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DISCUSSION PAPER

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Multinational Firms in Tax Havens – Corporate Motives, Regulatory Countermeasures, and Recent Statistics

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ABSTRACT: We investigate multinational firms' activities in tax havens and regulatory efforts to curb these activities in three steps. First, we discuss the evolution of information exchange and disclosure regimes among tax authorities, with a focus on the recent Country-by-Country (CbC) reporting regimes, designed to uncover and address tax haven usage by multinational firms. Second, we review existing empirical literature on multinational firms' tax haven utilization, specifically examining the impact of information exchange regulations and Country-by-Country Reporting. Third, we augment the current empirical evidence by presenting tax haven entity statistics from 2007 to 2021 for a representative multinational firm sample, sourced from Bureau van Dijk (BvD) Orbis and the aggregated CbC data provided by the Organisation for Economic Co-operation and Development (OECD). Our analysis suggests that, if exploited systematically, the recent Orbis database provides granular coverage of multinational firms' subsidiaries worldwide, including tax haven entities in jurisdictions without disclosure mandates and information sharing agreements. Our findings reveal that multinational firms' ownership of tax haven entities peaked in 2015, with over 50,000 legal entities incorporated in tax havens (30,000 in Big8 tax haven jurisdictions). Although the growth of tax haven entities slowed after 2015, the overall number remains substantial as of 2021. Furthermore, European multinationals experienced a modest decline in tax haven entities following the implementation of mandatory private CbCR. We conclude by discussing policy implications and suggesting avenues for future research.

Keywords: Tax havens, multinational firms, tax avoidance, Country-by-Country Reporting, transparency, information exchange

JEL classifications: H20, H25, H26, F23, P45

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1. Introduction

Multinational enterprises' (MNEs') use of corporate entities in tax havens is subject to a longstanding public debate with a largely negative connotation. The concern is that multinational firms' tax haven operations likely service corporate tax avoidance activities but also contribute to broader economic phenomena such as illicit financial flows and distortions in global capital allocation (e.g., Gravelle 2009; Copolla, Maggiori, Neiman, and Schreger 2021). To limit multinational firms' tax haven use, international policymakers have introduced information exchange regulations often alongside other anti-tax avoidance and disclosure regimes. We provide a comprehensive overview of the historical development of bilateral and multilateral agreements in this area. We then review the empirical literature on the use of tax havens and the effects of disclosure and information exchange regimes. Our focus is on information exchange regulation that affects MNEs, as opposed to bilateral tax treaties or similar regulations targeting tax evasion by individual investors through offshore holdings (e.g., Johannesen and Zucman 2014). We organize our paper into three main sections (Sections 2 to 4).

In Section 2, we discuss relevant policy developments. In summary, tax information exchange was initially enforced and standardized through model agreements for bilateral exchange treaties. With the turn of the millennium, there was a paradigm shift towards multilateral agreements. These multilateral agreements typically provide for the automatic exchange of specific information, such as financial accounts, aggressive tax planning arrangements, or crypto assets. Among these multilateral agreements, the exchange of country-by-country financial information – so-called Country-by-Country Reporting (CbCR) – stands out as one of the most comprehensive forms of information exchange, providing detailed insights into MNE's global operations, including those in tax havens that may otherwise remain opaque. The most recent policy development is that regulators will mandate the CbCR

information to be made available to the general public, at least for firms operating in the European Union (EU). Despite the significant policy strides toward greater MNE transparency and information exchange among tax authorities, it remains uncertain whether this policy development can effectively deter the use of tax havens. Additionally, it is unclear whether tax authorities can efficiently utilize the additional information or if they might face information overload.

In Section 3, we review the literature that has examined these questions. We focus on empirical studies that shed light on the specific motives for multinationals to operate in tax havens, as well as how information exchange and CbCR regulations have impacted multinational firms' tax haven use.[1] Corporate income tax avoidance through cross-border profit shifting techniques is a well-documented concern, even though researchers often lack granular intra-firm data. Nonetheless, empirical research has examined the outcomes of corporate tax avoidance, such as disproportionately high profits booked in tax havens, low effective tax rates, and the use of tax haven entities, as summarized by Gravelle (2009) and Zucman (2014). Several recent papers have specifically examined the effectiveness of information exchange and CbC disclosures. While the empirical estimates vary across different settings, the surveyed studies generally indicate that tax information exchange has a reducing effect on profit shifting and MNEs' propensity to operate in tax havens, regardless of whether the exchange information instruments are bilateral or multilateral.

In Section 4, we then augment the existing empirical evidence described in Section 3 by providing our own empirical analysis using financial and ownership data from Orbis, the flagship database from BvD. Our analysis is exploratory in nature and aims to corroborate the

[1] Mueller, Spengel, and Vay (2020) provide a comprehensive review of recent policy trends and corporate responses to tax disclosure requirements, many of which focus on multinational firm activities. Hoopes, Slemrod, and Robinson (2023) also review the literature on private and public tax disclosure regulations, some of which are specific to MNEs and affects their tax haven disclosures. Lester and Olbert (2023) review the literature on the real and reporting effects of business taxation and also cover the effects of CbCR disclosures more broadly.

existing evidence. We document several stylized facts. First, the number of multinational firms' tax haven entities has increased significantly in the past two decades, with a peak around 2015.[2] Second, the growth in tax haven entities appears to have stopped after 2015, in particular for EU-based MNEs. This trend could be attributable to the implementation of CbCR and other anti-tax avoidance regulations' initiatives at national or multinational level (e.g., developments related to the OECD's Base Erosion and Profit Shifting (BEPS) program and the EU Anti-Tax Avoidance Directive (ATAD)). Third, nonetheless, the extent to which multinational firms engage in tax havens is still large. Using the historical corporate ownership files from Orbis, we identify approximately 50,000 corporate entities incorporated in tax haven countries that are majority-owned by MNEs as of 2021. Publicly listed U.S. MNEs own nearly 10,000 of these entities. Private and publicly listed MNEs from the U.K., France, or Germany own approximately 1,300 to 2,000 tax haven entities each. Fourth, exploiting aggregated administrative CbCR data from the OECD corroborates this inference. In fiscal year 2018, the approximately 10,000 MNEs subject to OECD-wide private CbCR reported ownership in 63,000 tax haven entities with 2.2 million employees located in these tax havens. For the average tax haven employee, the MNEs book EUR 1.9 million in revenues, which compares to EUR 0.58 million revenues per employee located in the MNEs' headquarter countries. Notably, our analysis show that BvD effectively combines regulatory and private information sources to compile a comprehensive list of corporate legal entities worldwide. If researchers exploit these data systematically, it is possible to identify a representative sample of MNEs' subsidiaries worldwide, including those located in tax haven countries without disclosure mandates or information sharing agreements. Collectively, this evidence suggests that despite

[2] Throughout our analyses, we refer to tax haven countries as jurisdictions listed in any of the tax haven lists used in Bennedsen and Zeume (2018) and De Simone and Olbert (2022). See De Simone and Olbert (2022) Appendix B for an overview. We observe that approximately two thirds of tax haven entities are incorporate in the Big8 haven countries. Big8 refers to the ''big seven'' tax havens in Hines and Rice (1994) plus Puerto Rico, consistent with De Simone and Olbert (2022). The Big 8 are Switzerland, Hong Kong, Ireland, Lebanon, Liberia, Panama, Puerto Rico, and Singapore.

a number of anti-tax avoidance, disclosure, and information exchange regimes in place, MNEs' operations in tax havens are substantial and MNEs still attribute relatively large portions of their tax base (at least scaled by employment) to tax havens.

We conclude with a synthesis and discuss the policy implications and avenues for future research in light of this evidence and the current policy debate. Such research can inform the nuanced effects of the OECD's global tax reform (Pillar 1 and 2) and the transition from private to public CbCR. Further, future research can exploit the nuanced institutional details of regulatory actions in the EU, such as the introduction of additional disclosures on beneficial corporate ownership, tax planning structures, or digital platform transactions.

Recent work has shown that the global tax reform appears to affect MNEs engaging in tax havens and tax haven countries at the macroeconomic level (Gómez-Cram and Olbert 2023). Further, recent work has shown that *private* CbCR already induces MNEs to alter their tax and investment behavior (e.g., Joshi 2020; De Simone and Olbert 2022). Therefore, we encourage further research that addresses the magnitudes and exact mechanisms of multinational firms' tax haven activities, with a particular focus on the understudied effects on stakeholders outside of tax havens. Such research is necessary to provide a comprehensive estimate of whether the estimated benefits of information exchange and CbCR regulations exceed the expected costs, and thus represent effective measures to prevent tax avoidance. Consistent with the longstanding narrative among academics, our review and analyses suggest that only coordinated action among jurisdictions can effectively combat international tax evasion and other illicit forms of tax haven use. We also note that more research is needed to explore potentially unintended consequences of tax disclosure and information exchange regulations. We hope our review and empirical insights help readers to evaluate the effectiveness of information exchange and CbCR regulation to date. Further, we believe our

evidence and discussions offer valuable insights that aid in assessing recent legislation, like public CbCR.

2. History of Tax Information Exchange Regulations Affecting Multinationals

2.1 Conventions on Bilateral Tax Information Exchange

The foundation of exchange tax information on multinational firms was established through bilateral agreements known as double taxation agreements (DTAs) to mitigate the risk of double taxation in cross-border investments. In 1963, the OECD introduced the Draft Double Taxation Convention on Income and Capital, serving as a model for standardized DTAs. This convention included a bilateral exchange of information on request (EOIR) under Article 26 (OECD 1963). Building upon these efforts, the United Nations published a model convention in 1980, intended for agreements between developed and developing countries, which also provided for the EOIR (UN 1980).

Four decades later, the OECD introduced a dedicated model agreement centered on tax information exchange. The introduction of the OECD Model Agreement on Exchange of Information in Tax Matters (TIEA) in 2002 built upon existing frameworks and introduced comprehensive guidelines for the establishment of tax information exchange agreements, encompassing provisions for both bilateral and multilateral agreements (OECD 2002).

In 2009, the OECD assigned the Global Forum on Transparency and Exchange of Information for Tax Purposes as the overseeing body responsible for implementing the EOIR standard. Since then, the Global Forum has conducted review processes to evaluate member countries' compliance with the standard, periodically issuing progress reports on the review outcomes (OECD 2023a).

Another important bilateral convention the Foreign Account Tax Compliance Act (FATCA), passed by U.S. Congress in 2010. FATCA requires to financial institutions outside

the US to automatically report information on U.S. bank account holders annually. This regulation was primarily introduced to fight individual taxpayer's US tax evasion. Therefore, we do not further consider FATCA in our literature review in Section 3 and empirical analyses in Section 4. We refer the reader to De Simone and Stomberg (2023) for a detailed discussion of FATCA.

2.2 Multilateral Agreements on Tax Information Exchange

In addition to bilateral model agreements, early efforts included creating multilateral instruments for more streamlined and effective information exchange. A major milestone occurred in 1988 with the introduction of the Convention on Mutual Administrative Assistance in Tax Matters by the OECD and the Council of Europe. This convention empowers competent authorities to exchange essential information for enforcing domestic tax legislation. Since 2010, the convention has expanded its reach beyond OECD and EU member states, allowing invitation-based adoption by third parties (OECD and Council of Europe 2011). Currently, 147 jurisdictions participate in the Convention (OECD 2023b).

In 2014, the OECD's Common Reporting Standard (CRS) marked a milestone in tax information exchange. Signatory states are required to obtain financial account information from institutions and automatically share it with affected competent authorities of other signatory states (OECD 2014). While the primary goal of the CRS is to detect offshore tax evasion concerning individuals' financial assets held offshore, it also necessitates financial institutions to collect and report information on both individual and corporate entity financial accounts. This heightened transparency can reveal corporate structures and ownership, making it harder for corporations to conceal assets or engage in tax evasion schemes.

The BEPS project of the OECD introduced two additional exchange regimes. Action point 5 provided for an exchange of information on tax rulings and advance pricing agreements between tax authorities (OECD 2015). Action point 13 established a confidential Country-by-

Country Reporting regime, requiring large multinational corporations with consolidated sales exceeding EUR 750 million euros to disclose key financial figures on a country-by-country basis. The EU has also introduced a sector-specific public CbCR in 2015, requiring banks that operate in the EU to publicly disclose corresponding CbC information (cf. Directive 2013/36/EU).

Within the EU, the rising trend towards more transparency and information exchange standards gained momentum. In 2016, the EU agreed on a regulation that grant tax authorities comprehensive access to beneficial ownership information (cf. Council Directive (EU) 2016/2258). Beneficial ownership information refers to details about individuals who are the ultimate owners or controllers of a company, trust, or other legal entity. This information is crucial for detecting and preventing money laundering and other financial crimes as it helps identify individuals who might be trying to hide their assets or income. The measure represents the fourth amendment to the Directive on Administrative Cooperation (DAC) and therefore commonly referred to as “DAC5”.

In 2018, another DAC amendment, providing for a third-party reporting scheme known as “DAC6”, was implemented, obliging intermediaries to report potentially aggressive cross-border tax avoidance structures to the competent authorities (cf. Council Directive (EU) 2018/822). The reports are subsequently exchanged between the authorities of the member states affected by the structure. This should enable the early reporting of allegedly undesirable tax avoidance practices to the tax authorities.

In 2021, a similar third-party reporting regime, known as “DAC7”, was introduced (cf. Council Directive (EU) 2021/514). DAC7 targets digital platform operators and obliges them to report information about the persons involved in transactions conducted through the platform. Again, the corresponding information is to be exchanged between the corresponding competent authorities. The exchange mechanism is designed to enable legislators to address

potential loopholes arising from national tax laws being ill-suited to effectively capture the tax implications of digital products and services.

2.3 Recent Developments

The landscape of tax information exchange is continuously evolving. In December 2021, with the adoption of Directive (EU) 2021/2101, the EU made the decision to extend the previously confidential CbCR to a public CbCR for companies with EU activities, starting from 2024. As a result, multinational enterprises (MNEs) will be required to disclose their CbC information in all EU countries and jurisdictions listed by the EU as non-cooperative.[3] The scope of the information will not be identical to the confidential CbCR and will be less detailed, as it will also allow MNEs to omit certain financial information to the extent MNEs can justify that the inclusion of this information would entail high proprietary costs (Müller, Spengel, and Weck 2021).

In May 2023, the EU finance ministers agreed on another extension of the Directive on Administrative Cooperation, "DAC8" (European Council 2023). DAC8 introduces a third-party reporting system that imposes obligations on crypto service providers to collect and report information regarding sellers and buyers involved in crypto asset transactions. The automatic information exchange will become effective from January 2026 (European Commission 2023).

Furthermore, a recent EU draft directive, commonly referred to as the "Unshell Directive", seeks to strengthen transparency regarding the use of insubstantial ("shell") companies. The most recent draft version proposes an automatic exchange of information on identified shell companies, enabling tax authorities to combat corresponding tax avoidance schemes (European Commission 2021).

[3] The list is updated twice a year and includes 16 jurisdictions (most prominently including the Bahamas, Costa Rica, Panama and Russia). It is accessible under the following link: https://www.consilium.europa.eu/en/policies/eu-list-of-non-cooperative-jurisdictions/ (last accessed: 10.07.2023).

3. Review of Empirical Research

3.1 Overview and Evidence on Multinationals' Use of Tax Havens

In public economics research and in the tax policy debate, tax havens are usually defined as low-tax jurisdictions that attract tax bases of non-residents who can escape taxation in their home country of residence (OECD 1998). Escaping home country taxation often works because tax haven countries offer laws or administrative practices that prevent the effective exchange of information on non-resident taxpayers (Slemrod and Wilson 2009). For non-corporate individual taxpayers, this feature creates incentives to evade home country capital income taxation and hide their wealth in tax havens (e.g., Zucman 2014). For MNEs, operating in tax havens offers the opportunity to allocate pre-tax corporate income in a tax haven and avoid higher taxes in other countries (e.g., Desai, Foley, and Hines 2006a).

However, it is important to acknowledge that multinational firms have different reasons to set up operations in tax havens to comprehensively assess the corporate tax haven activities and the effectiveness of information exchange and CbCR regulation to limit such activities. Specifically, tax havens not only provide opportunities to lower corporate income taxes but can also help firms and firms' investors reduce withholding taxes, avoid capital controls and other regulation (e.g., securities regulation), and access foreign capital more broadly (Hines 2010; Copolla et al. 2021; Hanlon, Maydew, and Thornock 2015). Thus, in certain instances, the presence and operations of MNEs in tax havens may not solely be motivated by their own tax avoidance strategies. Rather, a presence in tax havens enables firms to attract capital from investors who prefer to invest their money through these jurisdictions.

The significance of tax havens' secrecy becomes evident in recent discussions involving wealthy individuals potentially linked to totalitarian regimes, such as Russian oligarchs or politicians from countries with weaker institutions. For instance, recent data leaks reveal that Russian oligarchs utilize financial intermediaries and legal entities in tax havens for potential

money laundering and wealth investment.[4] Additionally, Andersen, Johannesen, and Larsen (2022) observe a surge in offshore account deposits in tax havens shortly after developing countries receive substantial foreign aid payments, suggesting that the political elite in these countries may be channeling these financial flows and "concealing" the acquired wealth through tax haven entities. While these examples pertain to individual taxpayers' tax avoidance, they carry at least two implications for multinational firms. Firstly, wealthy individuals might act as controlling shareholders of multinational firms that, in turn, operate through tax havens, thereby gaining access to and augmenting their capital. Secondly, other multinational firms may present investment opportunities to wealthy individuals with capital stored in tax haven accounts, provided these multinational firms themselves incorporate in tax havens.

A recent study by Hepfer, Wilde, and Wilson (2023) documents that MNEs also utilize tax havens as locations for captives. Captives are intra-company insurance firms employed when specific risks within a corporation are too specialized to be covered by external insurers. The authors analyze a sample of US MNEs and discover that 12.3 percent of firm-years reporting tax havens in Exhibit 21 appeared to do so exclusively because of the presence of a captive in a tax haven, underscoring the economic importance of captive operations in tax havens.

Copolla et al. (2021) provide compelling evidence for the large economic importance of tax havens in the global public capital market. They show multinational firms raise almost 10 percent of debt and equity by issuing securities through publicly listed subsidiaries in tax havens.[5] While traditional investment databases allocate these equity and debt issuances to tax haven countries, the real allocation of this form of global capital is to non-haven countries

[4] See also a recent discussion by Daron Acemoglu for the Project Syndicate: https://www.project-syndicate.org/commentary/western-sanctions-russia-oligarch-dark-money-by-daron-acemoglu-2022-03.

[5] This figure might even represent a lower bound, as Copolla et al. (2021) exploit the universe of mutual fund and ETF investments, which do not account for global investments of other investors like hedge funds, private equity firms, or other corporate investors and wealthy individuals investing directly in securities issued through tax haven entities.

where MNEs have their main operations. A key takeaway from Copolla et al. (2021) is that tax havens offer multinationals greater opportunities to access global capital, which is particularly attractive for firms from countries with weaker investor protection and less developed capital markets.

Finally, operating through opaque tax haven structures could also enable a firm's insiders to derive private benefits to a greater extent as highlighted by the anecdotal example of Enron (Bennedsen and Zeume 2018). Consistent with this interpretation, Dyreng, Hoopes, Langetieg, and Wilde (2020) show that firms avoid the public disclosure of tax haven operations to investors even though the relevant subsidiaries are economically material.

Beyond the evidence supporting various non-corporate income tax motives for multinational tax haven utilization, there exists a substantial body of research providing compelling and consistent evidence that tax havens serve as a crucial tool for multinationals to avoid corporate taxes through international tax planning structures. A pioneering study by Desai, Foley and Hines (2006) uses panel data on multinational firms from the Bureau of Economic Analysis (BEA) and establishes that larger firms and those with a higher proportion of non U.S.-sales are more inclined to operate in tax havens, particularly in more research and development (R&D) intensive sectors. This aligns with the notion that greater benefits in cross-border profit shifting incentivize the use of tax havens. Several other studies offer direct or indirect evidence that multinational firms employ tax havens to reduce their effective corporate tax burden through international profit shifting techniques (e.g., Bilicka 2019; Copolla et al. 2021; Dyreng and Lindsey 2009; Dyreng, Lindsey, Markle, and Shackelford 2015; Law and Mills 2022; Murphy 2023; Lafitte and Toubal 2022; Olbert and Severin 2023; Zhen, Lusch, and Murphy 2023). Furthermore, the non-disclosure of tax haven subsidiaries to investors and the general public, as documented in Dyreng et al. (2020), is consistent with managers aiming to avoid creating a public image of using tax havens for aggressive tax strategies.

While these studies paint a consistent picture, a big open question is *how much of corporate profits in total* are shifted to tax havens and what are the associated tax revenue losses worldwide. Gravelle (2009) and Dharmapala (2014) provide detailed reviews of the literature on these questions. Gravelle (2009) summarizes early macroeconomic estimates, suggesting a U.S.-specific tax revenue loss of up to USD 60 billion annually. Recent work has revisited these estimated magnitudes. Clausing (2016) uses BEA data and arrives at a larger estimate of at least USD 77 billion by 2012, likely increasing thereafter. She attributes more than 75% of the profit shifting to seven large tax havens. Blouin and Robinson (2021) challenge these large estimates. Adjusting the BEA data for double counting of equity holdings and dividend income at multinational subsidiaries', their estimates suggest the amount of profits booked at tax haven entities is likely only 10% of that estimated in previous work. Guvenen, Mataloni Jr., Rassier, and Ruhl (2022) estimate that U.S. multinationals shift USD 150-200 billion of profits out of the U.S., of which at least 80% seem to be attributable to tax havens (in particular, Netherlands, Bermuda, Ireland, and Luxembourg, UK and Caribbean Islands). Tørsløv, Wier, and Zucman (2023) provide the most recent estimates. Using country-level foreign affiliates statistics, they estimate that multinationals book approximately USD 600 billion in tax havens, corresponding to 36% of their corporate tax base, which is slightly lower than the estimate of 50% in Wright and Zucman (2018). Tørsløv et al. (2023) also show that reported profits in tax havens would fall by 55% if profits were allocated to source countries based on multinationals' real economic activity.

3.2 Evidence on the Effects of Bilateral Exchange of Information Regulations

Several studies have examined whether improvements in the exchange of information between tax authorities, including those of tax haven countries, have influenced multinationals' tax avoidance behavior. These studies often start with the assumption that the extensive and effective use of tax havens for corporate tax sheltering is facilitated by a lack of information

exchange (Gravelle 2009). Consequently, one would anticipate a reduction in multinationals' tax haven activities following the introduction or expansion of information exchange between a specific tax haven and the multinationals' home tax jurisdiction. Findings from three different studies with various perspectives indicate that this expectation holds true.

Braun and Weichenrieder (2015) use data from the German Bundesbank’s Midi database to measure German multinational firms’ investment in tax havens. They compare the activities of German multinationals in tax havens signing TIEAs with Germany and in those not signing TIEAs with Germany in the period 2006-2011. Results based on a difference-in-differences analysis comparing the change in the number of German multinational firm-owned subsidiaries supports that the conclusion of a bilateral TIEA has reduced firms’ operations in tax havens by almost 50%. Interestingly, this effect seems mostly driven by stop in the growth of tax haven operations over time in haven countries signing TIEAs and a continuing growth in haven countries continuing to offer greater levels of secrecy, rather than an actual decline in tax haven operations.

Li and Ma (2022) study how the implementation of the internationally agreed tax standard on the exchange of information on request (the EOIR standard) at the OECD level in 2009 affected multinational firms’ aggressive tax position. This EOIR standard applies to the execution of TIEAs and particularly ensures full cooperation of tax haven countries with competent tax authorities from the other country requesting the information on multinational firms’ activities. Li and Ma (2022) document that firms with operations in tax haven countries prior to the EOIR implementation reduce the number of affiliates in tax haven countries committing to EOIR by approximately 20%. The stricter implementation of information exchange is also associated with a decrease in aggressive tax positions (UTBs), suggesting that the previous tax haven activity was attributable to corporate income tax avoidance motives. Similar to Braun and Weichenrieder (2015), the data and regression results in Li and Ma (2022)

suggest that multinational firms' tax haven operations over time did not decrease but rather stopped growing in response to additional information exchange regulations.

Bennedsen and Zeume (2018) study stock market reactions to the signing of TIEAs between a multinational firm's home country and tax haven countries where multinational firms operate. Exploiting the staggered signing of TIEAs at the country-pair level, the study finds that TIEAs between home countries and tax havens is on average associated with 2.5% greater firm values based on the international sample of publicly listed multinationals in 52 countries. The authors also document that some firms respond to TIEAs by relocating subsidiaries from affected tax haven countries signing TIEAs to havens continuing to offer secrecy (haven hopping). For those firms, the authors fail to document increases in firm value after the TIEA signings. Therefore, the authors interpret the stock market responses as investors valuing the additional transparency inhibiting expropriation activities by insiders that extend beyond pure tax-saving activities.

3.3 Evidence on the Effects of Country-by-Country Reporting (CbCR) Mandates

Several recent studies examine the effects of mandatory CbCR regulations on firm behavior and firms' information environment (see also Müller et al. 2020; Hoopes et al. 2023 and Olbert and Lester 2023 for reviews of this work). The surge in studies is not surprising given the recent policy developments, culminating in the European Commission's decision to mandate *public* CbCR from 2024, and the far-reaching changes in information disclosure for a large global sample of multinationals and governments alike. Our review in this section focuses on those studies that have particularly studied multinational firms' tax haven operations in response to CbCR, also due to CbCR coming with a powerful element of bilateral and multilateral information exchange through the Multilateral Competent Authority Agreement.[6]

[6] For a recent overview of signatory jurisdictions, see https://www.oecd.org/tax/beps/country-by-country-exchange-relationships.htm.

Regarding the mandatory private CbCR regulation for multinational firms, De Simone and Olbert (2022) assess corporate responses focusing on MNEs affected by the EU Council Directive 2016/881/EU. As part of their analyses, the authors exploit historical firm ownership data from Orbis and study several tax haven outcomes, comparing firms above and below the reporting threshold of EUR 750 million in a regression discontinuity design. They find that firms just above the threshold own approximately 30 percent fewer tax haven subsidiaries after the CbCR mandate compared to firms just below the threshold. The authors interpret this result as evidence for firms closing down tax haven subsidiaries in response to the additional disclosures being made to tax authorities who might act on this incremental information by harsher tax audits. The result seems to be mainly driven by tax haven entity closures in the Big8 and so-called dot havens. Further, the study suggests that these haven subsidiaries used to be entities at the bottom of the ownership chain, i.e., owned by the parent firm through a layer of intermediary entities, potentially to obscure the existence of tax haven operations and implement complex tax avoidance strategies.[7]

Another strand of literature exploits the administrative data generated by the mandatory CbCR regulations. Most recently, Fuest, Hugger, and Neumeier (2022) use data provided by the German tax authorities to show that that 82% of German multinationals subject to CbC reporting have tax haven subsidiaries. Consistent with previous findings, most recently in Tørsløv et al. (2023), the authors also show and that these tax haven subsidiaries are

[7] The results on the decline in tax haven operations, De Simone and Olbert (2022) suggest that multinational firms reduced their most aggressive tax avoidance activities. This interpretation is consistent with Joshi (2020) and Hugger (2019). In a recent study using administrative CbCR data from the U.S. IRS, Nessa, Vuong Persson, Song, Towery, and Vernon (2022) document no evidence for a decline in tax avoidance by U.S. multinationals following CbCR. In their main analyses, De Simone and Olbert (2022) show that multinationals affected by CbCR increase physical and human capital investment in European countries commonly labeled as "preferential tax regimes" and often included in lists of "tax haven" countries. As these European countries also offer real economic infrastructures, such as skilled workforce (Ireland), access to capital markets, and strong institutions in general alongside the favorable tax environment, these findings suggest that firms' reaction to CbCR is to back up their relatively high tax base allocations to these countries by demonstrating economic substance, rather than by reducing tax planning and reallocating tax bases to high tax countries.

significantly more profitable than those in non-havens and that approximately 40% of the profits reported in tax havens are due to cross-border profit shifting.

Joshi et al. (2020) and Overesch and Wolff (2021) study commonly used proxies for banks' income shifting without specifically studying tax haven outcomes. While Joshi et al. (2020) find inconclusive evidence regarding the effects of CbCR on banks' tax avoidance activities, Overesch and Wolff (2021) document a relatively robust increase in affected banks' effective tax rates for those multinational banks having to disclose previously unreported tax haven operations. This finding is consistent with additional transparency revealing the use of tax havens stopping multinational banks to engage in the most aggressive forms of tax avoidance, likely previously conducted through tax haven entities.

Brown et al. (2019) and Eberhartinger et al. (2021) more directly examine tax haven activities in light of the public CbCR mandate in the banking sector. Brown et al. (2019) focus on the relationship between banks' mandatory CbCR, geographic segment reporting, and the use of tax havens. The findings indicate that the introduction of mandatory CbCR had a significant and positive effect on the disclosure of geographic segment information in EU financial institutions' annual reports, increasing the number of disclosed geographic segments by approximately 15% to 20%. Additionally, the study documents results consistent with financial institutions with higher tax haven involvement disclosing more geographic segment information after the implementation of CbCR. This finding suggests that banks with higher tax haven involvement feel a greater need to increase transparency towards investors once their tax haven operations become visible. One motive could be to demonstrate compliance with regulations and alleviate concerns about potential tax avoidance or expropriation practices. While the study does not explicitly examine tax haven outcomes before versus after CbCR, the authors argue that increased transparency through CbCR may have implications for reducing the use of tax havens among EU financial institutions.

3.4 Evidence on the Effects of Other Disclosure and Information Sharing Regimes

In a recent working paper, Edwards, Hutchens, and Persson (2021) study the association between the introduction of DAC6 and affected EU multinational firms' tax outcomes. The paper uses a difference-in-differences design comparing multinationals with versus without subsidiaries in the EU. They find some relatively modest evidence consistent with affected firms decreasing tax avoidance through cross-border profit shifting. While the authors do not explicitly examine tax haven outcomes, it is plausible to assume that affected firms engage in less aggressive tax strategies involving tax havens, as reporting the underlying structures by the third-party tax services providers are those most likely to trigger regulatory action.

To the best of our knowledge, no other empirical studies currently exist on the effectiveness or unintended consequences of recent disclosure regulations implemented after CbCR discussed in Section 2 (i.e., DAC5, DAC6, or DAC7). This gap in the literature likely stems from the policies' recent implementation and challenges in identifying relevant outcomes in available datasets.

Tax information exchange, based on the literature reviewed, has been found to reduce profit-shifting behavior of MNEs. However, the precise extent of this effect and the cost-benefit ratio of these measures remain largely unknown. Existing studies mainly focus on the marginal responses of MNEs, particularly those just above the EUR 750 million revenue threshold, facing the most significant incremental regulatory costs. While these studies indicate significant treatment effects from policy reforms, it remains uncertain if all MNEs worldwide changed their behavior sufficiently to meaningfully impact the overall effectiveness of these policies.

4. Descriptive Evidence on the Use of Tax Havens by Multinationals

4.1 Introduction and Data

In this section, we conduct an exploratory descriptive analysis using financial and ownership data of MNEs from Orbis to augment the evidence from existing empirical literature. While prior studies have mainly shown firms' use of tax havens for aggressive tax avoidance, and some reduction in tax avoidance and overall corporate activity in tax havens following information exchange and CbCR regime introductions, the effect sizes are not always easily interpretable and not notably significant. Therefore, it is highly likely that multinationals still employ tax havens for various reasons. However, the total volume of haven entities owned by multinational firms in recent years and how corporate tax haven entity ownership has evolved in the past two decades, especially during the introduction of TIEAs and CbCR, remain unknown. Additionally, the literature lacks clear guidance on the utility of publicly or commercially available and administrative data in better understanding multinational firms' tax haven activities. To address these issues, we utilize the Orbis database to create a panel dataset on multinational firms' tax haven subsidiary ownership. The Orbis Generic flatfiles from February 2023 serve as our data source.

4.2 A Note on the Coverage of Worldwide Corporate Legal Entities in Orbis

An advantage of BvD Orbis is its extensive coverage, encompassing data on corporate legal entities from both US and non-US jurisdictions, including tax haven countries. BvD obtains data on the existence, legal form, as well as date and location of incorporation from official regulatory sources and also voluntary disclosures and provide correspondence through a network of information providers in many countries (Bureau van Dijk 2023). BvD also obtains information on the ownership of the legal entities, allowing them to construct a database

in which each identified corporate entity is assigned a unique identifier.[8] In the historical annual Links Files provided as part of the Orbis Generics flatfiles, each entity has a list of direct shareholder and subsidiary entities it owns itself. As some of the shareholder and all subsidiary entities themselves again appear as corporate legal entities in the database, this coverage enables us to construct multinational firm networks and identify subsidiaries effectively. Specifically, we construct hierarchical firm-subsidiary networks for each year by identifying the ultimate corporate parent entity and iteratively looping through the majority-owned direct subsidiaries based on the Orbis Link Files.[9]

For the purposes of our analysis in this chapter, we focus on firms with available consolidated financial information for the ultimate parent entity of 2015 and with subsidiaries in at least two countries. This step yields 27,161 multinational firms from 92 countries. In 2015, these 27,161 multinational firms consisted of 1.51 million legal entities from 208 countries. Approximately 50,000 legal entities were incorporated in tax havens.

As we only use information on MNEs with parent entities providing consolidated financial information (as per the Orbis financials database), our sample includes publicly listed MNEs from around the world and non-listed private MNEs providing consolidated financial information voluntarily or due to regulatory mandates like the widespread financial reporting mandates in the European Union (Breuer 2020; Kim and Olbert 2022). Thus, our sample does

[8] In addition to data obtained from official registers, Bureau van Dijk collects information through private correspondence, including phone calls, as well as from company websites and press news. This comprehensive approach ensures data accessibility even in countries with less stringent disclosure regulations, including tax havens. While Orbis has a clear data advantage over other providers due to its international coverage and extensive resources invested into collecting data through worldwide information providers, we recognize that it may not always offer a complete picture. For further details, refer to Bureau van Dijk (2023).

[9] We follow the procedure as in Olbert (2023), De Simone and Olbert (2022), Olbert and Severin (2023, and Kaenzig, Marenz, and Olbert (2023). This approach has the advantage of ensuring a corporate entity is identified as the parent entity, meaning that that this corporate entity typically has headquarters functions and produces consolidated financial statements, such that the identified majority-owned subsidiaries can be seen as one economic entity. One caveat to this approach is that it relies on direct equity ownership percentages of at least 50 percent to link subsidiaries to the ultimate parent. Thus, this approach fails to include a lower-tier subsidiary to an MNE network if this subsidiary is directly owned by more than two other corporate entities but each of these entities have direct ownership stakes of less than 50 percent.

not include large private MNEs from the US and other countries without financial reporting disclosure mandates for non-listed firms, such that our descriptive statistics will constitute a lower bound. For example, our statistics do not include companies owned by non-listed US private equity firms, some of which have extensive tax haven operations (Olbert and Severin 2023; Abraham et al. 2023).[10]

In our sample of MNEs with available consolidated financial information, the average (median) MNE has 55.6 (11) legal entities and operates in 5.7 (3) countries. The highest number of legal entities and countries are driven by the 5 percent largest MNEs which have 182 to 13,060 entities in 19 to 141 countries. In our sample, slightly more than 5,000, or 18 percent, of multinationals reported consolidated revenues of at least EUR 750 million in 2015 and would thus fall under CbCR regulations from 2016.

4.3 Evidence from Orbis Ownership Data

We present the development in the total number of tax haven subsidiaries owned by multinational firms worldwide in the period 2007-2021 in Figure 1. The solid lines show the total number of tax haven subsidiaries and the dashed lines represent the share of tax haven subsidiaries to total multinational firm-owned subsidiaries. We show these numbers separately for the full list of tax haven countries according to Bennedsen and Zeume (2018) (black lines) and the group of Big8 tax haven countries (Big7 as in Hines and Rice (1994) plus Puerto Rico, red lines).[11] We document that the total number of multinational firms' tax haven subsidiaries has increased from approximately 15,000 in 2007 to more than 50,000 in 2015. Since then, the number has stabilized. The pattern for Big8 haven subsidiaries is similar, with approximately

[10] If we do not condition the sample on parent entities disclosing consolidated financial information, we observe more than 7 million entities owned by MNEs, more than 440,000 of which are incorporated in tax havens as of 2020.

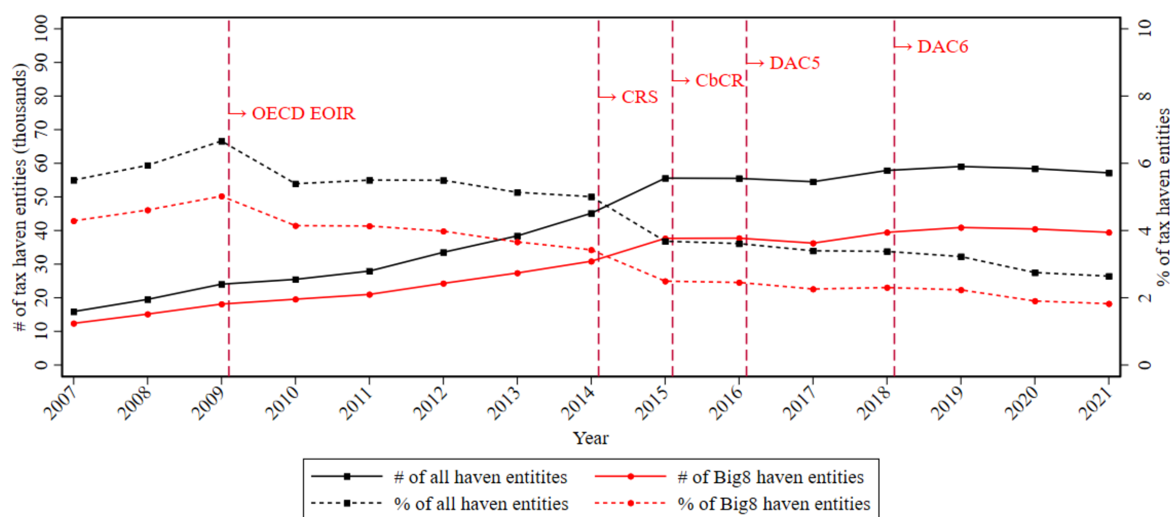
[11] De Simone and Olbert (2022) provide the full list of tax haven countries. They include so-called dot havens (small, typically island, jurisdictions with preferential tax regimes) and several European countries and financial centres like Cyprus, Ireland, Hong Kong, Luxembourg, Malta, and Panama. The Big8 havens comprise Switzerland, Hong Kong, Ireland, Lebanon, Liberia, Panama, Puerto Rico, and Singapore.

30,000 entities since 2015. When interpreting these total numbers, it is important to note that the coverage of corporate entities in Orbis has significantly increased over the sample period. To mitigate the influence of this mechanical time trend, we also present the share of tax haven entities to the total number of subsidiaries owned by multinationals (the dashed lines).

We observe that in 2007, approximately 6 (4) percent of multinational firm subsidiaries were located in any (Big8) tax haven country. This number increased until 2009, when the OECD EIOR was introduced, and decreased thereafter. The share of tax haven subsidiaries further decreased after 2015, when the CRS was introduced and then stabilized at slightly below 4 (above 2) percent. In the recent years since 2019, the trend seems to be slightly downward-sloping.

While these figures generally suggest that multinationals' use of tax haven entities, and their relative importance as corporate entities, decreased to some extent after the introduction of exchange information rules, our statistics also show that the number of multinational firm-owned tax haven entities is still economically very large. Specifically, as of 2021, we document that there are more than 57,000 active tax haven subsidiaries owned by approximately 25,000 multinational firms.

Figure 1: Multinationals' Tax Haven Entities over Time

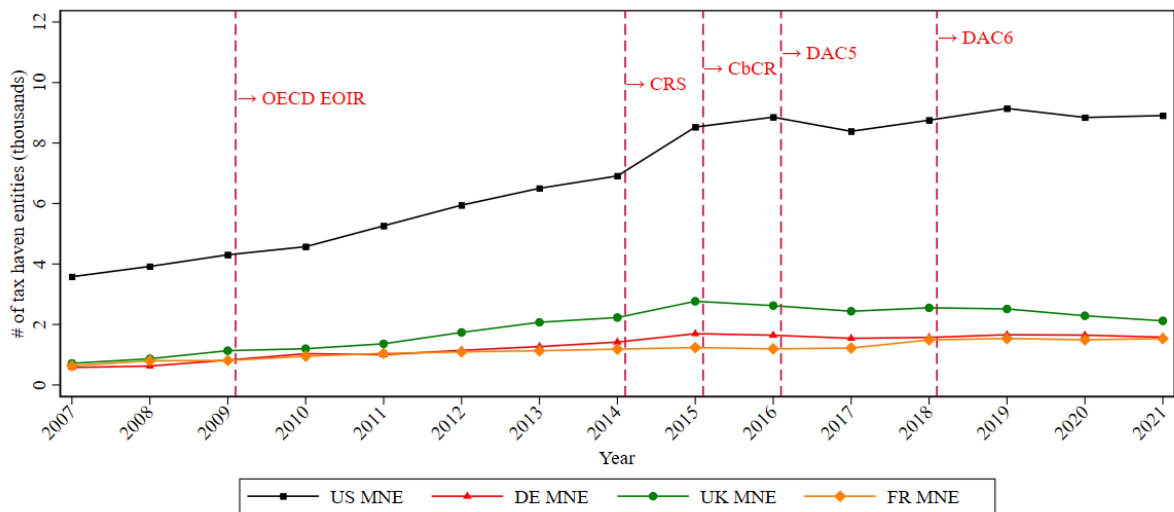


Notes: This figure shows the development in the total number of tax haven subsidiaries owned by multinational firms worldwide (solid lines) and the share of tax haven subsidiaries to total multinational firm-owned subsidiaries (dashed lines) in the period 2007-2021. The figure shows these numbers separately for the full list of tax haven countries according to Bennedsen and Zeume (2018) (black lines) and the group of Big8 tax haven countries (Big7 as in Hines and Rice (1994) plus Puerto Rico, red lines). The red vertical dotted lines indicate introduction dates of international information exchange and CbCR regulations. Multinational firm and subsidiary data are from the Orbis Generics flatfile as of February 2023. The sample includes multinational firms with available consolidated financial information in the year 2015.

In Figure 2, we disaggregate the tax haven subsidiary ownership by multinational firm parent country. We see that US multinationals account for the largest number of tax haven subsidiaries, which is not surprising given that the US is home to most of the very large multinational firms. At the beginning of our sample period in 2007, US multinationals owned almost 4,000 tax haven subsidiaries, while multinationals from Germany, the UK, and France owned less than 1,000 tax haven subsidiaries. Across all groups, we document a growth until 2014. Interestingly, this trend continued and became even stronger for US multinational firms, which then owned more than 8,500 tax haven subsidiaries, while the trend stopped for the German, UK, and French multinationals in 2014, when the CRS was politically committed to by most country and implemented in the following years (see Casi, Spengel, and Stage 2020). Our evidence could suggest that bank deposits in the US are booked by US multinational firm entities in tax havens in the post-CRS period.

We also observe that the growth in tax haven subsidiaries owned by German, UK, and French multinationals stops after the introduction of mandatory private CbCR in 2015, while the trend of US firms continues, albeit at a slower pace. This evidence is suggestive of CbCR preventing European multinationals in particular to expand their tax haven operations.

Figure 2: Multinationals' Tax Haven Entities over Time by Multinational Home Country

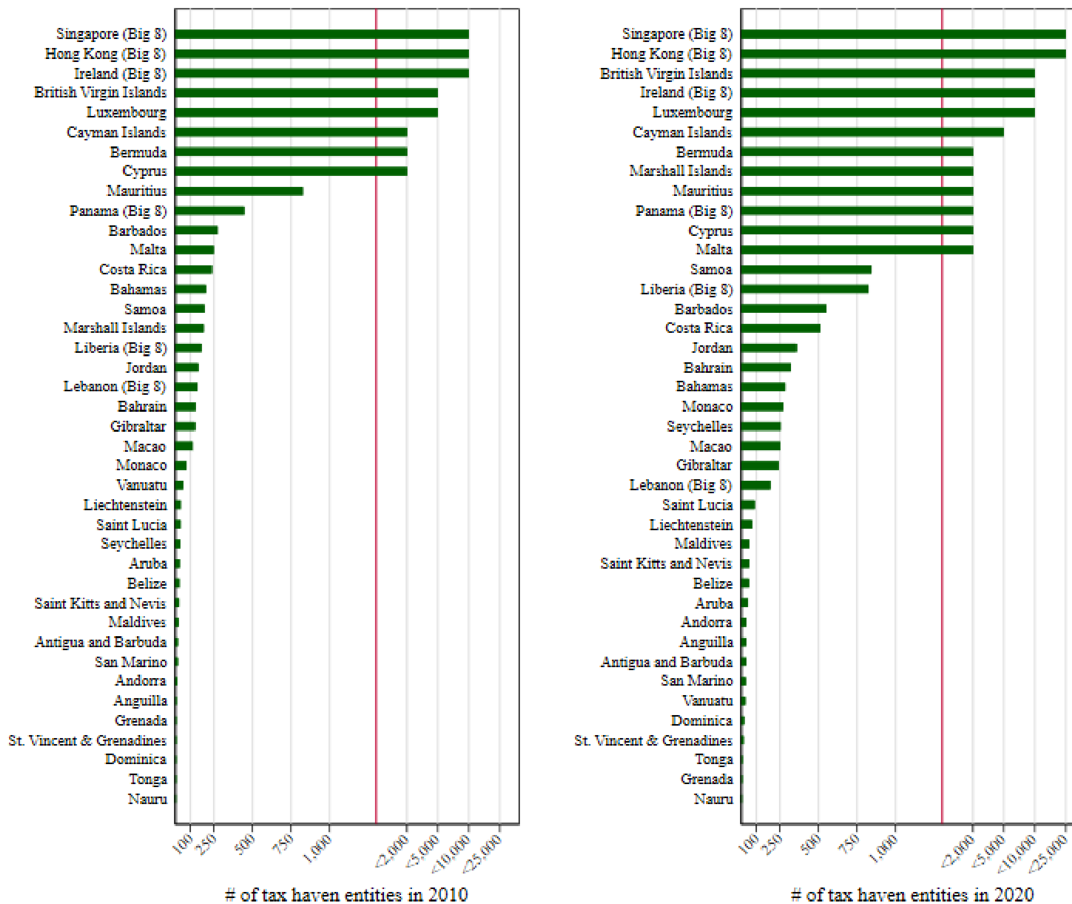


Notes: This figure shows the development in the total number of tax haven subsidiaries owned by multinational firms with the ultimate parent entity headquartered in the US, Germany, United Kingdom, and France (solid black line with quadrant markers, red line with triangle markers, green line with circle markers, and orange line with diamond markers) in the period 2007-2021. The figure shows the number for the full list of tax haven countries according to Bennedsen and Zeume (2018). Multinational firm and subsidiary data are from the Orbis Generics flatfile as of February 2023. The sample includes multinational firms with available consolidated financial information in the year 2015.

To analyze the tax haven preferences of our sample MNEs, we break down the number of tax haven entities to the country level for the years 2010 and 2020, presenting the findings in Figure 3. The figure illustrates a significant presence in Big8 countries, with Singapore, Hong Kong, and Ireland ranking among the top three (four) tax havens in 2010 (2020). Notably, Singapore and Hong Kong emerge as the most favored tax havens by 2020. Among the non-Big8 countries, the British Virgin Islands, Luxembourg, the Cayman Islands, and Cyprus are prominent choices for locating tax haven entities. Furthermore, we observe an overall increase in the number of entities across nearly all countries, attributed to firms expanding

internationally and growing in scope, along with improved coverage by Orbis. The Marshall Islands, Malta, and Panama have seen the most significant increases, each with more than 1,000 additional entities.

Figure 3: Multinationals' Tax Haven Entity Locations by Country

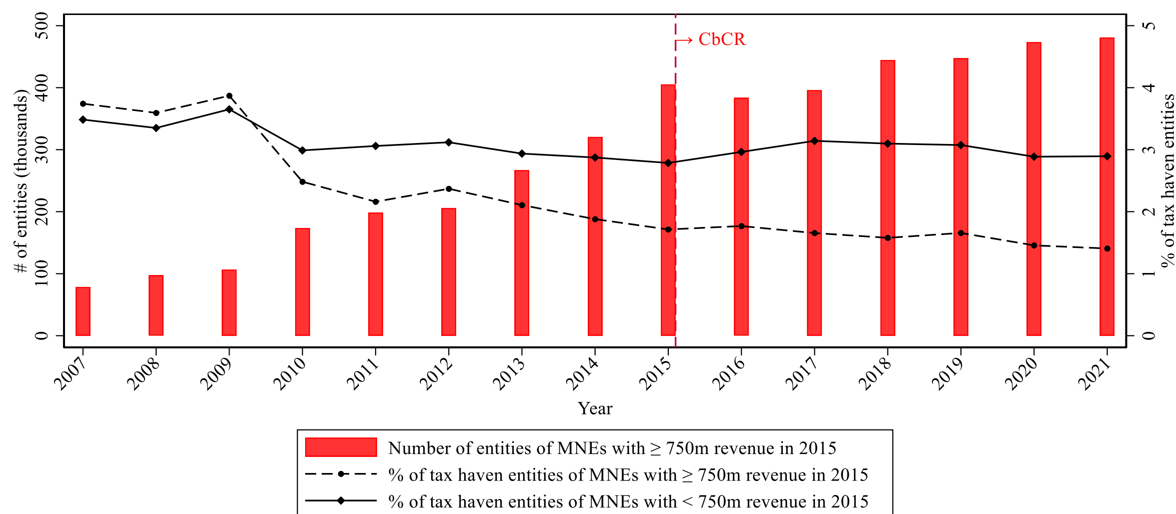


Notes: This figure shows the number of tax haven entities per tax haven country as defined in Bennedsen and Zeume (2018). The left panel of the figure represents the tax haven representations of multinational enterprises (MNEs) in the year 2010. The right panel displays the tax haven representations of MNEs in 2020. To improve readability, we have categorized countries with more than 1,000 sample firm representations into size categories, namely, less than 2, 5, 10, or 25 thousand representations. Multinational firm and subsidiary data are from the Orbis Generics flatfile as of February 2023. The sample includes multinational firms with available consolidated financial information in the respective years.

To further provide suggestive evidence to what extent CbCR affected multinational firms' tax haven operations, we limit our sample to European multinationals and split firms based on the EUR 750 million revenue reporting threshold in 2015. We then present the share

of tax haven subsidiaries for the firms above and below the threshold in Figure 3 (lines), along with the total number of subsidiaries owned by multinationals above the EUR 750 million revenue reporting threshold (red bars). We document that since 2009 the share of tax haven subsidiaries relative to all multinational firm subsidiaries for firms with more than EUR 750 million in 2015 revenues was approximately 2 percent and that of firms below the EUR 750 million threshold approximately 3 percent. Interestingly, we observe that the share of tax haven subsidiaries slightly decreases for firms above the CbC reporting threshold after the introduction of CbCR in 2015, while it slightly increases (or continues to grow) for firms not affected by CbCR given their smaller size. This finding suggests that CbCR incentivized some affected firms to cut back on tax haven activities, consistent with the results in De Simone and Olbert (2022). De Simone and Olbert (2022) focus on a small sample of affected versus unaffected firms just above and below the EUR 750 million threshold. However, the evidence in Figure 4 also shows that European multinationals still own an economically large number of tax haven subsidiaries after the introduction of CbCR.

Figure 4: EU Multinationals' Tax Haven Entities over Time around the CbCR Size Threshold



Notes: This figure shows the development in the total number of European multinational firms' subsidiaries worldwide and reporting consolidated revenue of at least EUR 750 million in 2015 (red bars) and the share of tax haven subsidiaries to total multinational firm-owned subsidiaries separately for European multinational firms with consolidated revenue at least EUR 750 million and below EUR 750 million in 2015 (dashed and solid lines) in the period 2007-2021. The tax haven subsidiaries refer to the full list of tax haven countries according to Bennedsen and Zeume (2018) (black lines). The red vertical dotted line indicates the introduction year of mandatory private CbCR in the EU. Multinational firm and subsidiary data are from the Orbis Generics flatfile as of February 2023. The sample includes multinational firms with the ultimate parent entity headquartered in Europe and available consolidated financial information in the year 2015.

4.4 Evidence from Aggregated OECD CBCR data

In this section, we use data from multinational firms' original CbC reports to shed light on the presence of multinational firms in tax havens *after* the introduction of the mandatory CbC regime. Our descriptive evidence in Section 4.2 relies on voluntarily and mandatorily reported ownership information collected by BvD (see also Wagner and Zeume 2023). In this Section, we complement this evidence with actual administrative data which have been anonymized, aggregated, and made publicly available by the OECD (see notes to Table 1 for details). The data have been used in recent empirical studies to measure overall misalignment between multinational firms' reported tax bases and countries' market sizes as a proxy for tax-motivated income shifting (e.g., De Simone and Olbert 2023; Gómez-Cram and Olbert 2023). However, these data should be interpreted with care due to inconsistencies in the firm-specific data

sources and in the aggregation procedure by the OECD as well as potential double-counting issues (Blouin and Robinson 2021; De Simone and Olbert 2022).[12]

We use the data to complement our inferences from Section 4.2 and get a better sense for the extent of multinational firms' tax haven activities as of 2016, the first year in the post-CbCR era, and 2018, the OECD's latest data release. The OECD anonymizes and aggregates the data obtained from reporting multinational firms at the headquarter country-partner jurisdiction level. We further aggregate the data over specific country groups and report the resulting statistics for the total number of multinational firm entities, the number of employees, and the revenues and pre-tax income per employee in a given country group. Table 1 shows the aggregated totals over *all* jurisdictions and statistics for multinational firms' activities in their headquarter country (*home*) and across tax haven countries (all tax havens according to Bennedsen and Zeume (2018) and Big8 tax havens).

As of 2016, the OECD database contains information from 3,644 reporting multinational firms, which compares to the approximately 5,000 firms we identify as European multinationals with more than EUR 750 million in 2015 consolidated revenue in the Orbis database. The smaller number of firms in the OECD database is reasonable given that not all jurisdictions had implemented mandatory CbCR as of 2016 and the OECD only includes firms from 47 headquarter countries. Over all countries worldwide, the reporting multinational firms owned approximately 361.000 entities which are listed in the CbC reports. This number seems consistent with the approximately 400,000 entities we observe in Orbis for multinationals likely falling under the CbCR mandate as of 2016 (Figure 3). This suggests that the Orbis ownership data is fairly accurate and also covers entities in countries without financial reporting mandates and entities likely at the bottom of corporate ownership networks. As of 2016, the reporting

[12] Users should also refer to the data disclaimer published by the OECD available here: https://www.oecd.org/tax/tax-policy/anonymised-and-aggregated-cbcr-statistics-disclaimer.pdf.

entities employ almost 82 million people and report revenues and pre-tax income of approximately USD 512,000 and USD 40,000 per employee.

Table 1 also shows that the patterns of multinational firms' entities, labor force, and reported revenues and profitability per employee differ strongly between the home countries, the average country (i.e., all countries), and tax haven jurisdictions. While multinational firms' controlled entities are mostly incorporated in the home country (167,000), there is still a significant number of tax haven entities as of 2016 with nearly 30,000 entities for all tax haven countries and approximately 21,000 entities in the Big8 havens. MNEs employ approximately 1.6 million people in tax havens as of 2016, compared to 82 million worldwide. Consistent with other studies on profit shifting using macroeconomic data (e.g., Tørsløv et al. 2023), we observe evidence consistent with MNEs engaging in profit shifting to tax havens. Specifically, the average revenues booked for one employee in a tax haven exceed EUR 1,500 million, while the revenue-per-employee ratio is only EUR 0.51 million worldwide and 0.54 in MNEs' home countries. This inference is corroborated when looking at pre-tax income per employee.

Table 1: Aggregate Information from Multinationals' CbCR Reports (OECD)

	# of MNE Entities (thousand)	Employees (m)	Revenues (thousands) per Employee	Pre-Tax Income (thousands) per Employee
		2016		
All	360.90	81.91	512.11	39.72
Home country	167.22	51.18	542.95	44.17
All Havens	29.60	1.62	1563.73	155.80
Big 8 Havens	20.77	1.64	1637.62	128.64
		2018		
All	622.54	116.61	533.58	52.87
Home country	251.61	64.45	580.58	60.92
All Havens	63.05	2.15	1900.29	263.18
Big 8 Havens	46.73	2.52	1931.89	186.83

Notes: This figure shows aggregate statistics from the OECD's anonymized and aggregated CbCR data collected for the CbCR statistics. Financial values are in USD. The raw data are available at OECD.Stat (Table I – Aggregate totals by jurisdictions) here: https://stats.oecd.org/Index.aspx?DataSetCode=CBCR_TABLEI. We accessed the data through the OECD's RESTful application programming interface (API) based on the SDMX-ML standard. We aggregate the data over all multinationals included in the OECD data and over certain country groups for the years 2016 and 2018. The first line (*All*) shows aggregate (summed) statistics for the total number of MNE entities (subsidiaries listed by the multinational firms in their CbC reports), the number of employees, and the revenues and pre-tax income per employee worldwide. The other lines show the same information based on country-specific information in the multinational firms' headquarter jurisdiction (*Home country*), across all tax havens (*All Havens*), and across the Big8 tax havens (*Big 8 Tax Havens*). The 2016 version of the OECD CbCR data comprises reports from 3,644 multinational firms from 47 headquarter jurisdiction with entities in 234 foreign jurisdictions. The latest 2018 release comprises data on more than 10,000 multinational firms.

Interestingly, we observe very similar patterns and even stronger evidence for tax haven use and profits booked in tax havens for the 2018 statistics. In 2018, approximately 10,000 MNEs fell under the OECD-wide CbCR reporting mandate compared to approximately 3,600 MNEs in 2016 when fewer countries had implemented the mandatory regime and fewer MNEs had met the EUR 750 million reporting threshold. These approximately 10,000 MNEs included 622 thousand entities in their CbCR reports, 63,050 of which were incorporated in tax havens. The number of employees in tax havens increases in proportion to the increase in the number of tax entities. However, compared to 2016, MNEs booked higher revenues per employee in tax havens with a ratio of EUR 1,900 million in 2018. We note that this statistic seems surprising as the average reader would have expected a decline in tax haven usage, at least in

terms or profit shifting towards tax havens after CbCR and other anti-tax avoidance regulations had been implemented since 2015.

5. Discussion and Conclusion

In this study, we present a comprehensive overview of multinational firms' utilization of tax havens and policy developments regarding information exchange and CbC tax disclosures. Our investigation covers policy developments (Section 2), empirical literature on profit shifting and the impact of tax information exchange (Section 3), and our descriptive evidence based on BvD's Orbis database and OECD's CbCR data (Section 4).

While the empirical literature confirms that multinational firms engage in profit shifting to tax havens, the estimates of its extent vary widely. Also, the literature lacks a clear picture of the effectiveness of tax information exchange as a measure to curb tax haven utilization, which aligns with the predictions in early academic contributions (Evers, Meier, and Spengel 2014).

Considering the findings from existing studies, we conclude that tax information exchange does reduce profit-shifting behavior to some extent. Yet, the actual magnitude of this effect and the cost-benefit ratio of these measures remain largely unknown. Many studies focus on MNEs with the greatest incremental regulatory costs, such as those just above the EUR 750 million revenue threshold responding to CbCR (as in many analyses in Joshi 2020 or De Simone and Olbert 2022). While significant treatment effects of policy reforms are reported, it is unclear if all MNEs globally altered their behavior to the extent that the policies had meaningful aggregate impact.

Our statistics in Section 4 indicate that tax haven use by MNEs still prevails, potentially driven by larger MNEs not significantly changing their activities in response to CbCR due to their prior exposure to extensive tax audits and reporting requirements. We thus look forward

to future research that addresses the magnitudes and exact mechanisms of multinational firms' tax haven activities and also sheds light on the understudied effects on stakeholders outside of tax havens.

Recent work has shown that the global tax reform appears to affect MNEs engaging in tax havens and tax haven countries at the macroeconomic level (Gómez-Cram and Olbert 2023). Further, recent work has shown that *private* CbCR already induces MNEs to alter their tax and investment behavior (e.g., Joshi 2020; De Simone and Olbert 2022). Therefore, we encourage further research that addresses the magnitudes and exact mechanisms of multinational firms' tax haven activities, with a particular focus on the understudied effects on stakeholders outside of tax havens. Such research is necessary to provide a comprehensive assessment of whether the estimated benefits of information exchange and CbCR regulations exceed the expected costs, and thus represent effective measures to prevent tax avoidance.

Beyond being a tax avoidance tool, theoretical arguments and recent empirical evidence suggest that tax havens' low tax burdens may influence multinational firms' investment and capital allocation in non-reform targeted countries. For example, Suarez-Serrato (2019) demonstrates that U.S. MNEs invest significantly less abroad and in the U.S. after a regulatory change affecting tax exemptions in Puerto Rico. These insights align with the model presented in Desai, Foley, and Hines (2006b) and early evidence on the correlation between tax haven usage and foreign investment activity (Desai, Foley, and Hines 2006a). Furthermore, De Simone and Olbert (2022) highlight the possibility of unintended corporate responses to CbCR, including corporate activity reallocation toward tax-favorable jurisdictions.

To advance future research, we thus believe it is crucial to consider potential unintended consequences of regulations aiming to combat corporate tax haven use. Disclosure and information exchange rules are particularly susceptible to unintended effects, leading to competitive distortions due to the proprietary nature of the revealed information (e.g., Leuz

and Wysocki 2016 for an overview and Müller et al. 2021; De Simone and Olbert 2022 for CbCR in particular). We encourage further investigation on CbCR, for example by leveraging the staggered adoption of bilateral information exchanges through the CbCR MCAA, to disentangle the effects of within-firm information or learning mechanisms and expected changes in CbCR information usage in tax enforcement or other governmental actions in home versus host countries (see also Roychowdhury, Shroff, and Verdi 2019 for a helpful framework).

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