Could Country-by-Country Reporting Increase Profit Shifting?*

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Abstract

Since 2016, Country-by-Country reporting has provided tax authorities with detailed information about multinationals' worldwide activities. We model Country-by-Country reporting as increasing tax planning and tax audit costs for profit-shifting multinationals, where the latter costs depend on the share of profits in tax havens. Then, Country-by-Country reporting makes shifting profits from a high-tax country to a tax haven more attractive compared to shifting from a low-tax country. Thus, while total profits shifted to the haven decrease, profit shifting from high-tax affiliates may *increase* relative to the situation without Country-by-Country reporting. We confirm these changes in profit-shifting patterns using a difference-in-differences design.

Keywords: Country-by-Country-Reporting, Profit Shifting, Anti-Tax-Avoidance Rules

JEL Classification: H25, H26, F23

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1 Introduction

International profit shifting by multinational corporations (MNCs) has long challenged tax authorities (e.g., Beer et al., 2024; Merlo and Wamser, 2024), in part because it was difficult to detect with the available information. Country-by-Country (CbC) reporting substantially narrowed this information gap. Before CbC reporting, tax authorities typically observed only the local affiliate, its reported profits, and its transfer prices. If an affiliate was weakly profitable, authorities could not tell whether this reflected low real profitability or profit shifting within the group, because they lacked information on whether the MNC was more profitable elsewhere—particularly in tax havens. CbC reporting fundamentally changed this information environment. For each jurisdiction, large MNCs are now required to report pre-tax profits, taxes paid, revenues, employment, and tangible assets. This information is exchanged among tax authorities, so that national tax authorities now have, for the first time, a group-wide overview of the geographic distribution of profits and real activity, allowing them to directly observe the profitability of tax haven entities and to assess local outcomes within the full global context (OECD, 2017). While the OECD presented CbC reporting as a major breakthrough originally, its effect on tax payments of affected MNCs turned out to be modest at best (e.g., Joshi, 2020; Overesch and Wolff, 2021; Hugger, 2025).

In this paper, we investigate how CbC reporting changes profit shifting patterns. We first develop a theoretical model, which confirms that CbC reporting reduces profit shifting overall. Our central contribution is to show that CbC reporting changes where profits are shifted from: While profit shifting from low-tax affiliates declines, profit shifting from high-tax affiliates may increase relative to a world without CbC reporting. We confirm this pattern using affiliate-level data in a difference-in-differences design. In particular, profitability in tax havens declines, indicating a reduction in total profit shifting, and profitability of low-tax affiliates rises, consistent with reduced outward shifting. Strikingly, profitability of high-tax affiliates decreases, consistent with increased outward profit shifting. According to our back-of-the-envelope calculations, Germany (as a typical high-tax country) loses about 5.3% of its corporate income tax revenue.

Intuitively, this pattern arises because CbC reporting changes how tax authorities target tax audits. Tax authorities now target firms with high total profits in tax havens, but CbC reports do not reveal from which country these profits originate. As a result, profit shifting decisions across affiliates become interlinked: Shifting more profits from one affiliate raises the expected audit costs for the entire group. Then, firms optimally concentrate remaining profit shifting where tax savings are highest, i.e., in the high-tax country. This reallocation explains how CbC reporting increases shifting from high-tax countries despite decreasing overall profit shifting.

To analyze these effects formally, we develop a model of profit shifting under CbC reporting. The model considers an MNC with two productive affiliates, one located in a high-tax

country and one in a low-tax country, as well as a tax-haven affiliate that serves as a profit center. The MNC can shift profits from the productive affiliates to the tax haven through intra-group payments, such as royalties or service fees. Profit shifting generates tax savings but is costly. We distinguish between two types of costs that MNC affiliates face. First, *tax planning costs* capture the resources required to design and justify transfer prices that deviate from arm's-length benchmarks. Second, *tax audit costs* capture the expected costs of tax audits, which increase with the perceived aggressiveness of the firm's profit-shifting behavior. Before CbC reporting, tax authorities observe only domestic information so that tax audit costs depend solely on the local affiliate's behavior. With CbC reporting, tax audit decisions by tax authorities additionally rely on the total amount of profits reported in the tax haven.

This change in the information available for tax audits links profit-shifting decisions across affiliates. When tax audit costs depend on total haven profits, shifting profits from one affiliate raises the tax audit risk for the entire group. As a result, CbC reporting has two effects. A direct effect increases expected tax audit costs and reduces total profit shifting to tax havens. A substitution effect reallocates profit shifting toward affiliates where tax savings are highest. Because shifting profits out of high-tax countries yields larger tax savings than shifting out of low-tax countries, MNCs optimally concentrate profit shifting in high-tax affiliates. The model therefore predicts asymmetric effects across countries: Tax havens lose tax base; low-tax countries unambiguously gain; and high-tax countries benefit less and may even lose tax base if tax audit costs are sufficiently important relative to tax planning costs.

To test the model's predictions, we use unconsolidated affiliate-level data from Orbis covering more than 45,000 affiliates belonging to about 6,000 large MNCs worldwide. We employ a difference-in-differences design that compares affiliates of MNCs subject to CbC reporting with affiliates of otherwise similar MNCs that are not (yet) subject to CbC reporting, before and after CbC reporting becomes effective. Whether an affiliate becomes subject to CbC reporting depends on the location of the ultimate parent and on whether the group meets a revenue threshold. Guided by the theory, we focus on changes in affiliate profitability—measured as profit before tax relative to total assets—and allow treatment effects to differ systematically with statutory tax rates.

The empirical results strongly support the model's predictions. Following the introduction of CbC reporting, affiliates in low-tax countries experience an increase in profitability, consistent with reduced outward profit shifting from these locations. In contrast, affiliates in high-tax countries become less profitable, indicating increased profit shifting out of high-tax locations. These opposing effects imply a reallocation of profit shifting within the MNC rather than a uniform reduction across affiliates. We also find that profitability in tax-haven affiliates declines, consistent with a reduction in total profit shifting. Taken together, the empirical findings support the substitution mechanism highlighted by the model.

These empirical patterns extend the existing literature on the effects of CbC reporting and help reconcile differences between consolidated- and affiliate-level analyses. Several studies document that CbC reporting led to only modest changes in aggregate tax outcomes. Relying on firm-level data, Joshi (2020) uses the CbC reporting revenue threshold in regression discontinuity and difference-in-differences designs. She finds a significant but modest increase in affected MNCs' consolidated effective tax rates (ETRs), and only limited evidence for a decrease in profit shifting at the affiliate level.[1] Hugger (2025) uses bunching analysis to show significant regulatory avoidance: MNCs avoid becoming subject to CbC reporting by reporting consolidated revenue below the EUR 750 million threshold. He also studies the effect of CbC reporting on tax avoidance in a difference-in-differences design and finds that consolidated ETRs of affected MNCs increase significantly. At the affiliate-level, the tax sensitivity of profits declines after the introduction of CbC reporting.[2]

The empirical literature on the EU Capital Requirements Directive (CRD) IV, which introduced public CbC reporting for the financial sector, also provides insight into the relationship between tax avoidance and transparency. Overesch and Wolff (2021) estimate a difference-in-differences model for the ETR of EU banks compared to banks not covered by the directive. They find evidence that CbC reporting increases ETRs, but only for banks that are particularly exposed to the CbC reporting requirements because they report tax-haven activities. Their event-study evidence suggests that the aggregate effect is limited. Joshi et al. (2020) study public CbC reporting for EU banks by estimating a production function using the tax-incentive variable developed by Huizinga and Laeven (2008). They find limited evidence that public CbC reporting increases the pre-tax income of EU banks' affiliates and do not find robust evidence for an increase in the ETR of affected EU banks in general.

As a main take-away, private and public CbC reporting appear to have modest aggregate tax effects, while affiliate-level effects remain unclear. The substitution effect we propose offers an explanation for this pattern. CbC reporting reduces total profit shifting, but also concentrates remaining shifting in high-tax affiliates. This reallocation buffers aggregate tax payments and can mute average affiliate-level effects on profitability and ETRs. The back-of-the-envelope calculations in Section 7.4 show that this effect can be quantitatively meaningful.

Focusing on U.S. MNCs, Nessa et al. (2025) use difference-in-difference and regression discontinuity models around the threshold of USD 850 million and do not find significant effects of CbC reporting, neither for paper profit shifting nor for real activity. They see two

[1] On aggregate level, Joshi (2020)'s results do not hold when she uses the consolidated cash ETR as dependent variable, and they become insignificant when controlling for average statutory tax rates and the number of affiliates. On affiliate level, she does not find significant evidence that affiliate-level pre-tax earnings increase after MNCs become subject to CbC reporting.

[2] Hugger (2025) also splits the sample into high- and low-tax affiliates. He finds that the share of pre-tax profits reported in high-tax countries increases, but does not find a significant effect for low-tax countries. These results differ from ours, possibly because Hugger (2025) does not include affiliate- or country-level fixed effects and relies on a substantially smaller sample.

reasons for these null results: First, U.S. tax authorities already had relatively rich information prior to CbC reporting through IRS Form 5471 so that the introduction of CbC reporting provided little additional information to U.S. tax authorities. Second, the U.S. did not implement the OECD's Multilateral Competent Authority Agreement on the exchange of CbC reports and shares CbC reports with fewer jurisdictions than other countries such that "...U.S. CbCR may provide less incremental information to relevant tax authorities than non-U.S. CbCR" (Nessa et al., 2025, pp. 954f). Thus, also non-U.S. tax authorities gain little additional information on U.S. MNCs. That the U.S. limits information exchange with other countries is in line with our results: The U.S. is a high-tax country (until 2018 at least) and according to our model does not stand to gain (much) from CbC reporting.

Further literature studies the real effects of CbC reporting. Using difference-in-differences and regression discontinuity analysis, De Simone and Olbert (2022) study European MNCs and show that firms respond to CbC reporting by reallocating real activity: Capital and employment increase in countries with preferential tax regimes—which correspond to low-tax countries in our model—while tax-haven affiliates are closed. In contrast, using a regression discontinuity design, Joshi et al. (2025) find that outbound-shifting affiliates reduce their misalignment between profits and real activity, but in a surprising way: Rather than reporting higher income and reducing profit shifting, misaligned affiliates in non-haven countries primarily reduce their fixed assets, i.e., scale back economic activity. At the same time, affiliates that were not shifting profits abroad increase their fixed assets. Our results complement this strand of the CbC literature in two ways. First, our theory shows how economic substance in haven affiliates can facilitate profit shifting and provides a mechanism for why such affiliates may nevertheless be phased out under CbC reporting. Second, we highlight and empirically support an additional adjustment margin: Beyond reallocating real activity, MNCs also strategically adjust paper profit shifting in response to CbC reporting.

More broadly, our paper contributes to the theoretical literature on anti-tax avoidance rules and their incentive effects. A recurring insight in this literature is that policies designed to curb profit shifting can alter firms' behavior in unintended ways. Work on thin capitalization and earnings stripping rules highlights that anti-avoidance measures can reduce profit shifting but at the cost of distorting investment incentives or shifting activity across margins (Haufler and Runkel, 2012; Gresik et al., 2017; Mardan, 2017; Haufler et al., 2018). We add to this literature by showing that a transparency-based anti-avoidance measure—CbC reporting—can have similarly unintended effects: While it reduces profit shifting overall, it can increase profit shifting out of high-tax countries. We are not aware of any other paper showing that well-intended and well-drafted regulation directly *increases* the activity that it aims to curb.

Finally, the substitution effect highlighted in this paper is not specific to CbC reporting but arises more generally whenever three conditions are met. First, regulation imposes costs at the group level. Second, the benefits from the regulated activity accrue at the affiliate

or activity level and are heterogeneous, for example because tax savings differ or marginal profitability varies across activities and locations. Third, the regulation constrains aggregate outcomes but does not pin down where within the group the regulated activity originates. In such settings, firms optimally comply with regulation by reallocating remaining activity toward affiliates or activities with the highest marginal gains.

This mechanism is not limited to taxation. A closely related example are EU fleet-wide CO_2-emission standards for car manufacturers. These impose penalties based on average emissions at the fleet level, while allowing emissions to differ across vehicle types. Manufacturers therefore comply with aggregate targets by concentrating remaining emissions in high-margin vehicle segments, such as SUVs or luxury cars (see, e.g., Knittel, 2012). While total emissions fall, emissions associated with specific products—and potentially specific locations where these products are predominantly used—may increase. As in the case of CbC reporting, regulation that operates at the group level can thus reshape the allocation of activity across units, with uneven local consequences despite achieving its aggregate objective.[3]

We next discuss the institutional background of CbC reporting. Subsequently, in Section 3, we set up a stylized model of profit shifting. Section 4 characterizes the effects of CbC reporting on profit shifting and tax bases across countries, highlighting the direct reduction in overall profit shifting and the substitution effect toward high-tax affiliates. Section 5 illustrates this mechanism in a stylized setting with multilateral CbC reporting and homogeneous shifting costs to sharpen intuition and clarify the underlying forces. We highlight links of our theoretical analysis to previous empirical findings in Section 6 and also derive testable predictions of our model. Section 7 presents our own empirical analysis. Section 8 concludes.

2 Country-by-Country Reporting

In 2015, the OECD published its Base Erosion and Profit Shifting (BEPS) Action 13 Final Report on Transfer Pricing Documentation and Country-by-Country Reporting (OECD, 2015). BEPS Action 13 requires countries that are part of the Inclusive Framework on BEPS to implement CbC reporting requirements in their national legislation.[4] An MNC is obliged to submit a CbC report in the year after its consolidated global revenues exceed EUR 750 million (OECD, 2015, p. 9). This threshold is assessed on a year-by-year basis, and MNCs cannot voluntarily opt in or out of CbC reporting.

[3] A similar logic arises under consolidated capital regulation in the financial sector, such as Basel III for banks or Solvency II for insurance groups, where minimum capital or leverage requirements are assessed at the group level. When the consolidated constraint binds and local requirements are not tighter, financial groups retain discretion over the allocation of risk across subsidiaries and may shift activity toward units with higher marginal returns.

[4] As of 2026, 147 countries are part of the Inclusive Framework on BEPS, and over 120 have implemented CbC reporting (OECD, 2025, p. 10).

Based on 2016 data from Bureau van Dijk's Orbis, 90% of worldwide MNC profits are covered (OECD, 2020, par. 505). The OECD (2016) suggests that CbC reporting covers around 7,000 MNC groups worldwide—a lower bound, since not all countries that participate in CbC reporting provide data for these statistics. Based on current data from Orbis, a total of 9,600 MNCs have consolidated revenue above EUR 750 million, which amounts to 16.5% of all MNCs in the database.

The goal of CbC reporting is to generate and provide high-level information that tax authorities can use for transfer pricing and BEPS risk assessments. CbC reporting should enable tax authorities to identify artificial profit shifting, understand, and address such BEPS behaviors (OECD, 2015, p. 9). The CbC report therefore provides a starting point for tax authorities to target audit resources more effectively.[5]

CbC reporting entails a three-tiered structure. First, the 'Ultimate Parent Entity' drafts a *master file*, which provides standardized information on the MNC's global activities and organizational structure relevant to all jurisdictions in which members of the MNC group operate. Second, domestic affiliates provide information about their material business activities in *local files*, which include information on related party transactions, the amounts involved, and the transfer pricing analysis behind these transactions.[6] Lastly, the MNC has to file a *CbC report* where it provides information on the following items for each jurisdiction where it is active: Revenues, profit or loss before tax, income tax paid, income tax accrued, stated capital, accumulated earnings, number of employees, and tangible assets. Usually, the ultimate parent entity files the CbC report in the country where it is resident.[7] The tax authorities then forward the CbC report to all other participating countries where the MNC is active.

OECD BEPS Action 13 mandates 'private' CbC reporting, under which tax authorities exchange CbC reports only among themselves and not with the public. The alternative is 'public' CbC reporting, which the EU began implementing in 2024.[8] We focus on private CbC reporting and analyze how additional transparency toward tax authorities affects MNCs' tax audit costs. Public CbC reporting also entails public scrutiny and may generate reputational

[5] As an example that CbC reports are used to target audits, the IRS' Final Regulations on CbC reporting (TD 9773) state that "[...] the information reported on the CbCR will be used for high-level transfer pricing risk identification and assessment, and that transfer pricing adjustments will not be made solely on the basis of a CbCR, but that the CbCR may be the basis for further inquiries into transfer pricing practices or other tax matters which may lead to adjustments." According to Clausing (2020, p. 526), this guidance implies that MNCs face a massively reduced incentive to overstate their income, especially in tax havens.

[6] The MNC's ultimate parent entity has to submit local files with transaction-level transfer pricing documentation to their host countries, which are—in principle—not exchanged with other countries. Therefore, our analysis does not incorporate these local files.

[7] All EU countries require a constituent entity in the EU to be assigned status of Surrogate Parent Entity whenever the Ultimate Parent Entity is situated outside of the EU and is not obliged to file a CbC report there. Thus, any MNC that earns consolidated revenues of more than EUR 750 million and owns an affiliate situated within the EU is subject to CbC reporting requirements.

[8] Since 2014, EU banks have to make CbC reports public (see, e.g., Overesch and Wolff, 2021).

('shaming') effects, which we abstract from.[9] Public opinion would most likely focus on (misalignment of) profits reported in tax havens, and if anything, trigger a mechanism that is analogous and reenforcing to the effect that we are going to identify.

3 A Model of Profit Shifting and Tax Audit Costs

We set up a stylized model of profit shifting with a single MNC with three affiliates. To keep the model tractable, we abstract from endogenous real activity and let the MNC decide only on profit shifting. Nonetheless, the model yields insights into how economic substance in tax havens can help to justify profit shifting.

The MNC owns two productive affiliates, one in the high-tax country H and one in the low-tax country L. These affiliates face corporate tax rates t_i with $t_H > t_L$. In addition, the MNC owns a tax-haven affiliate $i = 1$, taxed at a rate $t_1 < t_L$. All countries apply the tax exemption principle so that the MNC operates under a territorial tax system. Thus, the location of the headquarters (henceforth HQ) does not affect the taxation of intra-group income flows.[10] Therefore, we assume—without loss of generality—that the parent firm is a pure holding company residing in any of the three countries.

Each productive affiliate $i \in \{H, L\}$ earns taxable profit π_i. The tax-haven affiliate $i = 1$ invoices the productive affiliates $i \neq 1$ a fee $R_i + P_i$ for the use of a management service (or a trademark). Assuming that the economic value of the service (i.e., the arm's-length price) is equal to R_i, any payment $P_i \neq 0$ constitutes international profit shifting. To maintain business operations, the haven affiliate exogenously hires $L_1 > 1$ employees at a wage rate w_1, implying the presence of some real economic activity (or 'substance') in the tax haven.

Shifting income to the tax haven triggers both convex tax planning costs and convex tax audit costs. Tax planning costs capture the costs related to the ex-ante business decision, whereas tax audit costs relate to the ex-post consequences of such tax planning. As there is no overlap between the two events, we can assume that the costs are additively separable. In Appendix A, we present an alternative, multiplicative specification that results qualitatively in the same effects.[11] Let us now discuss the tax planning and tax audit costs in turn.

[9] Recent empirical evidence suggests that consumers do not respond persistently to tax-aggressive behavior (Asay et al., 2024) and that firms do not incorporate reputational concerns into tax avoidance decisions (Gallemore et al., 2014; Baudot et al., 2019).

[10] Territorial taxation has become the dominant regime among OECD countries. Only Chile, Israel, Mexico, and South Korea still apply worldwide taxation within the OECD. Under territorial taxation, inter-corporate dividends are not subject to additional taxation, and—conditional on a given allocation of profits—the overall tax burden of the MNC is independent of the location of the HQ. Empirical evidence suggests that profit shifting is more pronounced under territorial than under worldwide taxation; see Markle (2016) and Langenmayr and Liu (2023).

[11] In that specification, the tax audit costs are a probability that measures the frequency and intensity of a tax audit. Multiplying this probability with the standard tax planning costs leads to the expected

Tax planning costs comprise compliance costs and costs for consultants and lawyers to strategically implement a favorable transfer price and justify the deviation from the true arm's-length price because the exact arm's-length value of the transfer price is unknown to the tax authorities.[12] We follow previous literature in modelling tax planning costs (Juranek et al., 2018): We define convex tax planning (or 'concealment') costs C^C over the level of shifted profits P such that $C_i^C = C_i^C(P_i)$. The tax-haven affiliate receives shifted profits without additional costs. For simplicity, we assume a quadratic cost function in the productive affiliates $i = H, L$. Consequently, the tax planning costs C_i^C in country i are

$$C_i^C = C^C(P_i) = \frac{\theta_i^C}{2} P_i^2, \; i = H, L,$$

where θ_i^C represents a cost parameter that captures the difficulty of enabling and justifying profit shifting and the tightness of transfer pricing regulation in country $i = H, L$.[13]

Tax audit costs capture the costs incurred by an MNC when facing a tax audit. Tax audits are costly because they require resources, extensive documentation, and may disrupt regular business operations. The more aggressively a tax authority perceives an MNC to engage in profit shifting, the more frequent, intensive, and thorough tax audits will be. Higher audit intensity increases the resources the MNC must devote to dealing with tax inspectors, fulfilling information requests, and potentially negotiating costly settlements. All of these considerations result in convex tax audit costs.[14]

Tax audit costs depend crucially on the information available to the domestic tax authority and on how this information is used in audit decisions. In the absence of CbC reporting, the tax authority i observes only the affiliate located in country i and has access solely to its domestic tax file, which reports local economic activity and cross-border payments. With

costs of profit shifting. In that setting, the audit probability can even be linear (i.e., does not need to be convex) in shifted profits. As this alternative probability specification complicates the formal analysis without yielding relevant differences in effects, we stick to the simpler setting with additive cost components and only sketch some of the effects under the alternative specification in Appendix A.

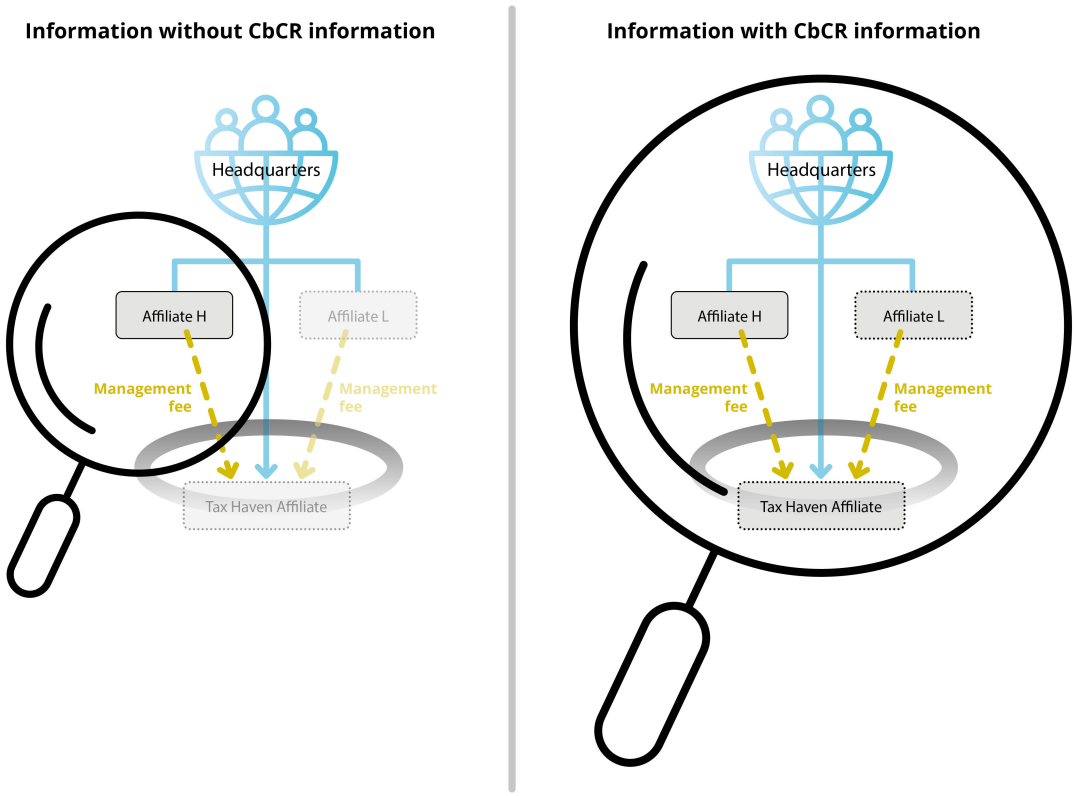
[12] The true arm's-length price might also be unknown to the MNC itself. For related literature on transfer pricing costs, see, for example, Haufler and Schjelderup (2000) and Gresik and Osmundsen (2008). These costs also include costs related to double taxation, see Martini et al. (2025). Grubert (2003) interprets the tax planning costs as costs for "greater than efficient" (Grubert, 2003, p. 224) levels of intercompany transactions.

[13] Tax planning costs in our model do not depend on the size of the MNC, although empirical evidence suggests that profit shifting is more prevalent among large firms (see, e.g., Rego, 2003; Dyreng et al., 2008). The latter rests on complex shifting structures being associated with fixed costs that need to be recovered (Davies et al., 2018; Goldbach et al., 2021). Since CbC reporting applies only to MNCs with consolidated revenues of at least EUR 750 million, we assume that the MNC in our model is sufficiently large to incur the fixed costs of a tax-haven structure.

[14] In many countries, large taxpayers are audited routinely, implying a fixed component of tax audit costs. However, the intensity and intrusiveness of audits vary substantially. In this sense, higher tax audit costs associated with CbC reporting stem from increased audit intensity rather than from the mere occurrence of audits. Introducing a baseline audit cost in the model would not affect our results qualitatively, but would add notation, so we abstract from it.

CbC reporting, tax authorities additionally obtain information on the MNC's total activity and reported profits across all affiliates, allowing them to assess whether the local affiliate's profitability appears unusual. We summarize the set-up of our model and the different information sets available with and without CbC reporting, respectively, in Figure 1.

Figure 1: Graphical Representation of CbC reporting



Note: The left panel shows the information available to the tax authority in the high-tax country without CbC reporting. In this case, the authority only observes the high-tax affiliate. The right panel shows the information available with CbC reporting. Here, the authority observes the complete group structure.

We model the completeness of CbC reporting by a country-specific parameter $\alpha_i \in [0, 1]$, with $i \in \{H, L\}$. When $\alpha_i = 0$, there is no CbC reporting and the tax authority in country i has no information about the MNC's foreign affiliates. When $\alpha_i = 1$, CbC reporting is complete and the tax authority has full information on the MNC's reported profits worldwide. Intermediate values of α_i capture partial access to CbC information and allow for asymmetric cases in which countries differ in the extent to which such information is available.[15]

[15]Imperfect CbC reporting ($0 < \alpha_i < 1$) may reflect incomplete information exchange, limited participation in multilateral information sharing agreements, or insufficient verification of reported data, allowing firms to submit incomplete or inaccurate reports.

Equivalently, α_i can be interpreted as capturing how strongly a tax authority incorporates CbC information into its audit strategy. This second interpretation allows us to capture discretionary choices in how intensively tax authorities use CbC information. In the model, a marginal change in α_i then represents a shift in audit strategy toward placing more weight on CbC-based red flags. Thus, our model also informs about the consequences of tax authorities' choices. An example would be the choice to not use CbC reporting to its full extent.

CbC reporting provides tax authorities with additional signals to decide which firms to audit and how intensively to deploy scarce enforcement resources. Tax authorities are more likely to target firms for which they expect large adjustments in taxable income and, consequently, higher additional tax revenue.[16] We assume that tax audit intensity is based on a weighted measure combining information from domestic tax filings with selected indicators derived from CbC reports. Without CbC reporting ($\alpha_i = 0$), audit decisions rely solely on deviations of domestic profits from benchmark levels, proxied by P_i. With CbC reporting ($\alpha_i > 0$), tax authorities can better assess the overall tax aggressiveness of an MNC and identify suspicious cases (see also the IRS quote in footnote 5).

Tax authorities may use two closely related red flags derived from CbC reports to identify aggressive profit shifting. The first is the absolute level of profits reported in tax-haven affiliates. High haven profits are a strong signal of potential tax revenue that can be recovered through a detailed and intensive audit.[17] A second indicator emphasized in the academic literature is haven profits relative to measures of economic substance, such as employment (see, e.g., Tørsløv et al., 2023b; Joshi et al., 2025). Unusually high profits per employee signal a misalignment between reported profits and real activity and are therefore indicative of aggressive tax planning. Both absolute haven profits and profit–substance ratios are discussed by the OECD as key tax risk indicators enabled by CbC reporting (OECD, 2017, pp. 35-44).

Our model captures both red flags. The substance-based indicator is represented by $\frac{\pi_1}{L_1} = \frac{R_H+P_H+R_L+P_L}{L_1}$. Setting $L_1 = 1$ corresponds to the case in which tax authorities base audit decisions on the absolute level of profits reported in the tax haven.

In our model, tax audit costs in country i depend on the audit signal that the tax authority uses to assess the MNC's tax aggressiveness. This signal combines (i) the domestically observable deviation in reported profits, indicated by P_i, and (ii) a CbC-based red flag X_i reflecting misaligned profits in tax havens. We capture the relative weight placed on the

[16] Tørsløv et al. (2023a) argue that tax authorities in high-tax countries do not target transactions with tax havens, but instead focus on correcting transfer prices to other high-tax countries, as firms are less likely to challenge such corrections and better dispute-settlement mechanisms are in place with other high-tax countries. Nevertheless, they report that 18% of the transactions that Danish tax authorities targeted were with tax havens. In addition, their data ends in 2016, i.e., before tax authorities had good information on which tax haven transactions to target.

[17] Officials from two national Ministries of Finance confirmed in private discussions that the primary information extracted from CbC reports is the level of profits reported in tax-haven affiliates, as this information is particularly easy to identify and operationalize in audit decisions.

CbC-based information by $\alpha_i \in [0,1]$. Accordingly, the relevant audit signal in country i is

$$S_i = (1-\alpha_i)P_i + \alpha_i X \quad \text{with} \quad X = \frac{\pi_1}{L_1} = \frac{R_H + P_H + R_L + P_L}{L_1}.$$

A higher value of either component signals more aggressive tax planning; hence, tax audit costs increase and are convex in S_i. For tractability, we assume a quadratic specification

$$C_i^A \;=\; \frac{\theta_i^A}{2}\, S_i^2 \;=\; \frac{\theta_i^A}{2}\Big[(1-\alpha_i)P_i + \alpha_i X\Big]^2, \qquad i \in \{H, L\},$$

where θ_i^A captures how costly tax audits in country i are for the MNC. Given all our assumptions, global after-tax profits of the MNC are

$$\begin{aligned}\Pi \;=\;& (1-t_H)\pi_H + (t_H - t_1)(R_H + P_H) - \frac{\theta_H^C}{2}P_H^2 - \frac{\theta_H^A}{2}\left[(1-\alpha_H)P_H + \alpha_H X\right]^2 \\ &+(1-t_L)\pi_L + (t_L - t_1)(R_L + P_L) - \frac{\theta_L^C}{2}P_L^2 - \frac{\theta_L^A}{2}\left[(1-\alpha_L)P_L + \alpha_L X\right]^2 \\ &-w_1 L_1,\end{aligned} \tag{1}$$

where the first term in the first two lines represents exogenous after-tax profits from business operations, the second term gives the tax savings from the arm's-length payments R_i and the shifting of profits P_i to the tax haven, and the last two terms in the first two lines capture tax planning and tax audit costs of profit shifting in an affiliate. The last line represents the costs from employment in the haven affiliate. The MNC only decides how much income P_i to shift from each productive affiliate to the tax haven in country 1. Maximizing global after-tax profits implies the following first-order conditions

$$\begin{aligned}\frac{\partial \Pi}{\partial P_H} \;=\;& (t_H - t_1) - \theta_H^C P_H - \theta_H^A\left(1 - \alpha_H + \frac{\alpha_H}{L_1}\right)\left[(1-\alpha_H)P_H + \alpha_H X\right] \\ &-\theta_L^A\left[(1-\alpha_L)P_L + \alpha_L X\right]\frac{\alpha_L}{L_1} = 0,\end{aligned} \tag{2a}$$

$$\begin{aligned}\frac{\partial \Pi}{\partial P_L} \;=\;& (t_L - t_1) - \theta_L^C P_L - \theta_L^A\left(1 - \alpha_L + \frac{\alpha_L}{L_1}\right)\left[(1-\alpha_L)P_L + \alpha_L X\right] \\ &-\theta_H^A\left[(1-\alpha_H)P_H + \alpha_H X\right]\frac{\alpha_H}{L_1} = 0.\end{aligned} \tag{2b}$$

In the optimum, the MNC balances marginal tax savings $(t_i - t_1)$ against the marginal tax planning and tax audit costs.

Profit shifting without CbC reporting. In the absence of CbC reporting ($\alpha_i = 0$ for all i), profit-shifting decisions across affiliates are independent of each other. The optimal level of shifted profits in country i is given by

$$P_i = \frac{t_i - t_1}{\theta_i^C + \theta_i^A}, \qquad i \in \{H, L\}, \qquad \text{for } \alpha_H = \alpha_L = 0.$$

Without CbC reporting, profit shifting increases in the domestic tax differential vis-à-vis the tax haven and decreases in marginal tax planning and tax audit costs, $\theta_i^C + \theta_i^A$. If the tax rate differential $t_H - t_L$ is sufficiently large relative to cross-country differences in tax planning and tax audit costs, the higher-taxed affiliate shifts more profits as it faces larger incentives. We assume this condition holds and thus focus on the case $P_H > P_L$ for $t_H > t_L$.[18]

As soon as domestic tax authorities start using information from CbC reporting ($\alpha_i > 0$), national profit-shifting decisions become interlinked through the tax audit cost function. We now turn to the effects of introducing CbC reporting.

4 The Effects of CbC Reporting

In this section, we analyze the effects of CbC reporting on corporate tax avoidance. We proceed in three steps. First, in Section 4.1, we provide an intuitive preview of the mechanisms at work. Second, in Section 4.2, we study the effects of unilateral use of CbC information by one country and show that, perhaps surprisingly, the country that does *not* rely on CbC information may benefit. Finally, in Section 4.3, we analyze the multilateral case in which all countries implement CbC reporting and symmetrically use the available information.

4.1 An Intuitive Preview

To build intuition, we highlight two channels through which CbC reporting affects profit-shifting behavior. First, CbC reporting raises the expected costs of profit shifting by improving transparency. Second, by linking tax audit costs across affiliates, it changes how firms allocate profit shifting across countries. This latter channel gives rise to two related but distinct effects: A *rebalancing effect* in response to tax changes and a *substitution effect* in response to changes in the use of CbC information.

First, CbC reporting makes profit shifting costlier by increasing the visibility of profits booked in tax havens. With CbC reporting, tax authorities observe the global distribution of profits and economic activity and can condition audit intensity on this previously unavailable information. In particular, high profits in tax havens—especially when they are large relative to measures of economic substance—are widely viewed as red flags for aggressive tax planning.

[18] This assumption is less restrictive than it may appear. A prominent stylized fact is that developing countries on average have higher statutory corporate tax rates (Bachas et al., 2024; Hohmann et al., 2024, Figure 8.2), but simultaneously feature weaker tax enforcement capacity (Johannesen et al., 2020; Hohmann et al., 2024, Figure 8.1). Haufler et al. (2025, Proposition 2) rationalize this pattern as the outcome of tax competition, where countries set high statutory rates to tax immobile domestic firms while allowing profit shifting to reduce effective tax burdens on mobile MNCs. Similar mechanisms may also arise in tax competition among developed countries.

This direct effect raises expected tax audit costs and discourages profit shifting from all non-haven affiliates, all else equal.

Second, CbC reporting interlinks profit-shifting decisions across affiliates because now tax audit costs depend on the *total* amount of profits booked in the tax haven rather than on profits shifted from each affiliate in isolation. As a result, shifting an additional unit of profit from one country raises expected tax audit costs for the MNC as a whole. This linkage is the key force behind both the rebalancing and substitution effects.

When CbC reporting is in place, we observe *rebalancing effects* when tax rates change. Because marginal tax audit costs associated with total haven profits are shared across affiliates, a change in tax incentives in one country affects optimal profit shifting elsewhere. Under CbC reporting, firms respond to tax changes by reallocating profit shifting toward countries where tax savings per shifted unit are higher.[19] We relegate the formal analysis and an elaborate discussion of the responses to tax incentives to Appendix B.

When countries change the extent to which they use CbC information in audit decisions, we observe a *substitution effect*. Since the marginal tax audit cost associated with total haven profits is the same regardless of where the shifted profits originate, but the tax savings differ across countries, it becomes optimal to concentrate profit shifting in affiliates with higher tax rates. Firms therefore reduce profit shifting from low-tax countries and shift relatively more from high-tax countries, where each unit of shifted profit yields larger tax savings. In this way, CbC reporting can reduce total profit shifting while simultaneously increasing profit shifting from high-tax affiliates. The importance of this effect increases with CbC reporting becoming more comprehensive (i.e., with α_i). If this substitution effect becomes sufficiently strong, it can even happen that the low-tax affiliate stops being an outward-shifting entity and the MNC effectively starts shifting from the high-tax to the low-tax affiliate: It saves tax audit costs by eliminating profits in the 'official' tax haven (while still shifting profits to save taxes).

The strength of the rebalancing and substitution effects depends on economic substance in the tax haven. If profits are evaluated relative to measures of real activity, such as employment, sufficiently high or easily inflated substance weakens the informativeness of haven profits and dampens the increase in tax audit costs (*substance channel*). Next, we formalize these mechanisms and study their implications under unilateral and multilateral CbC reporting.

4.2 Unilateral CbC Reporting and Shifting Decisions

What happens if only one country has access to, or is willing to use, information from CbC reporting? A natural candidate for unilateral use of CbC information is the high-tax country,

[19] This mechanism is similar to balancing overall bankruptcy costs on the parent level and external debt shifting to optimize the capital structure in MNCs' affiliates for which the parent guarantees part of their external debt (Huizinga et al., 2008).

which suffers more from profit shifting. In our model, this corresponds to a situation in which the low-tax country does not utilize CbC information ($\alpha_L = 0$), while the high-tax country starts relying on it ($\alpha_H > 0$). The effects on profit shifting can then be characterized by comparative statics of the first-order conditions (2a) and (2b); see Appendix C.1.

To ensure that we analyze a meaningful policy reform, we impose two assumptions throughout the paper. First, we assume that placing some (partial) weight on misaligned profits in the tax haven (i.e., X) provides better information for tax audits than relying solely on domestic transfer pricing rules and domestically inferred profit shifting (i.e., P_i). Second, we assume that a unilateral increase in the use of CbC information raises expected tax audit costs. Formally, this implies that the partial derivatives of the first-order conditions with regard to α need to be positive ($F_{i\alpha} > 0$); see Appendix C.1.[20]

Assumption 1 *To ensure that using CbC information increases tax audit costs, we assume:*

(i) $X - P_i = \frac{\pi_1}{L_1} - P_i = \frac{R_H + P_H + R_L + P_L}{L_1} - P_i > 0,\ i = H, L,$

(ii) $F_{i\alpha} = \left(1 - \alpha_i + \frac{\alpha_i}{L_1}\right)(X - P_i) - [(1-\alpha_i)P_i + \alpha_i X]\frac{L_1 - 1}{L_1} > 0,\ \ i = H, L.$

We proceed in two steps. First, we analyze how unilateral use of CbC reporting in one country affects profit shifting in the other country. Second, we study the effect on profit shifting in the country that adopts CbC reporting. Being agnostic about which non-haven country adopts CbC reporting, we assume that country i increases its reliance on the CbC-based audit measure ($d\alpha_i > 0$), while the other non-haven country j does not use this information ($\alpha_j = d\alpha_j = 0$). We obtain

$$\frac{dP_j}{d\alpha_i}\bigg|_{\alpha_j=0} = -\frac{\theta_i^A \theta_i^C \left\{\frac{(1-\alpha_i)P_i + \alpha_i X}{L_1} + \frac{\alpha_i (X - P_i)}{L_1}\right\} + (\theta_i^A)^2 \left(1 - \alpha_i + \frac{\alpha_i}{L_1}\right)\frac{(1-\alpha_i)P_i + \alpha_i X}{L_1}}{|\mathcal{H}|} < 0, \tag{3}$$

where $|\mathcal{H}| > 0$ is the determinant of the Hessian matrix, which is positive by the second-order conditions of the maximization problem.

Unilateral CbC reporting in country i unambiguously reduces profit shifting out of the other country j. The reason is that CbC reporting interlinks profit-shifting decisions across affiliates. Given Assumption 1, using CbC information in country i adds an additional audit-cost component to shifting from country j. To mitigate tax audit costs in the country that adopts CbC reporting, the MNC reduces profit shifting from the non-participating country.[21]

[20] Effectively, these assumptions require that building up economic substance in tax havens is sufficiently expensive. Then, incorporating CbC information into audit strategies increases the expected costs of profit shifting. If (inflating) 'haven substance' was cheap to costless, using CbC information would not raise expected tax audit costs and tax authorities would have no incentive to rely on it: CbC reporting would be irrelevant as an enforcement tool.

[21] For unilateral CbC reporting, this mitigation mechanism is one-sided: Reducing shifting in country i does not affect tax audit costs in country j, as country j does not use information on haven profits.

We now turn to the effect of unilateral CbC reporting on profit shifting from the participating country itself. This effect is generally ambiguous with

$$
\begin{aligned}
|\mathcal{H}|\frac{dP_i}{d\alpha_i}\Big|_{\alpha_j=0} \;=\; & -\theta_j^A(\theta_i^C+\theta_i^A)\left(1-\alpha_i+\frac{\alpha_i}{L_1}\right)(X-P_i)+(\theta_j^A)^2\frac{\alpha_i}{L_1}\frac{(1-\alpha_i)P_i+\alpha_i X}{L_1} \\
& +\theta_j^A(\theta_i^C+\theta_i^A)[(1-\alpha_i)P_i+\alpha_i X]\frac{L_1-1}{L_1} \gtrless 0. \qquad (4)
\end{aligned}
$$

By shifting the audit focus from domestically inferred profit shifting to total profits booked in the tax haven, CbC reporting raises expected tax audit costs, all else equal, see the first term in the first line in equation (4). This force works toward lower profit shifting from country i. However, there is an offsetting effect. As profit shifting from country j declines, total haven profits fall, which reduces marginal tax audit costs for shifting from country i. This reallocation of audit-cost pressure incentivizes higher profit shifting from country i, see the second term in the first line in equation (4).

In addition, economic substance in the tax haven creates a further offsetting channel. While total haven profits enter the tax audit cost function, they are discounted by real activity in the haven. Higher substance $L_1 > 1$ therefore weakens the increase in tax audit costs associated with CbC reporting and allows for more profit shifting, all else equal. These offsetting forces imply that the net effect on profit shifting from country i cannot be signed.

In sum, unilateral CbC reporting always reduces profit shifting from the *non-participating* country, as transparency adds tax audit costs to shifting from that country. The effect on profit shifting from the participating country is ambiguous, reflecting a trade-off between higher tax audit costs and the reallocation of shifting across affiliates.

4.3 Multilateral CbC Reporting and Shifting Decisions

We now analyze the case in which *both* non-haven countries introduce CbC reporting simultaneously (as, for example, the EU countries did in 2016) and use the information symmetrically ($\alpha_H = \alpha_L = \alpha$). We consider a marginal increase $d\alpha_H = d\alpha_L = d\alpha$, while keeping all other sources of heterogeneity in the model. As in the previous sections, we characterize firms' responses using comparative statics of the first-order conditions (2a) and (2b); see Appendix C.1. We also maintain Assumption 1.

Total profit shifting. Under multilateral CbC reporting, a first result is that an increase in the use of CbC information reduces total profit shifting to the tax haven, provided that

economic substance in the haven is sufficiently low (note again that $|\mathcal{H}| > 0$):

$$\begin{aligned}|\mathcal{H}|\frac{d(P_H+P_L)}{d\alpha} = & -\left\{\theta_L^C F_{H\alpha} + \theta_H^C F_{L\alpha} + (1-\alpha)\frac{\alpha}{L_1}\left[(\theta_H^A)^2(X-P_H) + (\theta_L^A)^2(X-P_L)\right]\right\} \\ & - \frac{1-\alpha}{L_1}\left[(\theta_H^A)^2 P_H + (\theta_L^A)^2 P_L\right] \\ & - \theta_L^A\theta_H^A(1-\alpha)\left\{\left[(1-\alpha)^2 + 2\frac{\alpha^2}{L_1^2} + \frac{\alpha}{L_1}(2-3\alpha)\right](2X - P_H - P_L) - \frac{\alpha}{L_1}(P_H+P_L)\right\} \\ & + \left(\theta_L^A + \theta_H^A\right)(1-\alpha)^2\left[2\alpha X + (1-\alpha)(P_H+P_L)\right]\frac{L_1-1}{L_1} < 0. \end{aligned} \tag{5}$$

For sufficiently low levels of economic substance in the tax haven—and in particular in the limit $L_1 \to 1$—the expression in equation (5) is strictly negative. Intuitively, when both countries use CbC information, audit decisions increasingly rely on total profits booked in the tax haven. This raises expected tax audit costs at the group level and discourages profit shifting in the aggregate.

When profits are evaluated relative to real activity, higher haven employment weakens the informativeness of haven profits as a tax risk indicator. As reflected in the last line of equation (5), sufficiently large values of L_1 even overturn the negative effect of CbC reporting on total profit shifting.

Proposition 1 *If economic substance in the tax haven is sufficiently limited ($L_1 \to 1$), an increase in the use of Country-by-Country reporting reduces total profit shifting by MNCs, that is,*

$$\frac{d(P_H+P_L)}{d\alpha} < 0.$$

In this case, profits reported in tax-haven affiliates fall unambiguously.

Proof: See Appendix C.2.

Low-tax country. We now turn to the implications of multilateral CbC reporting for profit shifting from the *low-tax country*. The comparative static result is given by

$$\begin{aligned}|\mathcal{H}|\frac{dP_L}{d\alpha} = & -\theta_H^C F_{L\alpha} - (\theta_H^A)^2(1-\alpha)\frac{\alpha}{L_1}(X-P_H) \\ & + \theta_L^A\theta_H^A\frac{\alpha}{L_1}\left\{\frac{\alpha}{L_1}\left[(1-\alpha)\frac{L_1-1}{L_1} + \left(1-\alpha+\frac{\alpha}{L_1}\right)\right] + (1-\alpha)^2\right\}(P_L-P_H) \\ & + \theta_H^A\frac{1-\alpha}{L_1}\left(\theta_L^A\alpha P_L - \theta_H^A P_H\right) + \frac{\alpha}{L_1}\left[(\theta_L^A)^2\frac{(1-\alpha)P_L+\alpha X}{L_1} - (\theta_H^A)^2\frac{(1-\alpha)P_H+\alpha X}{L_1}\right] \\ & - \theta_L^A\theta_H^A(1-\alpha)\left\{\frac{\alpha^2}{L_1^2}(2X-P_H-P_L) + \left[(1-\alpha)^2 + \frac{\alpha}{L_1}(2-3\alpha)\right](X-P_L)\right\} \\ & + \theta_L^A\theta_H^A(1-\alpha)^2[(1-\alpha)P_L+\alpha X]\frac{L_1-1}{L_1} \gtrless 0. \end{aligned} \tag{6}$$

In general, the effect of increasing the use of CbC information on profit shifting from the low-tax country is ambiguous, even under Assumption 1. Three forces are at work: A direct audit-cost effect, a substitution effect, and a substance channel.

The direct effect of CbC reporting again raises expected tax audit costs, making profit shifting more expensive and reducing shifting from the low-tax country.[22] In addition, CbC reporting induces a substitution effect that parallels the rebalancing effect discussed earlier. Since shifting from the high-tax country generates larger tax savings for the same marginal tax audit cost, it is optimal to reduce shifting from the low-tax country to maximize the 'bang for the buck.' This substitution effect reinforces the direct audit-cost effect and pushes toward lower profit shifting from country L.[23]

Finally, the substance channel works in the opposite direction. When profits are evaluated relative to real activity in the tax haven, higher substance ($L_1 \gg 1$) weakens the informativeness of haven profits as a tax-risk indicator. In this case, increasing reliance on CbC reporting can raise profit shifting even in the low-tax country. When economic substance in the tax haven is sufficiently limited ($L_1 \to 1$), the substance channel vanishes and the total effect becomes unambiguous.

High-tax country. The effects of multilateral CbC reporting on profit shifting from the *high-tax country* mirror those for the low-tax country, with one crucial difference: The substitution effect now works in favor of *more* profit shifting. Formally, we obtain

$$\begin{aligned}
|\mathcal{H}|\frac{dP_H}{d\alpha} = & -\theta_L^C F_{H\alpha} - (\theta_L^A)^2(1-\alpha)\frac{\alpha}{L_1}(X-P_L) \\
& + \theta_H^A\theta_L^A\frac{\alpha}{L_1}\left\{\frac{\alpha}{L_1}\left[(1-\alpha)\frac{L_1-1}{L_1} + \left(1-\alpha+\frac{\alpha}{L_1}\right)\right] + (1-\alpha)^2\right\}(P_H-P_L) \\
& + \theta_L^A\frac{1-\alpha}{L_1}\left(\theta_H^A\alpha P_H - \theta_L^A P_L\right) + \frac{\alpha}{L_1}\left[(\theta_H^A)^2\frac{(1-\alpha)P_H+\alpha X}{L_1} - (\theta_L^A)^2\frac{(1-\alpha)P_L+\alpha X}{L_1}\right] \\
& - \theta_H^A\theta_L^A(1-\alpha)\left\{\frac{\alpha^2}{L_1^2}(2X-P_H-P_L) + \left[(1-\alpha)^2 + \frac{\alpha}{L_1}(2-3\alpha)\right](X-P_H)\right\} \\
& + \theta_L^A\theta_H^A(1-\alpha)^2[(1-\alpha)P_H+\alpha X]\frac{L_1-1}{L_1} \gtrless 0. \qquad (7)
\end{aligned}$$

As in the low-tax country, increasing the use of CbC information raises expected tax audit costs, reducing profit shifting. This direct tax-audit-cost effect is counteracted by two forces. First, the substance channel dampens tax audit costs when profits are evaluated relative to real activity in the tax haven, thereby fostering profit shifting for

[22] This effect is visible in the first line of equation (6) and gets reinforced by the fourth line as long as economic activity L_1 is not too high or the weight on CbC reporting does not exceed $\alpha = 2/3$.

[23] The substitution effect is captured in line 2 of equation (6), which is unambiguously negative for $P_L - P_H < 0$. As long as the difference in tax audit costs across countries is not too large, i.e., $\theta_H^A \approx \theta_L^A$, this substitution effect also shows up in the third line.

sufficiently large L_1. Second, the substitution effect (second and third line of equation 7) now works in the opposite direction compared to the low-tax country. If profit shifting is initially larger from the high-tax country ($P_H > P_L$), reallocating profit shifting toward country H yields larger tax savings for the same marginal tax audit cost.

Consequently, our analysis highlights an additional response margin under CbC reporting. Beyond adjustments in real activity (De Simone and Olbert, 2022; Joshi et al., 2025), MNCs may reallocate reported profits across affiliates. Reduced profit shifting from the low-tax affiliate can coincide with increased profit shifting from the high-tax country, where the tax incentives are stronger.

Proposition 2 *Under Assumption 1, greater use of Country-by-Country reporting affects profit shifting through three partial effects. First, the direct tax-audit-cost effect increases expected audit costs and reduces profit shifting from all affiliates. Second, when tax audits rely on profit–substance ratios ($L_1 > 1$), the substance channel weakens the audit signal and increases profit shifting from all affiliates. Third, CbC reporting creates a substitution effect that reallocates profit shifting toward affiliates where shifting yields larger tax savings. If the high-tax affiliate initially shifts more profit ($P_H > P_L$) and tax audit cost parameters are similar ($\theta_H^A \approx \theta_L^A$), this substitution effect increases profit shifting from the high-tax affiliate and reduces profit shifting from the low-tax affiliate.*

Therefore, the country that benefits the most from multilateral CbC reporting is the country that initially suffered less from profit shifting, i.e., the low-tax country. In the next section, we analyze a simplified version of the model without a substance channel and with less heterogeneity to isolate and highlight the substitution effect more sharply.

5 Illustrating the Substitution Effect: Multilateral CbC Reporting and Homogeneous Shifting Costs

In this section, we simplify the model to isolate the substitution effect. To this end, we eliminate the substance channel by setting $L_1 = 1$, which is equivalent to assuming that tax authorities base audit decisions on the absolute level of profits booked in the tax haven. We also assume that the arm's-length payments are equal to zero, i.e., $R_H = R_L = 0$. In addition, we assume homogeneous cost parameters for tax planning, $\theta_H^C = \theta_L^C = \theta^C$, and for tax audits, $\theta_H^A = \theta_L^A = \theta^A$.

These simplifications allow us to focus exclusively on how CbC reporting reshapes profit-shifting incentives through the substitution effect. We first discuss the general

implications of this effect. We then derive conditions under which the high-tax country not only benefits less than the low-tax country from CbC reporting, but experiences an absolute loss in tax revenues.

5.1 The Substitution Effect at Work

As predicted by Proposition 1, eliminating the substance channel implies that any symmetric use of CbC reporting unambiguously reduces total profit shifting to the tax haven. In this case, as shown in Appendix D, equation (5) simplifies to

$$\frac{d(P_H + P_L)}{d\alpha} = -\frac{2\theta^A \left[\theta^C(1+\alpha)(P_H + P_L) + 2\theta^A(1-\alpha^2)(1-\alpha)(P_H + P_L)\right]}{|\mathcal{H}|} < 0. \quad (8)$$

The effects of CbC reporting differ across affiliates. Subtracting the simplified first-order conditions (D.2) and (D.3)—see Appendix D—and imposing homogeneous cost parameters, θ^C and θ^A, yields

$$P_H - P_L = \frac{t_H - t_L}{\theta^C + \theta^A(1-\alpha)^2} > 0. \quad (9)$$

As expected, more profit is always shifted from the high-tax affiliate than from the low-tax affiliate. Moreover, the gap $P_H - P_L$ increases with the use of CbC reporting (i.e., with any $\alpha < 1$). This widening reflects the substitution effect. Importantly, the difference in shifting between affiliates is maximized under full use of CbC reporting ($\alpha = 1$). Hence, while total profit shifting declines, the low-tax country gains relatively more tax base from CbC reporting than the high-tax country.

The simplified setting also allows us to solve explicitly for optimal profit shifting in both affiliates, see Appendix D.3 for formal details. It is straightforward to show that the optimal shifting from the low-tax affiliate, P_L^*, is positive in absence of CbC reporting (i.e., for $\alpha = 0$). Furthermore, if marginal tax audit costs θ^A are sufficiently large, P_L^* becomes negative for some $\alpha > 0$ and remains negative as α increases further. This result illustrates the substitution effect in its strongest form. Under CbC reporting, the MNC reduces shifting from the low-tax affiliate and concentrates profit shifting in the high-tax affiliate. If tax audit costs are sufficiently important, it can even become optimal to shift profits from the high-tax affiliate to the low-tax affiliate, rather than to the tax haven. In this case, the MNC sacrifices some tax savings ($t_L - t_1$) to reduce overall tax audit costs. The smaller the tax differential between the low-tax affiliate and the tax haven, the more attractive this inverted structure becomes, see equation (D.12).

We can now sharpen Proposition 1 as follows.

Proposition 3 *If there is no substance channel and cost parameters are homogeneous, the introduction of Country-by-Country reporting can induce MNCs to shift profits to less-scrutinized low-tax affiliates rather than to tax havens. As a result, traditional tax havens are gradually phased out, while low-tax affiliates emerge as the new 'havens'.*

This result implies that MNCs use tax havens less intensively, and haven affiliates may eventually report little or no income. It therefore provides a theoretical mechanism for the empirical findings of De Simone and Olbert (2022), who document that MNCs close subsidiaries in tax havens and reallocate profits toward affiliates in countries with preferential (low-)tax regimes following the introduction of CbC reporting (see Section 6 for further discussion).[24]

In Appendix D.3, we also solve for optimal shifting P_H^* in the high-tax affiliate. When we compare the case of full CbC reporting to no CbC reporting, we obtain

$$P_H^*(\alpha = 1) - P_H^*(\alpha = 0) = \frac{(t_H - t_1)}{\theta^C + 4\theta^A} + \frac{2\theta^A(t_H - t_L)}{\theta^C\left[\theta^C + 4\theta^A\right]} - \frac{(t_H - t_1)}{\theta^C + \theta^A} \gtrless 0. \tag{10}$$

Hence, the effect of CbC reporting on P_H is ambiguous. Whenever the tax audit cost parameter θ^A is sufficiently large, full CbC reporting induces *higher* profit shifting from the high-tax affiliate than in the absence of CbC reporting.

We can summarize the implications of the substitution effect and the strategic adjustment of paper profit shifting as follows. Introducing CbC reporting always reduces total profit shifting to the tax haven. However, the resulting gains in taxable income are distributed asymmetrically across countries. Low-tax countries unambiguously gain from CbC reporting, as their tax bases increase. By contrast, high-tax countries gain less and potentially lose tax base, as MNCs rebalance profit shifting toward high-tax affiliates to maximize tax savings for a given level of tax audit costs. Even when both countries experience an increase in taxable income, the low-tax country benefits more, since CbC reporting widens the gap in shifted profits, $P_H - P_L$.

Proposition 4 *Introducing Country-by-Country reporting has asymmetric effects on profit shifting and tax revenues across countries. In the absence of a substance channel and under homogeneous cost parameters:*

(i) Tax havens unambiguously lose tax base under Country-by-Country reporting.

[24] Importantly, this result does not rely on the absence of economic substance in tax havens, but on the assumption that building or inflating such substance is sufficiently costly.

(ii) Low-tax countries unambiguously gain tax base. The substitution effect reallocates profit shifting away from them.

(iii) High-tax countries gain less than low-tax countries and may even experience a reduction in their tax base, because the substitution effect makes profit shifting from high-tax affiliates more attractive for a given level of tax audit costs.

5.2 When Does CbC Reporting Harm the High-Tax Country?

As shown in the previous subsection, high-tax countries always benefit less from CbC reporting than low-tax countries. They may even experience an increase in profit shifting relative to the case without CbC reporting. In the simplified setting, this occurs when equation (10) is positive, implying a cutoff value for relative costs of

$$\frac{\theta^A}{\theta^C} > \frac{t_H - t_1}{2(t_H - t_L)} + \frac{t_L - t_1}{t_H - t_L}. \tag{11}$$

Using recent statutory corporate tax rates as guidance (OECD, 2023, Figure 2.1), a reasonable calibration is $t_H = 30\%$, $t_L = 15\%$, and $t_1 = 5\%$. Under these values, the cutoff becomes $\theta^A/\theta^C > 1.5$. Hence, if tax audit costs are sufficiently large relative to tax planning costs, the model predicts that a high-tax country loses tax base when complete CbC reporting is introduced.

Equation (11) highlights two relevant margins. The first term on the right-hand side captures the opportunity cost of shifting profits from the high-tax country to the low-tax country instead of to the tax haven. A larger differential vis-a-vis the tax haven $(t_H - t_1)$ increases this cost and therefore raises the cutoff. By contrast, a larger differential vis-a-vis the low-tax country $(t_H - t_L)$ increases the tax savings from shifting profits from the high-tax to the low-tax affiliate, lowering the cutoff.

The second term reflects the forgone tax savings from no longer shifting profits from the low-tax affiliate to the tax haven. A larger differential $(t_L - t_1)$ makes this loss more important and thus raises the required level of tax audit costs. Again, a larger gap $(t_H - t_L)$ amplifies the profitability of reallocating profit shifting toward the low-tax affiliate and mitigates the critical tax-audit-cost threshold.

Our findings have implications for the implementation of CbC reporting. Our analysis suggests that high-tax countries may formally implement CbC reporting but credibly commit not to use the information intensively in tax audits. Consistent with this interpretation, tax administrations differ markedly in how they use CbC reports for risk

assessment. The OECD notes that "[t]he specific approaches adopted vary depending upon each tax administration's general approach to risk assessment," (OECD, 2022, p. 33) and the European Commission documents that CbC information is underused within the EU, partly due to insufficient risk-analysis systems (European Court of Auditors, 2021). Taken together, the substitution effect identified in this paper may help explain why CbC reporting has not become the initially expected game changer.

Our analysis is based on the assumption that CbC reporting primarily serves a red-flagging purpose. Under the current framework, tax authorities receive only aggregated country-level information through CbC reports, which limits the scope for targeted audits. More detailed information is contained in the master file submitted to the HQ host country, but this file is not exchanged across jurisdictions. The master file includes information on group structure, value creation, and transfer pricing policies, which would allow tax authorities to target transfer pricing arrangements more directly. A natural extension of the current CbC framework would therefore be to exchange master files as well. It is, however, not clear whether tax authorities have the capacity to use such vast information to effectively target audits more precisely. To alleviate this issue, the master file should additionally be standardized.[25]

6 Bringing the Model to the Data

Our theoretical analysis connects to the existing empirical literature in several ways. The mechanism of tax audit costs driving effects on profit shifting corresponds well to the tax-enforcement channels that are suggested in previous literature (Overesch and Wolff, 2021). Furthermore, the empirical findings fit well with our theoretical results: CbC reporting increases the consolidated ETRs of MNCs (Joshi, 2020; Hugger, 2025), which is in line with our finding that overall profit shifting (to tax havens) decreases.

Turning to public CbC reporting, our substitution effect argument also puts the results in Joshi et al. (2020) into perspective, who do not find a robust increase in ETRs. Their finding that affiliates in EU countries report higher income is in line with our predictions if one interprets the (receiving) EU countries as—relatively—low-tax countries. An explicit test of the substitution effect, however, is still missing.[26]

[25]For example, Germany and the Netherlands have standardized master-file requirements largely based on the OECD BEPS Action 13 framework.

[26]Note that Joshi et al. (2020) do not differentiate between high-tax and low-tax EU countries in their analyses of pre-tax income.

There are also close parallels with De Simone and Olbert (2022). They document a reallocation of real activity from higher-tax EU affiliates to affiliates in EU countries with preferential tax regimes, which can be interpreted as low-tax countries or disguised tax havens. Our model provides a theoretical underpinning by highlighting a substance channel: Relocating economic activity mitigates tax audit costs under CbC reporting.

In addition, our model stresses that the optimal adjustment to CbC reporting also includes a reallocation of paper profits from high-tax to low-tax countries. Joshi et al. (2025) find that outbound shifting affiliates with low income and high activity adjust their misalignment after the introduction of CbC reporting. The adjustment happens by reducing fixed assets, income does not change. This is consistent with our theory when the direct cost effect and the substitution effect (plus the substance channel) offset each other in magnitude.

Turning to tax havens, De Simone and Olbert (2022) find that MNCs close tax-haven affiliates after the introduction of CbC reporting, which they interpret as an attempt to reduce the appearance of tax aggressiveness. Our model provides a complementary explanation. CbC reporting makes the use of tax havens costly because shifting profits to low-tax countries—rather than to havens—reduces both audit likelihood and audit costs. As a result, tax-haven affiliates lose relevance or become mere conduit entities for rerouting profits from high-tax to low-tax countries.[27] This interpretation is also consistent with earlier evidence on reduced tax-haven presence following geographic earnings disclosure (Hope et al., 2013).

Taken together, our model predicts that CbC reporting reshapes profit-shifting patterns between high-tax and low-tax countries. Much of the existing empirical literature analyzes non-haven countries jointly, which makes it difficult to directly identify such reallocation mechanisms.[28] We therefore turn to the data to test our model predictions more directly. Before doing so, we briefly summarize these predictions by country type.

Tax havens. Our analysis predicts that under CbC reporting both the direct tax audit cost effect and the substitution effect work against tax havens. At the same time, CbC reporting opens a substance channel that can foster total profit shifting. If

[27] In a richer framework with fixed costs of transfer pricing, firms would optimally relocate intangibles and potentially split them across multiple low-tax affiliates. This keeps tax audit costs in check and can rationalize the disappearance of tax-haven affiliates documented by De Simone and Olbert (2022).

[28] An exception is Hugger (2025), who splits affiliates by tax rates in the appendix; however, his design does not allow identifying absolute profitability changes across country types. De Simone and Olbert (2022) distinguish between countries with and without preferential tax regimes.

the substance channel is sufficiently weak, CbC reporting reduces reported profits in tax-haven affiliates of treated MNCs relative to haven affiliates of untreated MNCs.

Low-tax countries. In the presence of a muted substance channel, firms shift less profit out of low-tax countries after the introduction of CbC reporting, because the direct effect and the substitution effect operate in the same direction. We therefore expect that affiliates in low-tax countries report higher taxable profits after CbC reporting if they belong to treated MNCs, relative to comparable affiliates of untreated MNCs.

High-tax countries. For affiliates in high-tax countries, the profit-shifting response is a priori ambiguous, regardless of the substance channel. The substitution effect works in the opposite direction of the direct tax audit cost effect. Equation (11) shows that if tax audit costs are sufficiently large relative to tax planning costs, profit shifting from high-tax countries increases. In this case, treated affiliates in high-tax countries should report lower taxable profits than comparable untreated affiliates. If tax audit costs do not sufficiently exceed tax planning costs, the substitution effect remains weaker than the direct effect, and treated high-tax affiliates will not report lower taxable profits. Even then, however, their profit increase should be smaller than that observed for treated affiliates in low-tax countries.[29]

7 Empirical Analysis

7.1 Identification

To test the hypotheses stated in the previous section, we conduct several difference-in-differences analyses at the affiliate level. We compare affiliates of MNCs that have to submit CbC reports ('treatment group') with affiliates of MNCs not subject to CbC reporting ('control group'), before and after CbC reporting was in place in a difference-in-differences analysis.[30]

[29]Importantly, the substitution effect—rather than the substance channel—generates asymmetric responses between high-tax and low-tax countries.

[30]We do not implement a Regression Discontinuity Design (RDD), because the median of consolidated revenue among the treated MNCs in the sample is EUR 3.5 billion (mean EUR 11.2 billion), indicating that most treated MNCs in our sample are far above the EUR 750 million threshold. An RDD only yields a local average treatment effect (LATE) around the threshold, whereas we are interested in the average treatment effect on the treated. Furthermore, we find evidence of bunching below the threshold of EUR 750 million, which biases the estimate of the LATE.

Treatment definition. As treatment group, we use affiliates of MNCs that are subject to CbC reporting. An MNC becomes subject to CbC reporting if it reports total consolidated revenues above the CbC reporting threshold and the global ultimate owner is located in a country that has implemented CbC reporting legislation. For all countries in the sample, we specify the CbC reporting at the applicable threshold. For most countries, the threshold is EUR 750 million in consolidated revenue, but some countries specify the threshold in local currency.[31] To avoid bias from potential manipulation around the reporting threshold, we exclude MNCs whose consolidated revenue lies within 10 million above or below the applicable threshold in any year. We include these affiliates as a robustness check in Section 7.4. Furthermore, the EU-wide implementation of CbC reporting requires that if an EU affiliate is part of an MNC that exceeds the EUR 750 million revenue threshold but is not subject to CbC reporting in its HQ country, the MNC has to assign an EU-based affiliate the status of 'Surrogate Parent Entity'. The surrogate parent entity has to file the CbC report for the MNC in the EU. Therefore, we include such corporate groups with a surrogate parent entity in the treatment group.[32]

Treatment timing. Most countries introduced CbC reporting in 2016, including all EU countries.[33] In 2017, Iceland, Malaysia, Singapore, and Venezuela introduced CbC reporting; followed in 2018 by Switzerland, Curaçao, Hong Kong, the Marshall Islands, and the British Virgin Islands; in 2019 by Turkey; and in 2021 by Thailand. Our sample period 2012–2021 covers four to nine years before and one to six years after the introduction of CbC reporting. 90.6% of our observations that ever receive treatment are treated in 2016.

High-tax vs. low-tax split. We split the sample into high-tax, low-tax and tax-haven affiliates. To define high-tax and low-tax affiliates, we calculate the median statu-

[31]The countries with a different threshold than EUR 750 million include Australia (ASD 672 million), Brazil (BRL 2.26 billion), Cayman Islands (USD 850 million), China (RMB 5.5 billion), Curacao (ANG 1.5 billion), Hong Kong (HKD 6.8 billion), Iceland (ISK 100 billion), India (INR 55 billion), Japan (JPY 100 billion), Malaysia (MYR 3 billion), Mexico (MXN 12 billion), New Zealand (NZD 1.3 billion), Norway (NOK 6.5 billion), Singapore (SGD 1.125 billion), South Africa (ZAR 10 billion), South Korea (KRW 1 trillion), Switzerland (CHF 900 million), Taiwan (NTD 27 billion), United States (USD 850 billion), and Vietnam (VND 18 trillion).

[32]In our sample, 48.6% of the observations that ever receive treatment have a global ultimate owner in the EU, but 95.7% belong to MNCs with at least one affiliate in the EU. Thus, the revenue threshold is often decisive for whether a group is required to file CbC reports or not, not where the HQs are.

[33]In addition to the EU countries, Australia, Bermuda, Brazil, Canada, Chile, India, Japan, South-Korea, the Cayman Islands, Mexico, Norway, New Zealand, Taiwan, the U.K., the U.S., and South-Africa introduced CbC reporting in 2016.

tory corporate tax rate among all affiliates within an MNC on a year-by-year basis.[34] Then, we define low-tax affiliates as affiliates that face a tax rate in a given year below or equal to the median tax rate within the MNC. High-tax affiliates are affiliates that face a tax rate in a given year above the median tax rate within the MNC. The average within-MNC median tax rate decreases over time (2012: 30.10%; 2021: 25.13%). High-tax or low-tax status is highly stable over time: in only 3.11% of affiliate-year observations does an affiliate's classification switch between the low-tax and high-tax group relative to the previous year. We define affiliates as tax-haven affiliates if they are located in a country classified as a tax haven by Tørsløv et al. (2023b). Our results are also robust to excluding Belgium from the tax-haven group and to using the most recent tax-haven list of Dharmapala (2024) instead, see Appendix Table E.5.[35]

Estimation equation. We implement two main regression specifications. First, we split the sample into high-tax, low-tax and tax-haven affiliates and estimate

$$\left(\frac{EBT}{Assets}\right)_{i,m,c,t} = \gamma_1 \cdot CbCR_{m,t} + \text{Firm FE}_i + \text{Country-Year FE}_{c,t} + \epsilon_{i,m,c,t}, \quad (12)$$

where $\left(\frac{EBT}{Assets}\right)_{i,m,c,t}$ denotes the profit before taxes divided by total assets of affiliate i of the MNC m in country c in year t. To ensure that the denominator is not driving the estimated coefficients, we use the number of total assets in 2015 to scale profit before taxes. Using $EBT/Assets$ as the main dependent variable has the advantage that affiliates with negative or zero profit remain in the sample. Zero profit may reflect profit shifting in its most aggressive form (Bilicka, 2019).

$CbCR_{m,t}$ is a dummy variable that equals one if the affiliate is part of an MNC that is subject to CbC reporting in a given year. Hence, γ_1 identifies our estimated coefficient of interest as the effect of CbC reporting on an affiliate's profitability. For low-tax affiliates, we expect γ_1 to be positive, indicating that these affiliates shift less profit after the introduction of CbC reporting. For high-tax affiliates, we expect γ_1 to be close to zero or negative, indicating that CbC reporting is not effective against profit shifting or—in the case of a negative γ_1—even implies higher profit shifting due to the substitution effect identified in the model. For tax-haven affiliates, we expect γ_1 to be negative, as CbC reporting reduces total profit shifting to tax havens.

[34] We use the full list of affiliates listed for each global ultimate owner in Orbis, which includes affiliates for which no financial information is available in Orbis.

[35] In our sample, tax-haven affiliates are located in Belgium (23,195 affiliate-year observations), Switzerland (59), Ireland (3,450), Luxembourg (367), Malta (40), and the Netherlands (3,015).

We add affiliate fixed effects to control for affiliate-level time-invariant characteristics such as the home country, industry, size of the affiliate, and the cost parameters in the tax planning and tax audit cost function. Country-year fixed effects control for macroeconomic trends and time-varying country characteristics such as tax rates.

Second, we estimate a more flexible specification in the whole sample (low- and high-tax affiliates),

$$\left(\frac{EBT}{Assets}\right)_{i,m,c,t} = \gamma_2 \cdot CbCR_{m,t} + \delta \cdot CbCR_{m,t} \cdot TaxRate_{c,t} + \psi \cdot TaxRate_{c,t} + \text{Firm FE}_i + \text{Year FE}_t + \epsilon_{i,m,c,t}. \quad (13)$$

The effect of CbC reporting is now given by $\gamma_2 + \delta \cdot TaxRate_{c,t}$, where $TaxRate_{c,t}$ denotes the statutory corporate income tax rate in the country where affiliate i is located.[36] In this specification, we exclude tax-haven affiliates from the main sample. We include affiliate and year fixed effects and, in additional specifications, time-varying affiliate- and country-level controls. We cannot include country-year fixed effects as these would subsume the variation in the tax rate.

We expect that γ_2 is positive and δ negative, i.e., that introducing CbC reporting increases profitability of low-tax affiliates, but only has a weak effect on or even decreases profitability (implying more profit shifting) in high-tax affiliates. The regression equation (13) imposes that profit shifting changes linearly with the tax rate. Note that also in our model, this relationship is linear if the tax planning costs are identical across countries.[37]

We estimate our regressions using two-way fixed effects. In our setting, there is little heterogeneity in treatment timing, as most countries introduced CbC reporting in 2016 and only few MNCs cross the EUR 750 million threshold in later years. Therefore, in the main analysis, we use the standard fixed effects estimator, as 90.6% of our observations that ever receive treatment are treated in 2016. We cluster standard errors at the level of the MNC interacted with year because being subject to CbC reporting is determined yearly by the consolidated revenue threshold of EUR 750 million. The baseline results are robust to clustering standard errors at the MNC level instead of the

[36] Consistent with the model, we use statutory corporate income tax rates, as these represent the marginal rate against which profits are shifted. Alternative measures such as forward-looking effective tax rates (Devereux and Griffith, 2003) capture investment incentives rather than the taxation of shifted profits, while backward-looking effective tax rates are endogenous to firms' profit-shifting behavior.

[37] More formally, $\frac{\partial P_H}{\partial t_H} = \frac{\partial P_L}{\partial t_L} = \frac{\theta_A + \alpha^2 \theta_A + \theta}{(\alpha^2-1)^2 \theta_A^2 + \theta^2 + 2(1+\alpha^2)\theta_A \theta}$.

MNC–year level: the high-tax ($p = 0.011$), tax-haven ($p = 0.027$), and flexible-specification ($p < 0.001$) effects remain statistically significant, and only the already-marginal low-tax effect loses significance.

7.2 Data

We use data from Bureau van Dijk's Orbis database from 2012–2021 at both the affiliate– and the global ultimate owner–levels. In line with our model, we select global ultimate owners—HQs in our model—that are located anywhere in the world and have at least two foreign affiliates, which are each located in different countries. We only include MNCs with consolidated revenues above EUR 100 million. At the global ultimate owner–level, we use consolidated data on total revenues and information on the location of subsidiaries.

We include affiliates in the sample if the global ultimate owner owns (directly or indirectly) more than fifty percent. We construct ownership links as follows: We take the latest available information from Historical Orbis Data and update the ownership structure if there is historical ownership data available. We exclude financial and extractive industries (based on NACE Rev. 2 core codes) because these industries face different regulations and tax incentives. We also exclude affiliates that have global ultimate owners from the U.S., because these might be affected by the Tax Cuts and Jobs Act (TCJA) around the time of the introduction of CbC reporting, and because the U.S. has not signed up to the CbC MCAA.[38] At the affiliate-level, we use unconsolidated data on profit before tax (EBT), total and fixed assets, and the number of employees. In addition, we collect country-level data on corporate statutory tax rates from the Tax Foundation and GDP data from the World Bank.[39]

We drop affiliates and global ultimate owners with negative total assets and negative turnover. Thus, a negative value of $EBT/Assets$ indicates loss-making affiliates. We also drop affiliates of global ultimate owners for which we do not observe consolidated revenue of the MNC in one of the sample years. We drop an affiliate from all sample years if we do not observe its profit before tax or total assets in one (or more) sample years. Our final sample for analysis includes 467,552 affiliate-years, consisting of 48,428 unique affiliates that are part of 6,040 MNCs. Appendix Table E.1 compares our sample coverage in terms of countries, years, and number of observations to the most closely related studies using Orbis data.

[38] In robustness analyses, we include U.S. MNCs (see Table 3) and find similar results.

[39] For Taiwan, we obtain GDP data directly from the National Statistics of the Republic of Taiwan.

Table 1: Descriptives

Panel A: Full Sample

	Obs.	Mean	SD	1st	50th	99th
CbCR	467,552	0.38	0.48	0.00	0.00	1.00
EBT/Assets	467,552	0.07	0.22	-0.88	0.04	1.07
EBT (ths. EUR)	467,552	7,623	161,809	-22,542	348	133,525
Total Assets (ths. EUR)	467,552	158,094	1,884,842	27	11,286	2,434,828
Fixed Assets (ths. EUR)	467,487	94,881	1,487,618	0	2,270	1,337,765
Employees (number)	338,911	286	2,291	0	51	3,689
GDP (bln. EUR)	467,552	1.69	1.37	0.05	1.39	5.21
Tax Rate (%)	467,552	26	6	10	25	38

Panel B: Low-Tax vs. High-Tax vs. Tax Haven

	Low-Tax		High-Tax		Tax Haven	
	Treatment	Control	Treatment	Control	Treatment	Control
EBT/Assets	0.10	0.07	0.07	0.05	0.08	0.06
EBT (ths. EUR)	14,950	5,281	8,651	3,729	28,270	3,857
Total Assets (ths. EUR)	313,353	113,589	178,943	93,658	287,727	120,528
Fixed Assets (ths. EUR)	203,158	70,910	94,701	51,482	182,289	72,779
Employees (number)	437	193	404	243	214	130
GDP (bln. EUR)	1.25	1.20	2.59	2.18	0.53	0.52
Tax Rate (%)	20	22	30	31	26	30
Observations	77,960	144,362	85,255	129,849	12,212	17,914

Note: Affiliate-level data from Orbis for 2012–2021. Panel A reports the full sample including tax-haven affiliates. Panel B reports means by group and treatment status. Low-tax (high-tax) affiliates are non-haven affiliates that face a tax rate in a given year below or equal to (above) the median tax rate within the MNC; tax havens follow Tørsløv et al. (2023b). Treatment affiliates belong to MNCs subject to CbC reporting.

Table 1, Panel A shows descriptive statistics for the full sample. We winsorize values of *EBT/Assets* at the 1% and 99% level. The 1st percentile of affiliates reports an *EBT/Assets* of -0.88, and the 99th percentile reports an *EBT/Assets* of 1.07. With a mean of 0.07 and a standard deviation of 0.22, there is large variability in our main variable *EBT/Assets*, including a substantial number of loss-making firms.[40]

Table 1, Panel B shows that on average, affiliates in the control group are smaller than affiliates that do become subject to CbC reporting. Tax rates are comparable between treatment and control affiliates within both the low-tax and high-tax groups. Table 1, Panel B further shows that on average, low-tax affiliates are more profitable and larger than high-tax affiliates, except for employee numbers. Low-tax countries are smaller than high-tax countries, as indicated by GDP.

Appendix Figure E.2 plots percentiles of affiliate size, measured by total assets and by the cost of employees. Appendix Figure E.3 compares the cumulative shares of EBT and total assets across affiliates ranked by total assets, separately for low-tax and high-tax affiliates. Together, the two figures show that affiliate size is highly right-skewed and that profits are similarly concentrated among the largest affiliates. Profit concentration broadly tracks asset concentration, with profits somewhat less concentrated than assets, so that *EBT/Assets* is broadly similar across the size distribution. Finally, Appendix Table E.2 reports the distribution of affiliate-year observations across countries and tax groups.

The differences between treatment and control groups do not threaten our identification strategy as long as treated and non-treated affiliates in each group develop similarly. Our identifying assumption is that in the absence of the introduction of CbC reporting, treated and non-treated low-tax (high-tax) affiliates would develop similarly with respect to their profitability. We cannot directly test this assumption, but we can assess whether reported profitability—as measured by EBT/Assets—develops similarly in treatment and control affiliates before the introduction of CbC reporting.

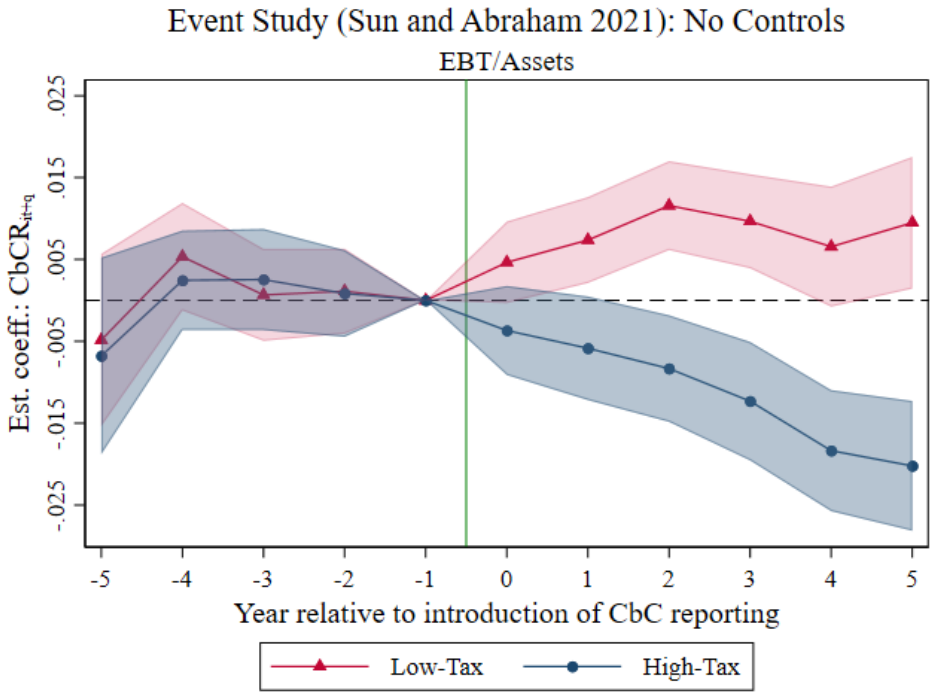
7.3 Results

To confirm that treated and control groups developed similarly before the introduction of CbC reporting, and to obtain a first set of results, we estimate an event study. We use the estimator by Sun and Abraham (2021). Figure 2 shows the results. There is no significant difference between treatment and control groups before the introduction

[40]Before winsorizing, *EBT/Assets* ranges from a minimum of −61,010 to a maximum of 272,143. Winsorizing at the 1% and 99% level thus removes the influence of these extreme outliers.

of CbC reporting. After becoming subject to CbC reporting, low-tax affiliates become more profitable whereas high-tax affiliates become less profitable, compared to the respective control group. This pattern aligns well with our hypotheses.

Figure 2: EBT/Assets over Time: Event Study, Sun and Abraham (2021)



Note: Affiliate-level data from Orbis for 2012–2021. Event Study coefficients and 90% confidence intervals based on standard errors clustered by MNC interacted with year. Estimated using Sun and Abraham (2021) dynamic difference-in-differences with affiliate and year fixed effects. Low-tax (high-tax) affiliates are affiliates that face a tax rate in a given year below or equal to (above) the median tax rate within the MNC.

Table 2 presents our main regression results. Panel A splits the sample into low-tax affiliates, high-tax affiliates, and tax-haven affiliates. Columns (1) to (3) report the baseline specification (12), which includes affiliate and country-year fixed effects. Following the introduction of CbC reporting, low-tax affiliates exhibit significantly higher profitability, while high-tax affiliates become significantly less profitable; tax-haven affiliates also experience a decline in profitability. In economic terms, low-tax (high-tax) affiliates increase (decrease) profitability by 5.57% (16.0%) relative to baseline EBT/Assets levels of 0.07 (0.05). Taken together, these patterns are consistent with the substitution mechanism derived in the model: As CbC reporting raises the audit costs associated with profits reported in tax havens, MNCs reduce shifting to havens and reallocate reported profits across non-haven affiliates.

Table 2: Main Regressions

Panel A: Sample Split

	(1) Low-Tax	(2) High-Tax	(3) Tax Haven	(4) Low-Tax	(5) High-Tax	(6) Tax Haven
CbCR	0.0039*	-0.0080***	-0.0144***	0.0070***	-0.0092***	-0.0088**
	(0.0021)	(0.0022)	(0.0043)	(0.0018)	(0.0021)	(0.0044)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Country-Year FE	Yes	Yes	Yes	No	No	No
Year FE	No	No	No	Yes	Yes	Yes
Obs.	222,322	215,104	30,126	222,374	215,116	30,126
R^2	0.51	0.52	0.48	0.50	0.52	0.47

Panel B: Flexible Specification

	(1) Full Sample, Excl. Controls	(2) Full Sample, Incl. Controls	(3) MNCs With Tax Havens Only
CbCR X Tax Rate	-0.0013***	-0.0013***	-0.0014***
	(0.0001)	(0.0001)	(0.0001)
CbCR	0.0317***	0.0320***	0.0312***
	(0.0036)	(0.0038)	(0.0040)
Tax Rate	0.0012***	0.0014***	0.0017***
	(0.0002)	(0.0002)	(0.0003)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Firm Ctrs.	No	Yes	Yes
Country Ctrs.	No	Yes	Yes
Obs.	437,490	314,783	244,135
R^2	0.49	0.54	0.54

Note: Affiliate-level data from Orbis for 2012–2021. Data excludes U.S. MNCs. The dependent variable is *EBT/Assets*, defined as the affiliate's yearly *Profit Before Tax* divided by *Total Assets* in 2015. Low-tax (high-tax) affiliates are affiliates that face a tax rate in a given year below or equal to (above) the median tax rate within the MNC. *CbCR* is a dummy variable equal to one if the affiliate is part of an MNC that is subject to CbC reporting in that year. Firm-level control variables comprise the number of employees and fixed assets; country-level control variables comprise GDP. Tax havens are defined according to Tørsløv et al. (2023b). Panel B, column (3) includes only MNCs with at least one tax-haven subsidiary in their group structure. We cluster standard errors by multinational, interacted with year. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

Columns (4) to (6) of Table 2 show the same sample but include year fixed effects only, because Berg et al. (2021) show that fixed effects can bias difference-in-differences estimates in case of heterogeneous spillovers between treated and control observations. Even though the estimated differences in profitability are insignificant pre-treatment (see Figure 2), it may still be that control affiliates experience changes in profitability as a result of CbC reporting. If this is the case, adding country-year fixed effects might bias the estimates. We therefore also report year fixed effects in Table 2. The results are similar to baseline.

Panel A of Table E.4 in the Appendix replicates Table 2 including control variables. The pattern of profit shifting is robust to the inclusion of affiliate-level and country-level control variables for tax-haven affiliates. For low-tax and high-tax affiliates, however, the estimates lose significance in columns (1) and (2).[41] Nevertheless, the point estimates retain their expected signs—positive for low-tax and negative for high-tax affiliates. Importantly, even the insignificant high-tax estimate rules out a large positive effect of CbC reporting on high-tax profitability and is thus in line with the substitution effect.

In Panel B of Table 2, we show results of estimating the flexible specification in equation (13).[42] We observe the expected signs: CbC reporting implies higher profitability in low-tax countries, but the effect decreases as the tax rate increases. Based on the specification with control variables in column (2), the effect of introducing CbC reporting turns negative if the tax rate is above 24.6%.[43] This suggests that the substitution effect identified in our theory model dominates the direct effect of introducing CbC reporting for affiliates that face a tax rate of 24.6% or higher. This critical value is close to the median tax rates used in the split sample in Panel A of Table 2.

The flexible specification also puts the size of the estimated decline for high-tax affiliates into perspective. The implied effect of CbC reporting, $\gamma_2 + \delta \cdot TaxRate_{c,t}$, is close to zero for affiliates just above the critical tax rate (e.g., -0.002 at a tax rate

[41] A reason for the loss of significance might be that only larger affiliates are required to report on the control variables. Furthermore, such extensive reporting rules are more prevalent in countries with higher enforcement capacity (e.g., France and Norway). This limits the sample to affiliates which may already be experiencing more scrutiny from tax authorities and thus might not be engaging in profit shifting to the same extent.

[42] Note that the number of observations in Panel B is the sum of the number of low-tax and high-tax affiliates in Panel A, columns (4) and (5). We exclude tax haven affiliates in Panel B, because there is no common support for the tax rate of tax haven affiliates.

[43] The critical tax rate at which CbC reporting does not affect profitability is obtained by differentiating equation (13) with respect to $CbCR_{m,t}$. Doing so leads to the condition $\gamma_2 + \delta \cdot TaxRate_{i,t} = 0$ such that $t^{critical} = -\frac{\gamma_2}{\delta} = -\frac{0.0320}{-0.0013} = 24.6$. Here and for the implied effects below, we compute derived quantities from the coefficients as displayed in Table 2, i.e., rounded to four decimals.

of 26%) and reaches −0.007 at 30%, the mean statutory rate in the high-tax group. This is closely in line with the sample-split estimate in Panel A of Table 2. The decline for high-tax affiliates is thus concentrated among affiliates facing the highest tax rates, where the tax savings from profit shifting are largest, exactly as the substitution effect predicts.

7.4 Robustness Tests and Back-of-the-Envelope Calculation

We next provide robustness tests for our main results on high-tax and low-tax countries.[44] In columns (1) and (2) of Table 3, we first show the event study estimates using Sun and Abraham (2021) from Figure 2. We estimate the ATT for all post-treatment periods, and obtain results that are similar to baseline. Furthermore, we test whether the estimates for high-tax versus low-tax affiliates differ significantly, which yields a Z-statistic with a P-value of 0.000. Appendix Figure E.1 shows results for the estimators of Callaway and Sant'Anna (2021), De Chaisemartin and D'Haultfœuille (2024), and a standard two-way fixed-effects event study; all reproduce the baseline pattern.

In the remainder of Table 3, we show that our results are robust to different samples. We base these tests on our main specification from columns (1) and (2) of Table 2. First, in columns (3) and (4), we restrict the sample to affiliates of MNCs with at least one subsidiary in a tax-haven country (based on the tax haven list in Tørsløv et al., 2023b). This measure is imperfect, as Orbis has incomplete coverage of tax haven affiliates (Tørsløv et al., 2023b) and does not include branches (Langenmayr and Reiter, 2022). At the same time, this restriction focuses the analysis on MNCs that are more likely to engage in profit shifting. Consistent with the model, the estimated coefficients for both low-tax and high-tax affiliates increase in magnitude.[45]

Second, in columns (5) and (6), we exclude HQ affiliates from the sample, because Dischinger et al. (2014) show that MNCs might be hesitant to shift profits away from their HQ. Furthermore, because HQs have to provide local files with detailed transfer-pricing documentation (see footnote 6), they might be subject to more scrutiny. Excluding them from the sample therefore focuses our analysis on subsidiaries only. The estimates are similar to baseline, suggesting that HQs are not driving the estimates.

[44] Appendix Table E.6 provides corresponding robustness tests for tax haven affiliates.

[45] As a placebo exercise, we also estimate the specification for MNCs without observable tax haven affiliates in Orbis (results available upon request). In this subsample, we find no statistically significant effects.

Table 3: Robustness

	Event Study		MNCs With Tax Havens		Non-HQs		Incl. U.S. MNCs	
	(1) Low-Tax	(2) High-Tax	(3) Low-Tax	(4) High-Tax	(5) Low-Tax	(6) High-Tax	(7) Low-Tax	(8) High-Tax
CbCR	0.0082***	-0.0114***	0.0061**	-0.0113***	0.0067***	-0.0096***	0.0067***	-0.0073***
	(0.0027)	(0.0028)	(0.0024)	(0.0027)	(0.0019)	(0.0022)	(0.0017)	(0.0020)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ctrs.	No	No	No	No	No	No	No	No
Obs.	222,322	215,104	157,790	181,469	214,985	206,406	262,604	240,535
R^2	0.50	0.52	0.50	0.52	0.51	0.53	0.50	0.52

	Incl. Threshold		Excl. 2020-2021		Excl. 2016	
	(9) Low-Tax	(10) High-Tax	(11) Low-Tax	(12) High-Tax	(13) Low-Tax	(14) High-Tax
CbCR	0.0076***	-0.0089***	0.0037**	-0.0084***	0.0085***	-0.0112***
	(0.0018)	(0.0020)	(0.0018)	(0.0021)	(0.0020)	(0.0023)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm Ctrs.	No	No	No	No	No	No
Obs.	230,739	221,374	175,301	171,066	198,032	194,207
R^2	0.50	0.52	0.54	0.57	0.50	0.52

Note: Affiliate-level data from Orbis for 2012–2021. The dependent variable is *EBT/Assets*, defined as the affiliate's yearly *Profit Before Tax* divided by *Total Assets* in 2015. Columns (1) and (2) show an event study using Sun and Abraham (2021). The rest of the table shows robustness regarding the sample. Compared to the main analysis, columns (3) and (4) only include MNCs with at least one tax-haven subsidiary in their group structure. Columns (5) and (6) exclude HQ entities. Columns (7) and (8) include U.S. MNCs. Columns (9) and (10) exclude MNCs around the CbC reporting threshold. Columns (11) and (12) exclude the years 2020 and 2021. Columns (13) and (14) exclude the year 2016. Low-tax (high-tax) affiliates are affiliates that face a tax rate in a given year below or equal to (above) the median tax rate within the MNC. *CbCR* is a dummy variable equal to one if the affiliate is part of an MNC that is subject to CbC reporting in that year. We cluster standard errors by multinational, interacted with year. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Third, in columns (7) and (8), we include affiliates with U.S. HQs, which we excluded from the main sample as they may have been affected by the Tax Cuts and Jobs Act (TCJA) around the time of the introduction of CbC reporting. These results are also comparable to the baseline estimates.

Fourth, in columns (9) and (10), we include affiliates from MNCs that report consolidated revenue within EUR 10 million around the threshold in any year. The results are similar to the main results, showing that manipulation around the threshold is not driving our findings. Fifth, in columns (11) and (12) we exclude the years 2020 and 2021 from our sample to ensure that the pandemic does not drive the estimates. Sixth, we exclude the year 2016 in columns (13) and (14) to account for MNCs not using the calendar year as their accounting year and countries that introduced CbC reporting halfway through the year. Results are again similar.

Table 4 repeats the robustness tests above for the flexible specification in equation (13). All results are similar to baseline.

We include two further robustness tests in Table E.3 in the Appendix. First, in Panel A, we estimate the effect of CbCR on aggregate profits of an MNC in each country where it has affiliates. The dependent variable is country-level aggregated profitability, defined as the sum of all non-HQ affiliates' profit before tax divided by all affiliates' total assets of the same MNC in one country. The estimates are smaller and insignificant, but have the correct signs. A reason for the smaller coefficients might be that we do not observe all affiliates of an MNC in each country, for example because accounting regulations only require larger affiliates to publish their financial statements.[46]

Panel B of Table E.3 shows the analysis restricted to affiliate-years with positive earnings before taxes only. This restriction addresses concerns that subsidiaries with operating losses or net operating losses may face very low effective marginal tax rates and therefore different shifting incentives, and that the prevalence of loss firms may affect profitability-based outcome measures more generally (De Simone et al., 2017). In this restricted sample, the estimates for low-tax affiliates are insignificant and close to zero, while the estimates for high-tax affiliates and tax-haven affiliates remain in line with the baseline results. The loss of precision for low-tax affiliates likely reflects the substantial reduction in sample size and the exclusion of affiliate-years with near-zero profits, which may be very active profit shifters.

[46]Our results are not driven by small affiliates: In untabulated analysis, we exclude the smallest tercile of affiliates in terms of total assets. The results are similar, albeit less significant in the sample split. The flexible specification remains highly significant and implies that the substitution effect dominates for tax rates above 22.8%.

Table 4: Robustness for Flexible Specification

	(1) With Tax Havens	(2) Non-HQs	(3) Incl. U.S.	(4) Incl. Threshold	(5) Excl. 2020- 2021	(6) Excl. 2016
CbCR X Tax Rate	-0.0013***	-0.0013***	-0.0012***	-0.0013***	-0.0011***	-0.0014***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
CbCR	0.0305***	0.0307***	0.0292***	0.0323***	0.0251***	0.0348***
	(0.0038)	(0.0036)	(0.0032)	(0.0035)	(0.0036)	(0.0038)
Tax Rate	0.0014***	0.0011***	0.0013***	0.0012***	0.0006***	0.0014***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm Ctrs.	No	No	No	No	No	No
Country Ctrs.	No	No	No	No	No	No
Obs.	341,951	425,204	507,450	456,209	351,371	396,219
R^2	0.50	0.50	0.49	0.49	0.53	0.49

Note: Affiliate-level data from Orbis for 2012–2021. The dependent variable is *EBT/Assets*, defined as the affiliate's yearly *Profit Before Tax* divided by *Total Assets* in 2015. Column (1) only includes MNCs with at least one tax-haven subsidiary in their group structure. Column (2) excludes HQs. Column (3) includes U.S. MNCs. Column (4) includes MNCs around the CbC reporting threshold. Column (5) excludes observations from 2020 and 2021. Column (6) excludes observations from 2016. *CbCR* is a dummy variable equal to one if the affiliate is part of an MNC that is subject to CbC reporting in that year. We cluster standard errors by multinational, interacted with year. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

To ensure that real responses do not drive our results (De Simone and Olbert, 2022), we re-estimate our main specifications in two untabulated robustness checks, where we scale EBT by (i) yearly total assets and (ii) 2021 total assets. The results are in line with baseline—profitability per unit of assets falls in high-tax affiliates and rises in low-tax affiliates. In an untabulated robustness check, we also find no significant effect of CbC reporting on fixed-asset investment. Accordingly, the changes in reported profitability are not driven by a reallocation of real activity across country groups in our sample.

In addition, we include robustness tests on the definition of high-tax versus low-tax affiliates in Panel B of Table E.4 in the Appendix. In columns (1) and (2), we define low-tax (high-tax) affiliates as affiliates below or equal to (above) the worldwide median tax rate on a yearly level. In columns (3) and (4), we define low-tax (high-tax) as affiliates below or equal to (above) the critical tax rate of 24.6% as estimated in Table 2, Panel B, Column (2).

Lastly, we use our estimates for a back-of-the-envelope calculation of the revenue implications of CbC reporting.[47] For each non-haven country, we evaluate the country-specific profitability effect of CbC reporting implied by the flexible specification (Table 2, Panel B, Column 2) at the country's average statutory tax rate over 2016–2021 and denote it by β_c.[48] We multiply β_c by the country's tangible assets reported in the OECD CbC data for 2018 to obtain the implied change in reported profits. Then, we multiply this change by the average tax rate. Table 5 reports the resulting change in corporate tax revenue as a percentage of each country's 2015 corporate tax revenue from the OECD Revenue Statistics. We restrict the calculation to non-haven countries.

We find that countries with a statutory rate below the critical rate of 24.6% gain revenue, and countries above it lose. Low-tax countries gain between 1.2% (Bulgaria) and 4.2% (Hungary) of their corporate income tax revenue. High-tax countries lose. For example, Germany loses 5.3% and Japan 2.9% of pre-CbCR corporate tax revenues. The losses grow with the statutory rate, consistent with the substitution effect concentrating the remaining profit shifting where the tax savings are largest.

[47] Because we do not observe the universe of MNC affiliates in Orbis—which has less coverage of smaller firms (Kalemli-Özcan et al., 2024)—we base this calculation on the aggregate CbC reporting data published by the OECD (2016), rather than on our own sample.

[48] Formally, we set $\beta_c = \gamma_2 + \delta \cdot \text{AvgTaxRate}_c$ for any country c.

Table 5: Back-of-the-Envelope Calculation: Tax Revenue Effects by Country

Country	% Avg. Tax Rate 2016–21	β_c	Profits (USD m)	Assets (USD m)	Lost / Gained Profits (USD m)	CIT Revenue (USD m)	Lost / Gained CIT (USD m)	% CIT
High-Tax								
France	33.0	−0.0109	121,649	888,614	−9,714	47,424	−3,208	−6.76
Germany	30.0	−0.0070	239,123	1,472,650	−10,279	57,721	−3,082	−5.34
Japan	29.8	−0.0068	513,964	2,355,213	−15,925	166,107	−4,748	−2.86
Low-Tax								
Bulgaria	10.0	0.0190	1,414	7,012	133	1,105	13	1.21
Czechia	19.0	0.0073	19,504	78,960	576	6,711	110	1.63
Finland	20.0	0.0060	21,759	61,406	368	5,045	74	1.46
Hungary	10.7	0.0181	10,193	46,423	842	2,153	90	4.17
Poland	19.0	0.0073	27,044	203,091	1,483	8,782	282	3.21
Romania	16.0	0.0112	6,071	35,106	393	4,176	63	1.51
United Kingdom	19.2	0.0071	263,464	1,777,256	12,589	66,956	2,413	3.60

Notes: Back-of-the-envelope calculation for the change in corporate income tax revenue as a result of CbC reporting. Sample restricted to countries with at least 3,000 affiliate-years and an imbalance in the within-MNE qualification as high-tax versus low-tax (or vice versa) of maximum 90% versus 10%. Countries are grouped by majority tax status (Tax Haven, High-Tax, Low-Tax). Columns are constructed the following way: *Avg. tax rate* is each country's statutory corporate income tax rate averaged over 2016–2021. The country-specific effect is $\beta_c = \gamma_2 + \delta \cdot \text{AvgTaxRate}_c$, with $\gamma_2 = 0.0320$ and $\delta = -0.0013$ from the flexible specification (Table 2, Panel B, column 2; equation (13)). *Profits* and *Assets* are 2018 sums from the OECD Aggregate CbCR Statistics; *Assets* is tangible assets other than cash and cash equivalents. *Lost / Gained Profits* = $\beta_c \times$ Assets. *CIT revenue* is 2015 total corporate income tax revenue. *Lost / Gained CIT* = Lost / Gained Profits × Avg. tax rate. *% CIT* expresses lost or gained CIT as a percentage of CIT revenue.

8 Conclusion

We model the effects of CbC reporting and identify a substitution effect in addition to the direct profit-shifting effect. The substitution effect incentivizes MNCs to shift (relatively) more profit from high-tax affiliates than from low-tax affiliates. The intuition is that CbC reporting interlinks and increases the cost of shifting to the tax haven at the MNC group level. Thus, to save on overall tax audit costs, it is optimal to focus remaining profit shifting on high-tax affiliates and to reduce shifting from low-tax affiliates, where tax savings are smaller. In sum, MNCs sacrifice some tax savings to reduce overall tax audit costs by effectively shifting profits from high-tax to low-tax affiliates and reducing tax-haven exposure. Importantly, this effect remains present even if there is an additional channel via economic substance in tax havens.

For a sufficiently weak substance channel, our theory model shows that CbC reporting reduces overall profit shifting (to tax havens). Furthermore, remaining profit shifting follows a pattern: (1) Tax havens lose tax base. (2) Low-tax countries gain from CbC reporting due to the substitution effect that leads to a restructuring of overall profit shifting. (3) Due to the substitution effect, high-tax countries benefit less from a decrease in overall profit shifting and can even lose tax base.

Our theoretical model helps reconcile mixed empirical evidence on whether CbC reporting addresses base erosion and profit shifting on consolidated vs. affiliate level. Our empirical analysis supports the model's predicted reallocation of profit shifting. It suggests that profit shifting from high-tax countries increased after MNCs became subject to CbC reporting, whereas profit shifting from low-tax countries decreased. This pattern helps explain why CbC reporting did not become the expected game changer for tax enforcement.

Our findings imply that transparency instruments need to identify not only the aggregate exposure of the group, but also the units or transactions from which the regulated activity originates. CbC reports reveal profits in tax havens, but they do not directly reveal from which affiliates these profits were shifted. Tax authorities should therefore combine CbC-based risk flags with audit strategies that trace the corresponding deductions in high-tax affiliates. More broadly, our results show that transparency instruments can reduce the targeted activity in the aggregate while reallocating the remaining activity toward units where private gains are highest. This mechanism is not specific to taxation. It can also arise under other group-level policies, such as fleet-wide CO_2 emission standards, where firms can meet an aggregate target while reallocating remaining emissions across products.

A Alternative Tax Audit Cost Specification

To keep the model more tractable, we assume that there is no substance channel and set employment in the tax haven to $L_1 = 1$. Furthermore, we focus on a symmetric use of the information from CbC reporting ($\alpha_H = \alpha_L = \alpha$). Then, the audit measure under full CbC reporting turns into $X = \pi_1 = R_H + P_H + R_L + P_L$ and the linear combination of the standard measure with purely national profit manipulation and focusing on tax haven profits implies

$$(1-\alpha)P_i + \alpha X = P_i + \alpha[R_H + R_L + P_j] \quad \forall i = H, L,\ j = L, H.$$

As an alternative to our tax audit cost specification in the main text, we can model the tax audit costs as the probability that the MNC needs to pay profit-shifting costs C_i^C because the MNC's profit-shifting behavior is detected during the tax audit, and the MNC has to provide additional documentation or has to pay a fine. In that case, we can write the tax audit costs as a probability p that is defined over the linear combination of the audit measures, i.e., $C_i^A = p(P_i + \alpha[R_H + R_L + P_j])$. We assume that the probability increases in that measure, that is, effectively with the total amount of profits shifted. Hence, $p'(P_i + \alpha[R_H + R_L + P_j]) > 0$. Then, the total (expected) costs for tax planning become $C_i = p(P_i + \alpha[R_H + R_L + P_j])C_i^C(P_i) = p(P_i + \alpha[R_H + R_L + P_j])\ \frac{\theta_i}{2}P_i^2$.

In that case, the maximization problem of the MNC becomes

$$\begin{aligned}\max_{P_H, P_L} \Pi \quad = \quad & (1-t_H)\pi_H + (t_H - t_1)P_H - p(P_H + \alpha[R_H + R_L + P_L])\ \frac{\theta_H^C}{2}P_H^2 \\ & + (1-t_L)\pi_L + (t_L - t_1)P_L - p(P_L + \alpha[R_H + R_L + P_H])\ \frac{\theta_L^C}{2}P_L^2, \quad \text{(A.1)}\end{aligned}$$

and the corresponding first-order conditions are

$$\begin{aligned}\frac{\partial \Pi}{\partial P_H} \quad = \quad & (t_H - t_1) - p(P_H + \alpha[R_H + R_L + P_L])\theta_H^C P_H - p'(P_H + \alpha[R_H + R_L + P_L])\frac{\theta_H^C}{2}P_H^2 \\ & - p'(P_L + \alpha[R_H + R_L + P_H])\frac{\theta_L^C}{2}P_L^2\alpha = 0, \quad \text{(A.2)} \\ \frac{\partial \Pi}{\partial P_L} \quad = \quad & (t_L - t_1) - p(P_L + \alpha[R_H + R_L + P_H])\theta_L^C P_L - p'(P_L + \alpha[R_H + R_L + P_H])\frac{\theta_L^C}{2}P_L^2 \\ & - p'(P_H + \alpha[R_H + R_L + P_L])\frac{\theta_H^C}{2}P_H^2\alpha = 0. \quad \text{(A.3)}\end{aligned}$$

In absence of CbC reporting, i.e., for $\alpha = 0$, tax savings in one affiliate are balanced against the local shifting costs in that affiliate only. The profit-shifting decisions across affiliates are independent of each other. The result is effectively identical to our reduced-

form approach in the main text. For (partial) CbC reporting, i.e., $\alpha > 0$, the shifting decisions become interlinked. Reducing profit shifting in one affiliate reduces total shifting costs in the other affiliate and allows for more shifting there, all else equal. Although the formal terms are more complicated in the alternative specification, this relationship identifies exactly the substitution effect that drives our findings under the approach in the main text. Qualitatively, the results and driving forces remain unchanged.

Importantly, the substitution effect also remains when the probability (or rather detection-risk function) linearly increases in the amount of profits shifted. Formally, applying $p(P_i + \alpha[R_H + R_L + P_j]) = P_i + \alpha[R_H + R_L + P_j]$ simplifies the first-order conditions, but does not eliminate the substitution effect:

$$\frac{\partial \Pi}{\partial P_H} = (t_H - t_1) - (P_H + \alpha[R_H + R_L + P_L])\theta_H^C P_H - \frac{\theta_H^C}{2} P_H^2 - \frac{\theta_L^C}{2} P_L^2 \alpha = 0, \quad \text{(A.4)}$$

$$\frac{\partial \Pi}{\partial P_L} = (t_L - t_1) - (P_L + \alpha[R_H + R_L + P_H])\theta_L^C P_L - \frac{\theta_L^C}{2} P_L^2 - \frac{\theta_H^C}{2} P_H^2 \alpha = 0. \quad \text{(A.5)}$$

B CbC Reporting and Responses to Tax Incentives

In this appendix, we analyze how CbC reporting affects the tax sensitivity of profit-shifting decisions. Doing a comparative-static analysis with the first-order conditions and applying Cramer's Rule (see Appendix C.1) allows identifying the rebalancing effect in response to changes in tax rates.

Affiliate-level profit shifting. A higher tax burden t_1 in the tax haven always reduces profit shifting in the absence of CbC reporting ($\alpha_H = \alpha_L = 0$). With CbC reporting, this is not necessarily the case:

$$\frac{dP_i}{dt_1} = -\frac{\theta_j^C + \theta_j^A[(1-\alpha_j)^2 + \frac{\alpha_j}{L_1}(1-\alpha_j)] - \theta_i^A \frac{\alpha_i}{L_1}(1-\alpha_i)}{|\mathcal{H}|} \gtrless 0, \quad \text{(A.6)}$$

where $i = H, L$, $j = L, H$. $|\mathcal{H}| > 0$ is the determinant of the Hessian matrix, which is positive by the second-order conditions of the maximization problem.

While a higher tax rate in the tax haven reduces the marginal tax incentive to shift profits and therefore tends to lower profit shifting in each affiliate, this effect can be overturned under asymmetric use of CbC reporting. When a country relies on CbC information only to a limited extent, a reduction in overall shifting to the tax haven lowers expected tax audit costs, partially offsetting the reduction in tax incentives.

This second-round effect can make it optimal for the MNC to increase profit shifting from that affiliate despite the higher haven tax rate. The resulting rebalancing effect arises only for intermediate values of α_i and disappears when CbC reporting is either not used ($\alpha_i \to 0$) or fully used ($\alpha_i \to 1$).[49]

Total profit shifting. Independently of the use of CbC reporting across countries, a higher tax rate in the tax haven reduces total profit shifting:

$$\frac{d(P_H + P_L)}{dt_1} = -\frac{\sum_{k=H,L}\left[\theta_k^C + \theta_k^A(1-\alpha_k)^2\right]}{|\mathcal{H}|} < 0. \tag{A.7}$$

Thus, although CbC reporting can reallocate profit shifting across affiliates, the direct effect of reduced profit shifting incentives dominates in the aggregate.

We now turn to the effect of a *foreign* tax change on profit shifting decisions. Here, the rebalancing effect becomes particularly transparent. In a standard environment without CbC reporting (i.e., $\alpha_H = \alpha_L = 0$), profit shifting depends only on the tax differential between the shifting affiliate and the tax-haven affiliate, not on foreign tax rates.[50] This independence breaks down as soon as CbC reporting is used ($\alpha > 0$):

$$\frac{dP_i}{dt_j} = -\frac{\sum_{k=H,L}\theta_k^A\left(1-\alpha_k+\frac{\alpha_k}{L_1}\right)\frac{\alpha_k}{L_1}}{|\mathcal{H}|} \leq 0. \tag{A.8}$$

A higher tax rate in one affiliate reduces profit shifting in the other affiliate whenever there is CbC reporting. This reflects the rebalancing of profit shifting across affiliates in response to interlinked tax audit costs: Shifting becomes concentrated in higher-tax affiliates where tax savings are larger. Because CbC reporting introduces group-level audit costs, the MNC reduces profit shifting from the other affiliate to contain total audit costs. This mechanism mirrors the reallocation channel identified by Huizinga et al. (2008) in MNCs' capital-structure choices and coexists with internal and parental debt-shifting channels (Goldbach et al., 2021).

Lastly, how does profit shifting from an affiliate change when its own tax rate

[49] It also disappears when both countries use CbC reporting equivalently ($\alpha_H = \alpha_L = \alpha$) and the difference in tax audit cost parameters is sufficiently small, as $\frac{dP_i}{dt_1} = -\frac{\theta_j^C + \theta_j^A(1-\alpha)^2 + (\theta_j^A - \theta_i^A)\frac{\alpha}{L_1}(1-\alpha)}{|\mathcal{H}|} < 0$ if $\theta_j^A \approx \theta_i^A$. In this case, the direct effect of a reduced tax differential dominates.

[50] The weighted tax rate differential identified as the 'C measure' in Huizinga and Laeven (2008) does not apply to profit shifting via intangibles to a tax haven (Hopland et al., 2021).

changes? We find

$$\frac{dP_i}{dt_i} = \frac{\theta_j^C + \theta_j^A \left(1 - \alpha_j + \frac{\alpha_j}{L_1}\right)^2 + \theta_i^A \frac{\alpha_i^2}{L_1^2}}{|\mathcal{H}|} > 0. \tag{A.9}$$

A higher domestic tax rate raises marginal tax savings and, under CbC reporting, additionally increases the relative attractiveness of shifting from that affiliate, as reducing shifting elsewhere frees up audit-cost capacity, see the last term in the numerator of equation (A.9).

Beyond these tax-rate-driven rebalancing effects, CbC reporting also introduces a direct substitution effect on profit-shifting choices. We turn to this effect in the following subsection.

C Derivations in the General Model

C.1 Comparative Statics in the General Model

To derive the comparative-static results used in the main text, recall

$$X \equiv \frac{\pi_1}{L_1} = \frac{R_H + P_H + R_L + P_L}{L_1} \quad \text{so that} \quad \frac{\partial X}{\partial P_H} = \frac{\partial X}{\partial P_L} = \frac{1}{L_1}. \tag{C.1}$$

and define the auxiliary term

$$S_i \equiv (1 - \alpha_i) P_i + \alpha_i X > 0. \tag{C.2}$$

Throughout, let $i \in \{H, L\}$, $j \in \{L, H\}$ and $j \neq i$.

Totally differentiating the first-order conditions (2a) and (2b) delivers

$$\begin{aligned} A_H dP_H + B dP_L &= -dt_H + dt_1 - \theta_H^A \left[\frac{L_1 - 1}{L_1} S_H - \left(1 - \alpha_H + \frac{\alpha_H}{L_1}\right)(X - P_H)\right] d\alpha_H \\ &\quad + \theta_L^A \left[\frac{S_L}{L_1} + (X - P_L)\frac{\alpha_L}{L_1}\right] d\alpha_L, \end{aligned} \tag{C.3}$$

$$\begin{aligned} B dP_H + A_L dP_L &= -dt_L + dt_1 + \theta_H^A \left[\frac{S_H}{L_1} + (X - P_H)\frac{\alpha_H}{L_1}\right] d\alpha_H \\ &\quad - \theta_L^A \left[\frac{L_1 - 1}{L_1} S_L - \left(1 - \alpha_L + \frac{\alpha_L}{L_1}\right)(X - P_L)\right] d\alpha_L, \end{aligned} \tag{C.4}$$

where

$$\begin{aligned}\mathcal{H}_{ii} &= A_i = -\left[\theta_i^C + \theta_i^A\left(1-\alpha_i+\frac{\alpha_i}{L_1}\right)^2 + \theta_j^A\frac{\alpha_j^2}{L_1^2}\right] < 0,\\ \mathcal{H}_{ij} &= B = -\sum_i \theta_i^A\left(1-\alpha_i+\frac{\alpha_i}{L_1}\right)\frac{\alpha_i}{L_1} < 0,\ i\neq j.\end{aligned}$$

We can summarize these expressions in a linear system in (dP_H, dP_L):

$$\underbrace{\begin{pmatrix} A_H & B \\ B & A_L\end{pmatrix}}_{\equiv\mathcal{H}}\begin{pmatrix} dP_H \\ dP_L\end{pmatrix} = \begin{pmatrix} -dt_H + dt_1 \\ -dt_L + dt_1\end{pmatrix} + \begin{pmatrix} -\theta_H^A\left[\frac{L_1-1}{L_1}\,S_H - \left(1-\alpha_H+\frac{\alpha_H}{L_1}\right)(X-P_H)\right] \\ \theta_H^A\left[\frac{S_H}{L_1}+(X-P_H)\frac{\alpha_H}{L_1}\right]\end{pmatrix} d\alpha_H + \begin{pmatrix} \theta_L^A\left[\frac{S_L}{L_1}+(X-P_L)\frac{\alpha_L}{L_1}\right] \\ -\theta_L^A\left[\frac{L_1-1}{L_1}\,S_L - \left(1-\alpha_L+\frac{\alpha_L}{L_1}\right)(X-P_L)\right]\end{pmatrix} d\alpha_L. \tag{C.5}$$

The second-order conditions imply that $A_i < 0$ and that the determinant of the Hessian matrix $\mathcal{H}$ is positive definite, i.e.,

$$|\mathcal{H}| \equiv \det(\mathcal{H}) = A_H A_L - B^2 > 0. \tag{C.6}$$

Comparative statics with respect to the tax rates. From equation (C.5) and Cramer's Rule, the effects of a tax-rate change in the haven affiliate under CbC reporting follow as

$$\begin{aligned}\frac{\partial P_i}{\partial t_1} &= \frac{\begin{vmatrix}1 & B\\ 1 & A_j\end{vmatrix}}{|\mathcal{H}|} = \frac{A_j - B}{|\mathcal{H}|} = -\frac{\left[\theta_j^C + \theta_j^A\left(1-\alpha_j+\frac{\alpha_j}{L_1}\right)^2 + \theta_i^A\frac{\alpha_i^2}{L_1^2}\right] - \sum_i \theta_i^A\left(1-\alpha_i+\frac{\alpha_i}{L_1}\right)\frac{\alpha_i}{L_1}}{|\mathcal{H}|}\\ &= -\frac{\theta_j^C + \theta_j^A[(1-\alpha_j)^2 + \frac{\alpha_j}{L_1}(1-\alpha_j)] - \theta_i^A\frac{\alpha_i}{L_1}(1-\alpha_i)}{|\mathcal{H}|} \gtrless 0,\end{aligned} \tag{C.7}$$

which gives equation (A.6).

From this equation and $|\mathcal{H}| > 0$, it is straightforward to show that

$$\frac{\partial(P_H + P_l)}{\partial t_1} = \frac{\partial P_H}{\partial t_1} + \frac{\partial P_L}{\partial t_1} = -\frac{\sum_{i=H,L}\left[\theta_i^C + \theta_i^A(1-\alpha_i)^2\right]}{|\mathcal{H}|} < 0. \tag{C.8}$$

Following equivalent procedures, a tax-rate change in country j affects profit shifting in country i by

$$\frac{\partial P_i}{\partial t_j} = \frac{\begin{vmatrix}0 & B\\ -1 & A_j\end{vmatrix}}{|\mathcal{H}|} = \frac{B}{|\mathcal{H}|} = -\frac{\sum_{i=H,L}\theta_i^A\left(1-\alpha_i+\frac{\alpha_i}{L_1}\right)\frac{\alpha_i}{L_1}}{|\mathcal{H}|} \leq 0, \tag{C.9}$$

whereas a tax rate change in the same country triggers

$$\frac{\partial P_i}{\partial t_i} = \frac{\begin{vmatrix} -1 & B \\ 0 & A_j \end{vmatrix}}{|\mathcal{H}|} = \frac{-A_j}{|\mathcal{H}|} = \frac{\theta_j^C + \theta_j^A \left(1 - \alpha_j + \frac{\alpha_j}{L_1}\right)^2 + \theta_i^A \frac{\alpha_i^2}{L_1^2}}{|\mathcal{H}|} > 0. \tag{C.10}$$

Comparative statics with respect to unilateral CbC reporting. Suppose that country j does not use CbC reporting ($\alpha_j = d\alpha_j = 0$). Then, the comparative static effects of country i unilaterally increasing its weight on CbC information ($d\alpha_i > 0$), reported in equations (3) and (4) in the main text, follow from equation (C.5) and Cramer's Rule as

$$\begin{aligned} \frac{dP_j}{d\alpha_i}\Big|_{\alpha_j=0} &= \frac{\begin{vmatrix} -\left[\theta_i^C + \theta_i^A \left(1 - \alpha_i + \frac{\alpha_i}{L_1}\right)^2\right] & -\theta_i^A \left[\frac{L_1-1}{L_1} S_i - \left(1 - \alpha_i + \frac{\alpha_i}{L_1}\right)(X - P_i)\right] \\ -\theta_i^A \left(1 - \alpha_i + \frac{\alpha_i}{L_1}\right) \frac{\alpha_i}{L_1} & \theta_i^A \left[\frac{S_i}{L_1} + (X - P_i)\frac{\alpha_i}{L_1}\right] \end{vmatrix}}{|\mathcal{H}|} \\ &= -\frac{\theta_i^A \theta_i^C \left[\frac{S_i}{L_1} + (X - P_i)\frac{\alpha_i}{L_1}\right] + (\theta_i^A)^2 \left(1 - \alpha_i + \frac{\alpha_i}{L_1}\right) \frac{S_i}{L_1}}{|\mathcal{H}|} < 0 \end{aligned} \tag{C.11}$$

and

$$\begin{aligned} \frac{dP_i}{d\alpha_i}\Big|_{\alpha_j=0} &= \frac{\begin{vmatrix} -\theta_i^A \left[\frac{L_1-1}{L_1} S_i - \left(1 - \alpha_i + \frac{\alpha_i}{L_1}\right)(X - P_i)\right] & -\theta_i^A \left(1 - \alpha_i + \frac{\alpha_i}{L_1}\right) \frac{\alpha_i}{L_1} \\ \theta_i^A \left[\frac{S_i}{L_1} + (X - P_i)\frac{\alpha_i}{L_1}\right] & -\left[\theta_j^C + \theta_j^A + \theta_i^A \frac{\alpha_i^2}{L_1^2}\right] \end{vmatrix}}{|\mathcal{H}|} \\ &= -\frac{\theta_i^A(\theta_j^C + \theta_j^A)\left(1 - \alpha_i + \frac{\alpha_i}{L_1}\right)(X - P_i) - \theta_i^A(\theta_j^C + \theta_j^A)\frac{L_1-1}{L_1} S_i - (\theta_i^A)^2 \frac{\alpha_i}{L_1}\frac{S_i}{L_1}}{|\mathcal{H}|} \gtrless 0, \end{aligned} \tag{C.12}$$

where $|\mathcal{H}| > 0$ from second-order conditions, $X - P_i > 0$ from Assumption 1(i), and where we used $\left(1 - \alpha_i + \frac{\alpha_i}{L_1}\right)^2 = (1 - \alpha_i)^2 + \frac{2\alpha_i(1-\alpha_i)}{L_1} + \frac{\alpha_i^2}{L_1^2}$ to consolidate terms.

Comparative statics with respect to symmetric multilateral CbC reporting. For the multilateral case assume a symmetric use of CbC reporting, $\alpha_H = \alpha_L = \alpha$, and a simultaneous adjustment of the weight on CbC reporting, that is, $d\alpha_H = d\alpha_L = d\alpha$. Then, the relevant linear system of a simultaneous change in the use of CbC reporting turns into

$$\begin{pmatrix} A_H & B \\ B & A_L \end{pmatrix} \begin{pmatrix} dP_H \\ dP_L \end{pmatrix} = \begin{pmatrix} \mathcal{H}_{H\alpha} \\ \mathcal{H}_{L\alpha} \end{pmatrix} d\alpha, \tag{C.13}$$

where

$$\begin{aligned} \mathcal{H}_{H\alpha} &= -\theta_H^A \left[\frac{L_1 - 1}{L_1} S_H - \left(1 - \alpha + \frac{\alpha}{L_1}\right)(X - P_H)\right] + \theta_L^A \left[\frac{S_L}{L_1} + (X - P_L)\frac{\alpha}{L_1}\right], \\ \mathcal{H}_{L\alpha} &= -\theta_L^A \left[\frac{L_1 - 1}{L_1} S_L - \left(1 - \alpha + \frac{\alpha}{L_1}\right)(X - P_L)\right] + \theta_H^A \left[\frac{S_H}{L_1} + (X - P_H)\frac{\alpha}{L_1}\right]. \end{aligned}$$

The effect of (symmetric multilateral) CbC reporting on profit shifting in the high-tax country, see equation (7) in the main text, results from

$$\frac{dP_H}{d\alpha} = \frac{\begin{vmatrix} \mathcal{H}_{H\alpha} & B \\ \mathcal{H}_{L\alpha} & A_L \end{vmatrix}}{|\mathcal{H}|} = \frac{\mathcal{H}_{H\alpha}A_L - \mathcal{H}_{L\alpha}B}{|\mathcal{H}|}. \tag{C.14}$$

As an intermediary step, we obtain

$$\begin{aligned}
\frac{dP_H}{d\alpha}|\mathcal{H}| \;=\;& -\theta_L^C\mathcal{H}_{H\alpha} \\
& +\theta_L^A\theta_H^A\left[(1-\alpha)\left(1-\alpha+\frac{\alpha}{L_1}\right)+\frac{\alpha}{L_1}-\frac{\alpha^2}{L_1}+\frac{\alpha^2}{L_1^2}\right]\left\{\frac{L_1-1}{L_1}S_H-\left(1-\alpha+\frac{\alpha}{L_1}\right)(X-P_H)\right\} \\
& -(\theta_L^A)^2\left[(1-\alpha)\left(1-\alpha+\frac{\alpha}{L_1}\right)+\frac{\alpha}{L_1}-\frac{\alpha^2}{L_1}+\frac{\alpha^2}{L_1^2}\right]\left\{\frac{S_L}{L_1}+(X-P_L)\frac{\alpha}{L_1}\right\} \\
& +(\theta_H^A)^2\frac{\alpha^2}{L_1^2}\left\{\frac{L_1-1}{L_1}S_H-\left(1-\alpha+\frac{\alpha}{L_1}\right)(X-P_H)\right\} \\
& -\theta_H^A\theta_L^A\frac{\alpha^2}{L_1^2}\left\{\frac{S_L}{L_1}+(X-P_L)\frac{\alpha}{L_1}\right\} \\
& +(\theta_H^A)^2\left(\frac{\alpha}{L_1}-\frac{\alpha^2}{L_1}+\frac{\alpha^2}{L_1^2}\right)\left\{\frac{S_H}{L_1}+(X-P_H)\frac{\alpha}{L_1}\right\} \\
& +\theta_H^A\theta_L^A\left(\frac{\alpha}{L_1}-\frac{\alpha^2}{L_1}+\frac{\alpha^2}{L_1^2}\right)\left\{\frac{S_H}{L_1}+(X-P_H)\frac{\alpha}{L_1}\right\} \\
& -\theta_H^A\theta_L^A\left(\frac{\alpha}{L_1}-\frac{\alpha^2}{L_1}+\frac{\alpha^2}{L_1^2}\right)\left\{\frac{L_1-1}{L_1}S_L-\left(1-\alpha+\frac{\alpha}{L_1}\right)(X-P_L)\right\} \\
& -(\theta_L^A)^2\left(\frac{\alpha}{L_1}-\frac{\alpha^2}{L_1}+\frac{\alpha^2}{L_1^2}\right)\left\{\frac{L_1-1}{L_1}S_L-\left(1-\alpha+\frac{\alpha}{L_1}\right)(X-P_L)\right\}.
\end{aligned}$$

When we consolidate terms and collected expressions across rows, the equation simplifies to equation (7) in the text:

$$\begin{aligned}
\frac{dP_H}{d\alpha}|\mathcal{H}| \;=\;& -\theta_L^C\mathcal{H}_{H\alpha}-(\theta_L^A)^2(1-\alpha)\frac{\alpha}{L_1}(X-P_L) \\
& +\theta_H^A\theta_L^A\frac{\alpha}{L_1}\left\{\frac{\alpha}{L_1}\left[(1-\alpha)\frac{L_1-1}{L_1}+\left(1-\alpha+\frac{\alpha}{L_1}\right)\right]+(1-\alpha)^2\right\}(P_H-P_L) \\
& +\theta_L^A\frac{1-\alpha}{L_1}\left(\theta_H^A\alpha P_H-\theta_L^A P_L\right)+\frac{\alpha}{L_1}\left[(\theta_H^A)^2\frac{(1-\alpha)P_H+\alpha X}{L_1}-(\theta_L^A)^2\frac{(1-\alpha)P_L+\alpha X}{L_1}\right] \\
& -\theta_H^A\theta_L^A(1-\alpha)\left\{\frac{\alpha^2}{L_1^2}(2X-P_H-P_L)+\left[(1-\alpha)^2+\frac{\alpha}{L_1}(2-3\alpha)\right](X-P_H)\right\} \\
& +\theta_L^A\theta_H^A(1-\alpha)^2[(1-\alpha)P_H+\alpha X]\frac{L_1-1}{L_1}\gtrless 0,
\end{aligned} \tag{C.15}$$

where $|\mathcal{H}|>0$ from second-order conditions, $\mathcal{H}_{H\alpha}>0$ and $X-P_i>0$ from Assumption 1, and $L_1\geq 1$.

The effect on profit shifting in the low-tax country, see equation (6) in the main

text, equivalently follows from

$$\frac{dP_L}{d\alpha} = \frac{\begin{vmatrix} A_H & \mathcal{H}_{H\alpha} \\ B & \mathcal{H}_{L\alpha} \end{vmatrix}}{|\mathcal{H}|} = \frac{\mathcal{H}_{L\alpha}A_H - \mathcal{H}_{H\alpha}B}{|\mathcal{H}|}. \tag{C.16}$$

As the structure of the model is symmetric (i.e., the countries differ in tax rates and the values of the cost parameters only), the equivalent steps to the previous derivation lead to the final term in equation (6):

$$\begin{aligned}
\frac{dP_L}{d\alpha}|\mathcal{H}| \;=\; & -\theta_H^C\mathcal{H}_{L\alpha} - (\theta_H^A)^2(1-\alpha)\frac{\alpha}{L_1}(X-P_H) \\
& +\theta_L^A\theta_H^A\frac{\alpha}{L_1}\left\{\frac{\alpha}{L_1}\left[(1-\alpha)\frac{L_1-1}{L_1} + \left(1-\alpha+\frac{\alpha}{L_1}\right)\right] + (1-\alpha)^2\right\}(P_L-P_H) \\
& +\theta_H^A\frac{1-\alpha}{L_1}\left(\theta_L^A\alpha P_L - \theta_H^A P_H\right) + \frac{\alpha}{L_1}\left[(\theta_L^A)^2\frac{(1-\alpha)P_L+\alpha X}{L_1} - (\theta_H^A)^2\frac{(1-\alpha)P_H+\alpha X}{L_1}\right] \\
& -\theta_L^A\theta_H^A(1-\alpha)\left\{\frac{\alpha^2}{L_1^2}(2X-P_H-P_L) + \left[(1-\alpha)^2 + \frac{\alpha}{L_1}(2-3\alpha)\right](X-P_L)\right\} \\
& +\theta_L^A\theta_H^A(1-\alpha)^2[(1-\alpha)P_L+\alpha X]\frac{L_1-1}{L_1} \gtrless 0.
\end{aligned} \tag{C.17}$$

Finally, we obtain the effect on total profit shifting, see equation (5) in the main text, from aggregating equations (C.15) and (C.17). Consolidating terms delivers

$$\begin{aligned}
\frac{d(P_H+P_L)}{d\alpha}|\mathcal{H}| \;=\; & \left(\frac{dP_H}{d\alpha}+\frac{dP_L}{d\alpha}\right)|\mathcal{H}| \\
=\; & -\left\{\theta_L^C\mathcal{H}_{H\alpha} + \theta_H^C\mathcal{H}_{L\alpha} + (1-\alpha)\frac{\alpha}{L_1}\left[(\theta_H^A)^2(X-P_H) + (\theta_L^A)^2(X-P_L)\right]\right\} \\
& -\frac{1-\alpha}{L_1}\left[(\theta_H^A)^2P_H + (\theta_L^A)^2P_L\right] \\
& -\theta_L^A\theta_H^A(1-\alpha)\left\{\left[(1-\alpha)^2 + 2\frac{\alpha^2}{L_1^2} + \frac{\alpha}{L_1}(2-3\alpha)\right](2X-P_H-P_L) - \frac{\alpha}{L_1}(P_H+P_L)\right\} \\
& +\left(\theta_L^A+\theta_H^A\right)(1-\alpha)^2\left[2\alpha X + (1-\alpha)(P_H+P_L)\right]\frac{L_1-1}{L_1}.
\end{aligned} \tag{C.18}$$

C.2 Proof of Proposition 1

For $L_1 \to 1$, we have $\mathcal{H}_{i\alpha} = \theta_i^A(X-P_i) + \theta_j^A\left[S_j + \alpha(X-P_j)\right] > 0$, $X = \pi_1$, and $X - P_i = R_H + R_L + P_j > 0$ such that Assumption 1 is always fulfilled. The comparative-static term (5) in the main text—equivalent to equation (C.18)—simplifies to

$$\begin{aligned}
\frac{d(P_H+P_L)}{d\alpha} \;=\; & -\left\{\theta_L^C\mathcal{H}_{H\alpha} + \theta_H^C\mathcal{H}_{L\alpha} + (1-\alpha)\alpha\left[(\theta_H^A)^2(X-P_H) + (\theta_L^A)^2(X-P_L)\right]\right\} \\
& -(1-\alpha)\left[(\theta_H^A)^2P_H + (\theta_L^A)^2P_L\right] \\
& -\theta_L^A\theta_H^A(1-\alpha)\left[2(R_H+R_L) + (1-\alpha)(P_H+P_L)\right] < 0.
\end{aligned} \tag{C.19}$$

As $\pi_1 = R_H + P_H + R_L + P_L$, $\frac{d(P_H+P_L)}{d\alpha} < 0$ unambiguously implies that profits in the haven affiliate decrease with (the use of) information under CbC reporting, that is, $\frac{d\pi_1}{d\alpha} < 0$.

D Calculating the Simplified Model

In this appendix, we focus on the case where employment in the tax haven is equal to $L_1 = 1$ and there is no substance channel. Moreover, we assume homogenous tax audit costs $\theta_H^A = \theta_L^A = \theta^A$ and a symmetric use of information from CbC reporting $\alpha_H = \alpha_L = \alpha$. We maintain heterogeneous tax planning costs for this appendix, that is, there are differences in the parameter for tax planning costs, $\theta_H^C \neq \theta_L^C$. All results in Section 5 result by setting $\theta_H^C = \theta_L^C = \theta^C$.

D.1 Optimal MNC Behavior under Heterogeneous Tax Planning Costs

For general costs parameters $\theta_H^C \neq \theta_L^C$, but homogeneous tax audit costs and a symmetric use of CbC reporting, the optimization problem of the MNC in equation (1) simplifies to

$$\begin{aligned}\max_{P_H,P_L} \Pi \;=\; & (1-t_H)\pi_H + (t_H - t_1)P_H - \frac{\theta_H^C}{2}P_H^2 - \frac{\theta^A}{2}\left[P_H + \alpha P_L\right]^2 \\ & +(1-t_L)\pi_L + (t_L - t_1)P_L - \frac{\theta_L^C}{2}P_L^2 - \frac{\theta^A}{2}\left[P_L + \alpha P_H\right]^2, \end{aligned} \tag{D.1}$$

and the first-order conditions result as

$$\frac{\partial \Pi}{\partial P_H} = (t_H - t_1) - \left[\theta_H^C + \theta^A(1+\alpha^2)\right] P_H - 2\alpha\theta^A P_L = 0, \tag{D.2}$$

$$\frac{\partial \Pi}{\partial P_L} = (t_L - t_1) - \left[\theta_L^C + \theta^A(1+\alpha^2)\right] P_L - 2\alpha\theta^A P_H = 0. \tag{D.3}$$

In the absence of CbC reporting ($\alpha = 0$), the profit-shifting decisions across affiliates are still fully independent of each other and given by

$$P_i = \frac{t_i - t_1}{\theta_i + \theta^A} \quad i = H, L, \quad \text{for} \quad \alpha = 0. \tag{D.4}$$

As an additional assumption, we restrict the scope of the cost parameters for tax planning, θ_H^C and θ_L^C, such that $\theta_H^C < \frac{(t_H - t_1)\theta_L^C + \theta^A(t_H - t_1)}{t_L - t_1}$. Under this assumption, the higher-taxed affiliate always shifts more profits, $P_H > P_L$, in the optimum. For homogeneous cost parameters $\theta_H^C = \theta_L^C = \theta^C$, this assumption is always fulfilled.

D.2 Comparative-Static Analysis

Fully differentiating the first-order conditions (D.2) and (D.3) leads to

$$-[\theta_H^C + (1+\alpha^2)\theta^A]dP_H - 2\alpha\theta^A dP_L = [2\theta^A(\alpha P_H + P_L)]d\alpha - dt_H + dt_1, \quad \text{(D.5)}$$

$$-2\alpha\theta^A dP_H - [\theta_L^C + (1+\alpha^2)\theta^A]dP_L = [2\theta^A(P_H + \alpha P_L)]d\alpha - dt_L + dt_1, \quad \text{(D.6)}$$

which can be rearranged to find

$$\begin{pmatrix} -[\theta_H^C + (1+\alpha^2)\theta^A] & -2\alpha\theta^A \\ -2\alpha\theta^A & -[\theta_L^C + (1+\alpha^2)\theta^A] \end{pmatrix} \begin{pmatrix} dP_H \\ dP_L \end{pmatrix} = \begin{pmatrix} 2\theta^A(\alpha P_H + P_L) \\ 2\theta^A(P_H + \alpha P_L) \end{pmatrix} d\alpha + \begin{pmatrix} -dt_H \\ 0 \end{pmatrix} + \begin{pmatrix} 0 \\ -dt_L \end{pmatrix} + \begin{pmatrix} dt_1 \\ dt_1 \end{pmatrix}. \quad \text{(D.7)}$$

The second-order conditions of the MNC optimization problem imply that the determinant of the Hessian on the left-hand side of equation (D.7) is positive, that is

$$|\mathcal{H}| = [\theta_H^C + (1+\alpha^2)\theta^A][\theta_L^C + (1+\alpha^2)\theta^A] - 4\alpha^2(\theta^A)^2 > 0. \quad \text{(D.8)}$$

Applying Cramer's Rule delivers

$$\frac{\partial P_H}{\partial \alpha} = -\frac{2\theta^A[\theta_L^C(\alpha P_H + P_L) - \theta^A(1-\alpha^2)(\alpha P_H - P_L)]}{|\mathcal{H}|} \lesseqgtr 0, \quad \text{(D.9)}$$

$$\frac{\partial P_L}{\partial \alpha} = -\frac{2\theta^A[\theta_H^C(\alpha P_L + P_H) + \theta^A(1-\alpha^2)(P_H - \alpha P_L)]}{|\mathcal{H}|} < 0. \quad \text{(D.10)}$$

Aggregating the two comparative-static effects, (D.9) + (D.10), results in

$$\frac{d(P_H + P_L)}{d\alpha} = -\frac{2\theta^A\left[\theta_L^C(\alpha P_H + P_L) + \theta_H^C(P_H + \alpha P_L) + 2\theta^A(1-\alpha^2)(1-\alpha)(P_H + P_L)\right]}{|\mathcal{H}|} < 0, \quad \text{(D.11)}$$

and setting homogeneous cost parameters for tax planning costs as well, $\theta_H^C = \theta_L^C = \theta^C$, simplifies the expression to equation (8) in the main text.

D.3 Solving for Explicit Solutions

The simplified setting also allows us to solve explicitly for optimal profit shifting in both affiliates. From equation (9),

$$P_H - P_L = \frac{t_H - t_L}{\theta^C + \theta^A(1-\alpha)^2} > 0,$$

we obtain

$$P_H = P_L + \frac{t_H - t_L}{\theta^C + (1-\alpha)^2\theta^A},$$

which we substitute into the simplified first-order condition (D.3) to yield optimal profit shifting in the low-tax affiliate as

$$P_L^* = \frac{\left[\theta^C + (1-\alpha)^2\theta^A\right](t_L - t_1) - 2\alpha\theta^A(t_H - t_L)}{\left[\theta^C + (1+\alpha)^2\theta^A\right]\left[\theta^C + (1-\alpha)^2\theta^A\right]}. \tag{D.12}$$

The numerator N in equation (D.12) decreases monotonically in α,

$$\frac{\partial N}{\partial \alpha} = -2\theta^A\left[(1-\alpha)(t_L - t_1) + (t_H - t_L)\right] < 0,$$

and is positive at $\alpha = 0$. Hence, if marginal tax audit costs θ^A are sufficiently large, P_L^* becomes negative for some $\alpha > 0$ and remains negative as α increases further.

Turning to profit shifting in the high-tax affiliate, we use equation (9) in a similar way as before and substitute for P_L in the first-order condition (D.2). Doing so, we can solve for the optimal shifting in the high-tax affiliate

$$P_H^* = \frac{[\theta^C + (1-\alpha)^2\theta^A](t_H - t_1) + 2\alpha\theta^A(t_H - t_L)}{\left[\theta^C + (1+\alpha)^2\theta^A\right]\left[\theta^C + (1-\alpha)^2\theta^A\right]}. \tag{D.13}$$

Without CbC reporting ($\alpha = 0$), optimal profit shifting in the high-tax affiliate is

$$P_H^*(\alpha = 0) = \frac{(t_H - t_1)}{\theta^C + \theta^A}. \tag{D.14}$$

Under complete CbC reporting and full use of the information exchange ($\alpha = 1$), optimal profit shifting becomes

$$P_H^*(\alpha = 1) = \frac{(t_H - t_1)}{\theta^C + 4\theta^A} + \frac{2\theta^A(t_H - t_L)}{\theta^C\left[\theta^C + 4\theta^A\right]}. \tag{D.15}$$

Deducting equation (D.14) from equation (D.15) leads to condition (10) in the main text:

$$P_H^*(\alpha = 1) - P_H^*(\alpha = 0) = \frac{(t_H - t_1)}{\theta^C + 4\theta^A} + \frac{2\theta^A(t_H - t_L)}{\theta^C\left[\theta^C + 4\theta^A\right]} - \frac{(t_H - t_1)}{\theta^C + \theta^A} \gtrless 0.$$

E Additional Tables and Figures

Table E.1: Comparison of existing papers on CbC reporting

Reference	Countries (period)	Method	Sample size
This Paper	MNCs worldwide (2012–2021)	DiD	48,428 affiliates 467,552 affiliate-years
Joshi (2020)	EU MNCs (2010–2018)	RDD DiD	14,530 affiliates 117,258 affiliate-years
Hugger (2025)	MNCs worldwide (2010–2019)	RDD DiD	61,073 affiliates 225,862 affiliate-years
De Simone and Olbert (2022)	MNCs with EU aff. (2012–2018)	RDD DiD	344,550 affiliates 687,406 affiliate-years
Nessa et al. (2025)	U.S. MNCs (2011–2018)	RDD DiD	2,585 MNC-years
Joshi et al. (2025)	EU MNCs (2013–2018)	RDD	12,715 affiliates 12,628 affiliate-years

Note: Comparison of most closely related research on CbC reporting that uses Orbis data.

Table E.2: Sample Composition by Country and Group

Country	Low-Tax	High-Tax	Tax Haven	Total obs.	Unique aff.	Percent (%)
Australia	16	2,397	0	2,413	245	0.52
Austria	2,923	3,378	0	6,301	651	1.35
Belgium	0	0	23,195	23,195	2,388	4.96
Bosnia and Herzegovina	448	0	0	448	46	0.10
Bulgaria	3,615	0	0	3,615	366	0.77
Colombia	1,093	1,990	0	3,083	315	0.66
Croatia	2,288	184	0	2,472	254	0.53
Czech Republic	8,441	115	0	8,556	871	1.83
Estonia	1,102	78	0	1,180	120	0.25
Finland	8,888	362	0	9,250	958	1.98
France	4,723	65,689	0	70,412	7,264	15.06
Germany	117	10,275	0	10,392	1,081	2.22
Greece	911	2,387	0	3,298	343	0.71
Hungary	6,411	61	0	6,472	663	1.38
India	0	2,773	0	2,773	281	0.59
Ireland	0	0	3,450	3,450	353	0.74
Italy	4,667	43,168	0	47,835	4,978	10.23
Japan	572	28,504	0	29,076	2,925	6.22
Latvia	108	12	0	120	12	0.03
Lithuania	538	0	0	538	55	0.12
Luxembourg	0	0	367	367	38	0.08
Malaysia	362	68	0	430	45	0.09
Malta	0	0	40	40	4	0.01
Morocco	0	16	0	16	2	0.00
Netherlands	0	0	3,015	3,015	313	0.64
New Zealand	0	771	0	771	78	0.16
North Macedonia	110	0	0	110	11	0.02
Norway	16,117	15,926	0	32,043	3,257	6.85
Philippines	0	248	0	248	26	0.05
Poland	13,813	374	0	14,187	1,467	3.03
Portugal	2,167	9,786	0	11,953	1,347	2.56
Romania	8,249	54	0	8,303	854	1.78
Russia	6,179	518	0	6,697	688	1.43
Serbia	1,367	0	0	1,367	139	0.29
Slovakia	2,686	338	0	3,024	312	0.65
Slovenia	1,510	121	0	1,631	166	0.35
South Korea	1,425	968	0	2,393	241	0.51
Spain	29,377	13,946	0	43,323	4,462	9.27
Sweden	41,216	7,898	0	49,114	5,307	10.50
Switzerland	0	0	59	59	6	0.01
United Kingdom	50,883	2,699	0	53,582	5,496	11.46
Total	222,322	215,104	30,126	467,552	48,428	100.00

Note: Affiliate-year observations by country, split into low-tax, high-tax, and tax-haven groups. Because the high-/low-tax split is defined relative to the within-MNC median tax rate and is time-varying, the same country can appear in both the low-tax and high-tax columns. Tax havens follow Tørsløv et al. (2023b).

Table E.3: Further Robustness Tests

Panel A: Aggregated EBT/Assets

	(1) Low-Tax	(2) High-Tax	(3) Tax Haven	(4) Flexible
CbCR	0.0021	-0.0006	-0.0118***	0.0066**
	(0.0018)	(0.0017)	(0.0044)	(0.0031)
CbCR X Tax Rate				-0.0002*
				(0.0001)
Tax Rate				-0.0011***
				(0.0001)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm Ctrs.	No	No	No	No
Obs.	88,920	69,495	13,082	173,318
R^2	0.37	0.41	0.47	0.33

Panel B: Profitable Affiliates Only

	(1) Low-Tax	(2) High-Tax	(3) Tax Haven	(4) Flexible
CbCR	0.0002	-0.0060***	-0.0068*	0.0116***
	(0.0017)	(0.0016)	(0.0041)	(0.0030)
CbCR X Tax Rate				-0.0006***
				(0.0001)
Tax Rate				0.0008***
				(0.0002)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm Ctrs.	No	No	No	No
Obs.	167,388	158,550	23,126	329,954
R^2	0.64	0.67	0.60	0.64

Note: Affiliate-level data from Orbis for 2012–2021. In Panel A, the dependent variable is country-level aggregated *EBT/Assets*, defined as the sum of all non-HQ affiliates' *Profit Before Tax* divided by all affiliates' *Total Assets* of the same MNC in one country. Panel B shows the analysis including affiliate-years with positive earnings before taxes only. Low-tax (high-tax) affiliates are affiliates that face a tax rate in a given year below or equal to (above) the median tax rate within the MNC. *CbCR* is a dummy variable equal to one if the affiliate is part of an MNC that is subject to CbC reporting in that year. We cluster standard errors by multinational, interacted with year. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table E.4: Robustness Control Variables and Sample Split Definitions

Panel A: Including Control Variables

	(1) Low-Tax	(2) High-Tax	(3) Tax Haven	(4) Low-Tax	(5) High-Tax	(6) Tax Haven
CbCR	0.0019	-0.0013	-0.0151***	0.0040*	-0.0063***	-0.0144***
	(0.0024)	(0.0021)	(0.0047)	(0.0021)	(0.0021)	(0.0046)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes	Yes	Yes
Country-Year FE	Yes	Yes	Yes	No	No	No
Firm Ctrs.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	166,330	147,265	23,464	166,349	147,288	23,470
R^2	0.55	0.58	0.50	0.54	0.58	0.50

Panel B: High-Tax Versus Low-Tax Definitions

	Country Median Tax Rate		Flexible Tax Rate	
	(1) Low-Tax	(2) High-Tax	(3) Low-Tax	(4) High-Tax
CbCR	0.0059***	-0.0106***	0.0059***	-0.0084***
	(0.0018)	(0.0021)	(0.0021)	(0.0018)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm Ctrs.	No	No	No	No
Obs.	248,415	192,601	186,312	250,071
R^2	0.48	0.53	0.50	0.52

Note: Affiliate-level data from Orbis for 2012–2021. Data excludes U.S. MNCs. The dependent variable is *EBT/Assets*, defined as the affiliate's yearly *Profit Before Tax* divided by *Total Assets* in 2015. Panel A replicates our baseline analysis in Table 2 including control variables. Columns (1)-(3) include country-year fixed effects and columns (4)-(6) include year fixed effects. Firm-level control variables comprise the number of employees and fixed assets. Tax havens are defined according to Tørsløv et al. (2023b). Panel B varies the definition of high-tax versus low-tax affiliates. In columns (1)-(2), low-tax (high-tax) affiliates are affiliates that face a tax rate in a given year below or equal to (above) the median worldwide tax rate. In columns (3)-(4), low-tax (high-tax) affiliates are affiliates that face a tax rate in a given year below or equal to (above) the tipping point tax rate in our flexible specification. *CbCR* is a dummy variable equal to one if the affiliate is part of an MNC that is subject to CbC reporting in that year. We cluster standard errors by multinational, interacted with year. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

Table E.5: Belgium Not Classified as Tax Haven, Dharmapala 2025

Panel A: Belgium Not Classified as Tax Haven

	(1) Low-Tax	(2) High-Tax	(3) Tax Haven	(4) Flexible
CbCR	0.0038*	-0.0078***	-0.0261***	0.0316***
	(0.0020)	(0.0021)	(0.0095)	(0.0037)
CbCR X Tax Rate				-0.0013***
				(0.0001)
Tax Rate				0.0013***
				(0.0002)
Firm FE	Yes	Yes	Yes	Yes
Country-Year FE	Yes	Yes	Yes	No
Year FE	No	No	No	Yes
Firm Ctrs.	No	No	No	Yes
Obs.	226,904	233,527	6,931	336,709
R^2	0.51	0.52	0.52	0.54

Panel B: Dharmapala (2024) List

	(1) Low-Tax	(2) High-Tax	(3) Tax Haven	(4) Flexible
CbCR	0.0032	-0.0078***	-0.0189	0.0312***
	(0.0020)	(0.0021)	(0.0180)	(0.0037)
CbCR X Tax Rate				-0.0013***
				(0.0001)
Tax Rate				0.0013***
				(0.0002)
Firm FE	Yes	Yes	Yes	Yes
Country-Year FE	Yes	Yes	Yes	No
Year FE	No	No	No	Yes
Firm Ctrs.	No	No	No	Yes
Obs.	229,173	234,243	3,916	339,468
R^2	0.51	0.52	0.52	0.54

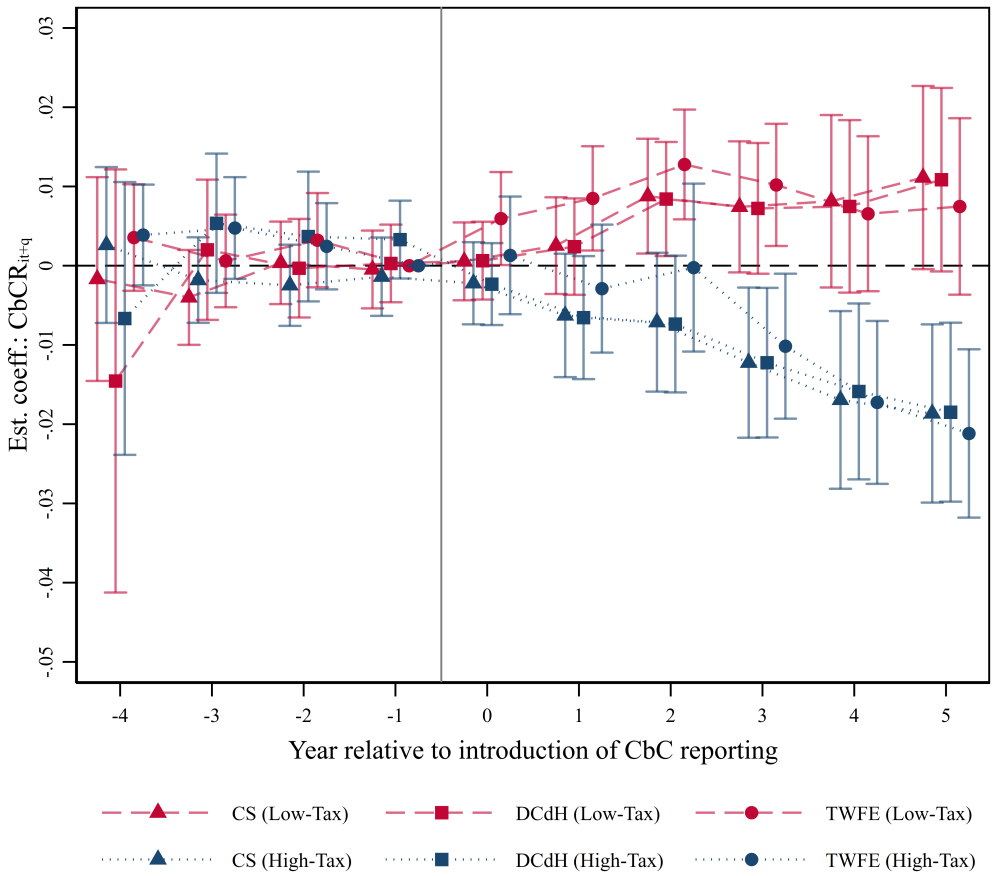
Note: Affiliate-level data from Orbis for 2012–2021. The dependent variable is *EBT/Assets*, defined as the affiliate's *Profit Before Tax* divided by *Total Assets* in 2015, winsorized at the 1%-level. In column (4), the regression additionally includes firm-level controls (the number of employees and fixed assets) and GDP. In Panel A, Belgian affiliates are re-classified out of the tax-haven group and into the low-/high-tax split. In Panel B, tax havens are defined based on Dharmapala (2024). Low-tax (high-tax) affiliates are affiliates that face a tax rate in a given year below or equal to (above) the median tax rate within the MNC. *CbCR* is a dummy variable equal to one if the affiliate is part of an MNC that is subject to CbC reporting in that year. We cluster standard errors by multinational, interacted with year. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table E.6: Robustness of the Tax-Haven Effect

	(1) Event Study	(2) MNCs With Tax Havens	(3) Non-HQs	(4) Incl. U.S. MNCs	(5) Incl. Thresh-old	(6) Excl. 2020–2021	(7) Excl. 2016
CbCR	−0.0069	−0.0088**	−0.0079*	−0.0089**	−0.0065	−0.0048	−0.0079
	(0.0066)	(0.0044)	(0.0046)	(0.0041)	(0.0044)	(0.0045)	(0.0048)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	30,126	30,126	29,182	37,859	30,956	23,988	27,046
R^2	0.47	0.47	0.47	0.46	0.46	0.49	0.47

Note: Affiliate-level data from Orbis for 2012–2021. The sample is restricted to tax-haven affiliates. The dependent variable is *EBT/Assets*, defined as the affiliate's *Profit Before Tax* divided by *Total Assets* in 2015. *CbCR* is a dummy variable equal to one if the affiliate is part of an MNC that is subject to CbC reporting in that year. Column (1) reports the average post-treatment effect (ATT) from the Sun and Abraham (2021) event study; columns (2)–(7) repeat the sample robustness checks of Table 3 for tax-haven affiliates only. Column (2) restricts to MNCs with at least one tax-haven affiliate (which, for this subsample, is the full sample); column (3) excludes headquarter entities; column (4) includes U.S. MNCs; column (5) includes MNCs around the CbC reporting threshold; column (6) excludes the years 2020 and 2021; column (7) excludes the year 2016. All specifications include affiliate (firm) and year fixed effects. Standard errors, clustered by multinational interacted with year, in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

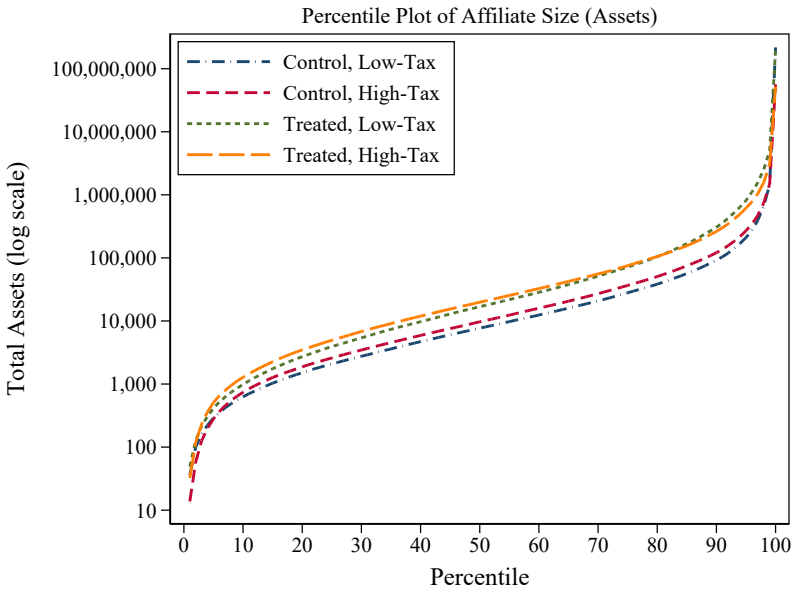
Figure E.1: Alternative Event Study Estimators



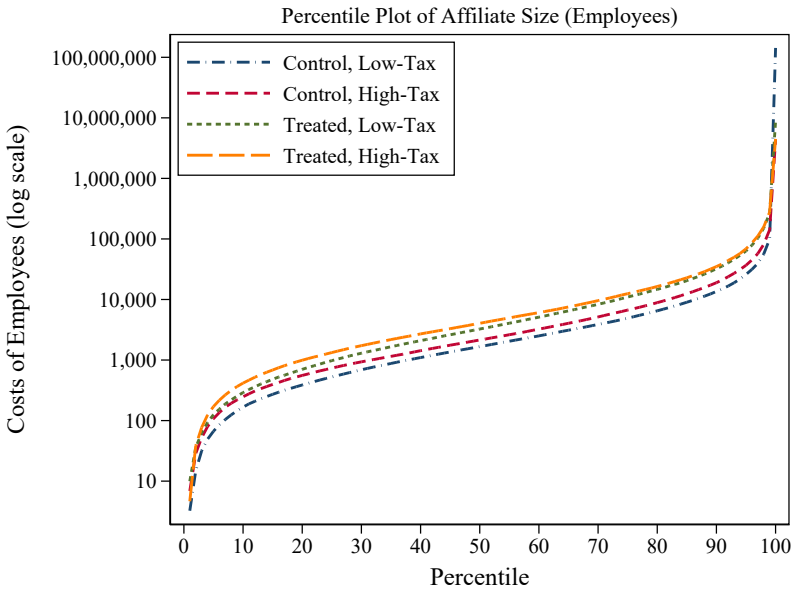
Note: Event studies based on affiliate-level data from Orbis for 2012–2021, using the estimator by Callaway and Sant'Anna (2021), De Chaisemartin and D'Haultfœuille (2024), and regular two-way fixed effects. The dependent variable is *EBT/Assets*, defined as the affiliate's *Profit Before Tax* divided by *Total Assets* in 2015. Low-tax (high-tax) affiliates are affiliates that face a tax rate in a given year below or equal to (above) the median tax rate within the MNC. Figures include 90% confidence intervals, estimated using affiliate and year fixed effects. Standard errors clustered by MNC.

Figure E.2: Percentile Plots With Size Distribution

(a) Panel A: Affiliate-Level Total Assets



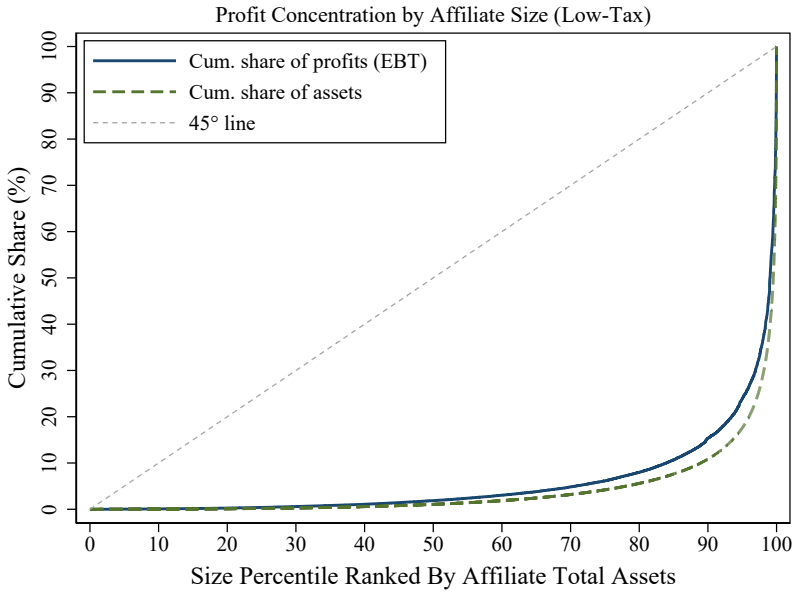
(b) Panel B: Affiliate-Level Costs of Employees



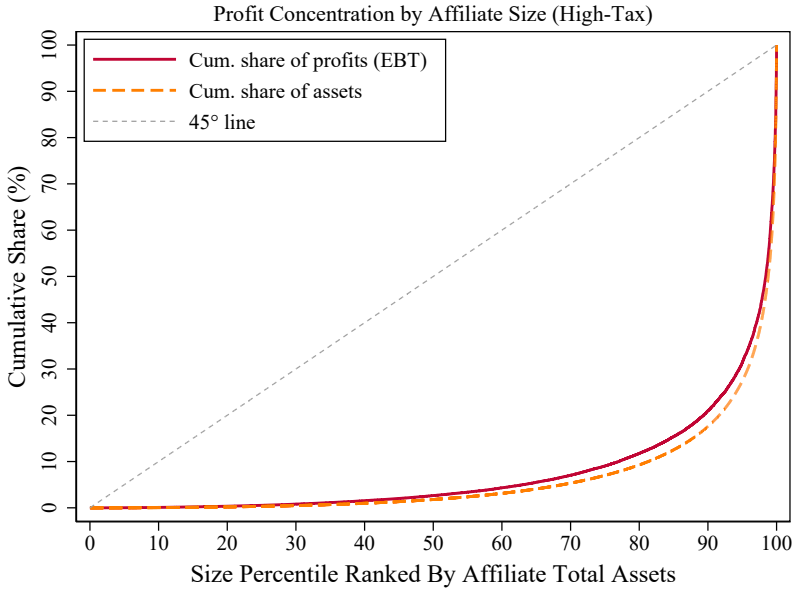
Note: Percentile plots based on affiliate-level data from Orbis for 2012–2021. For each percentile $p \in \{0, \ldots, 100\}$, the corresponding line reports the within-group p-th percentile of affiliate size on a logarithmic scale, measured by total assets (Panel A) and the cost of employees (Panel B). Low-tax (high-tax) affiliates are affiliates that face a tax rate in a given year below or equal to (above) the median tax rate within the MNC. Sample excludes tax-haven affiliates.

Figure E.3: Cumulative Distribution of Profits Across Affiliates

(a) Panel A: Distribution of Profits for Low-Tax Affiliates



(b) Panel B: Distribution of Profits for High-Tax Affiliates



Note: Cumulative distribution of profits and total assets across affiliates ranked by size based on affiliate-level data from Orbis for 2012–2021. Affiliates are collapsed to a single observation using the affiliate-level mean of profits (EBT) and total assets over their years in the sample, then ranked from smallest to largest by mean total assets and assigned a size percentile from 0 (smallest) to 100 (largest). EBT is winsorized at the 1st and 99th percentile. In Panel A (B), low-tax (high-tax) affiliates are affiliates that face a tax rate in a given year below or equal to (above) the median tax rate within the MNC. Sample excludes tax haven affiliates.

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