insurance; Real Estate Investing; Real Estate Listing Services; Real Estate Overview.

Note: Table C3 lists the industry and subindustry labels associated with the industries plotted in Figure 2. Nexis Uni attaches these labels to articles with any mention of the industry or subindustry in question.