

Report on CbCR Analysis and Capacity Building for ATI Partner Countries

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Matthew Amalitinga Abagna
Mario Cuenda García
Miroslav Palanský



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Executive Summary

The report presents the results of a technical assistance project designed to enhance the capacity of tax administrations in selected Addis Tax Initiative (ATI) partner countries (Benin, Ghana, Tanzania, and Zambia) to effectively use Country-by-Country Reporting (CbCR) data for corporate risk assessment. The project also aimed to enhance the readiness of participating countries to participate in the design and implementation of global tax reforms.

As part of the project, virtual sessions were held to introduce the project and follow up on key activities. The initial session provided an overview of the project scope, introduced the Tax Justice Network team, and discussed the broader context of tax competition, the rise of tax havens, and global efforts to tackle profit shifting, highlighting the role of CbCR data prior to the in-person workshop. Post-workshop virtual engagements focused on gathering participant feedback, reflecting on key takeaways from the in-person training, and assessing the need for tailored country-level follow-up sessions to reinforce learning and support national implementation efforts.

Through a combination of in-depth data analysis and targeted capacity building activities, including a three-day in-person training workshop on the use of CbCR data for risk assessment for tax authority and relevant government agencies in the participating countries, the project addressed both the strategic and operational challenges these countries face in accessing and using CbCR data. The training provided hands-on experience in analysing voluntarily disclosed CbCR data from the EU Tax Observatory and aggregate statistics from the OECD. The training program enhanced the technical capacity of participating countries to interpret and use CbCR data for transfer pricing risk assessment. It also introduced analytical tools to estimate effective tax rates and identify profit misalignments, contextualised global tax developments, including GMT and the ongoing UN tax convention negotiations within domestic legal and policy frameworks.

The project highlighted several key opportunities to strengthen the use of CbCR data in ATI partner countries. Despite the usefulness of the CbCR data, participating ATI countries are currently excluded from automatic CbCR exchanges under the OECD's Multilateral Competent Authority Agreement due to stringent confidentiality and data security requirements. The project also identified strong potential to build technical capacity in data analysis, and began addressing this through hands-on training and practical tools. The analysis revealed that ATI partner countries lost more than US\$ 10 billion in tax revenue losses in 2021 due to profit shifting from MNEs. This trend is particularly pronounced in the extractives sector, where a lack of comparable data weakens enforcement of transfer pricing rules.

Based on the identified challenges, we suggest the following policy recommendations to ATI partner countries: first, countries should adopt an incremental strategy to access and build capacity for using Country-by-Country Reporting (CbCR) data effectively. This includes improving access, both legal and technical, to the data, developing in-house expertise, and digitising CbCR submissions to enable easier analysis. Establishing mandatory electronic declarations and centralized databases would allow tax administrations to systematically analyse multinationals' reporting. Over time, countries can adopt more sophisticated tools, such as profit misalignment indicators and transfer pricing benchmarking, to detect risk and improve enforcement.

Second, ATI partner countries should invest in collaborative infrastructure to overcome structural constraints. This includes setting up a regional transfer pricing data-sharing platform focused initially on the extractive sector, where profit shifting risks are acute. Such a platform would allow

countries to pool and analyse key sectoral data, enable peer learning, and strengthen regional audit capabilities. In parallel, tax administrations should use CbCR data to improve audit targeting by identifying firms with unusual patterns of reported profits, taxes, and employees—especially those indicating negative misalignment in the local country paired with positive misalignment in known tax havens.

Finally, countries should promote transparency by implementing and advocating for robust public CbCR standards, following the Global Reporting Initiative (GRI) framework. They should push for comprehensive disclosures by all MNEs and advocate globally for improvements such as beneficial ownership transparency and resolution of double-counting issues. With the collapse of the OECD Two Pillars process, ATI partners must seize the opportunity to shape a more inclusive tax agenda under the United Nations Tax Convention to build fiscal resilience and sovereignty.

1. Introduction

The globalisation of economic activities and the rise of multinational enterprises (MNEs) have created significant challenges for tax governance worldwide. Developing countries in particular face heightened risks from profit-shifting practices, whereby MNEs strategically relocate profits to jurisdictions with lower or no taxes, eroding domestic tax bases. This phenomenon deprives countries of vital tax revenues for infrastructure, healthcare, education, and other public services.

The magnitude of revenue losses for developing countries due to base erosion and profit shifting is staggering. According to the Tax Justice Network's State of Tax Justice (2024), developing countries lose approximately US\$ 118 billion annually in tax revenue due to profit-shifting practices.¹ The UN Conference on Trade and Development (UNCTAD) highlights that profit shifting accounts for a 10-20% erosion of corporate income tax bases in low- and middle-income countries, disproportionately affecting their fiscal stability compared to developed economies.

Concerns over worldwide profit shifting and base erosion increased after the late 2000s financial crisis. In 2013, the G20 mandated the OECD to tackle base erosion and profit shifting (BEPS), an initiative that became known as the OECD/G20 BEPS framework. Among the initiative's actions, the OECD BEPS Action 13 established Country-by-Country Reporting rules for Multinational Enterprises with a turnover above €750 million.

Country-by-Country Reporting (CbCR) is a cornerstone of transparency in international taxation and was first proposed by Tax Justice Network in 2003. Under Country-by-Country Reporting, MNEs disclose financial and tax-related information on a jurisdictional basis each year. This data gives tax authorities insights into the multinationals' operations in each country, including profit allocation, revenues, and taxes paid. The information is especially relevant to identify and counter profit-shifting practices.

However, despite its potential, the effective use of CbCR data remains a significant challenge for developing countries due to limited technical capacity, data access issues, and resource constraints. These challenges underscore the need for targeted capacitybuilding programs, improved access to CbCR data, and technical assistance tailored to the needs of developing countries.

This project provides technical and capacity building support to four Addis Tax Initiative (ATI) partner countries – Benin, Ghana, Tanzania and Zambia. ATI partner countries have much to gain from leveraging CbCR data. One of the objectives of the Addis Tax Initiative is to increase domestic revenue mobilisation; harnessing the full potential of CbCR data aligns with that particular goal, alongside other goals such as strengthening tax systems, reducing dependence on external financing and achieving sustainable development. Overall, CbCR is a tool for enhancing tax transparency and addressing base erosion. It is the goal of this project to maximise the use that ATI partner countries can make of CbCR data.

The first crucial deliverable of this project was the elaboration of a capacity-building training program designed to enhance the capabilities of tax authorities in ATI partner countries. The central bloc of that training program was a three-day in-person workshop delivered in March in Zambia.

¹ Here developing countries are defined using the IMF's Emerging and Developing countries category.

The training was structured into four modules: it began with an introduction to CbCR and the Global Minimum Tax (GMT), followed by practical sessions on analysing CbCR data, identifying profit-shifting risks, and integrating findings into national tax frameworks. Besides the in-person three-day workshop, several mentoring meetings and virtual follow-ups took place after and before the workshop. The program equips participants with analytical tools and techniques, fosters an understanding of MNE tax structures, and provides hands-on guidance for assessing tax risks.

The second crucial deliverable of this project is the elaboration of the present report containing the key aspects of the training program, and offering some further written output that will be useful for the ATI administrations. In this report, Section 2 reviews the context and challenges related to profit shifting and the role of CbCR; Section 3 reviews the available CbCR datasets as well as the academic literature that has studied and analysed CbCR.

Sections 4 and 5 undertake a comprehensive analysis of CbCR data to uncover patterns of profit shifting and assess the tax losses ATI partner countries face. Section 4 presents the "misalignment method" with different formulas, and explain how to overcome data limitations. Section 5 then applies the "misalignment method" to evaluate discrepancies between reported profits and actual economic activity, as well as some results. The results shows that the 33 ATI countries lost over US\$ 10 billion in taxes in 2021, as MNEs shifted over US\$ 40 billion in profits out of the countries and into tax havens; Benin lost approximately US\$ 10 million; Ghana lost approximately US\$ 20 million; Tanzania lost US\$ 122.5 million, the most of the four countries analysed; Zambia lost approximately US\$ 46 million. The section also shows how profit shifting evolved over time in the 33 ATI countries and in the four countries of interest; discrepancies between statutory and effective tax rates; and how Orbis data complements CbCR data, and viceversa.

Section 6 summarises the training program delivered to ATI partner countries, which combined technical instruction, practical analysis, and policy engagement to build their capacity to use CbCR data for improved tax governance. Structured around an introduction to CbCR and progressing to in-depth, firm-level analysis of MNE behavior, the training enabled participants to understand profit-shifting mechanisms and assess discrepancies between statutory and effective tax rates. Participants were actively engaged through virtual pre-training meetings, in-person sessions featuring hands-on exercises, and post-training mentoring, ensuring continuous learning and practical application of tools. The training was particularly important for developing countries that face limited access to CbCR data and capacity constraints, as it strengthened their ability to analyze MNE tax structures, estimate revenue losses, and design more effective tax policies. A key lesson from the program was the critical need for sustained access to high-quality data and tailored analytical skills to enable evidence-based responses to international tax challenges, especially under the evolving Global Minimum Tax framework.

Finally, section 7 presents seven policy recommendations and tailored insights to strengthen participating ATI partner countries' tax governance frameworks using CbCR data. These recommendations draw on the report's findings, relevant literature, insights from the inperson training program, and extensive exchanges and feedback with tax administrations in several ATI partner countries. They emphasize the importance of continuous capacity building for tax authorities in data analysis and modern risk assessment techniques, alongside the digitalisation and e-declaration of CbCR data. A regional data-sharing platform for transfer pricing—particularly relevant for the extractive sector—also features prominently. Additionally, the recommendations explore how CbCR analyses can support more targeted audits, the benefits of implementing Public CbCR, and the global advocacy needed for more granular Public CbCR data and the inclusion of Beneficial Ownership Information. Finally, they highlight the significance of active participation in global tax reform processes. Section 8 concludes the report.

2. Global Tax Landscape and the Challenges of Profit Shifting

The global tax landscape is undergoing a significant transformation. The increasing globalisation, coupled with the digitisation of economic activities, has made it more challenging to enforce effective tax governance and compliance globally. As multinational enterprises expand across borders and move more of their operations online, traditional tax frameworks struggle to keep pace, therefore creating loopholes that multinational enterprises exploit to lower their corporate tax burden. While this is a worldwide phenomenon, lower income countries are the worst affected. They face significant challenges in combating tax invasion, including limited access to international tax data, weak enforcement mechanisms and limited capacity in analysing complex corporate structures and data. These limitations make them vulnerable to tax abuse by multinational enterprises, leading to substantial revenue losses and ultimately undermining their ability to finance public services and support long term economic development.

In this chapter of the report, we provide an overview of the systematic challenges faced by the participating ATI partner countries in addressing the urgent issue of base erosion and profit shifting by multinational enterprises. We also explore the potential of global initiatives, such as country-by-country reporting and the global minimum tax, in enhancing tax transparency and governance within the participating countries. We conclude the chapter by examining the barriers that hinder the effective implementation of these initiatives, both in the participating countries and more broadly across low- and middle-income countries.

2.1. ATI Participating Countries Tax Landscape and the Challenges of Profit Shifting

The global tax landscape has undergone significant transformation due to increased globalisation, the rise of MNEs, and the advent of digitalisation. These developments have created opportunities for MNEs to structure their operations across multiple jurisdictions, often exploiting regulatory gaps and inconsistencies in tax laws to shift profits to jurisdictions with lower tax rates. This misalignment between where profits are reported and where actual economic activity occurs, commonly referred to as profit shifting, has become a major challenge for tax authorities worldwide.

Profit shifting practices by MNEs frequently involve the use of offshore financial centres and tax havens, where corporate tax rates are low or nonexistent. This enables MNEs to artificially reduce their tax liabilities. García-Bernardo and Janský (2024) estimated that global profit shifting results in over USD 300 billion in lost tax revenue annually, with lower-income countries losing a disproportionately higher share relative to their smaller tax bases.

The rest of the section draws on discussions with tax administration officials from ATI partner countries and provides an overview of current profit-shifting trends, highlighting the key challenges and opportunities these countries face in responding to such practices.

Zambia: Zambia, endowed with significant copper reserves, experiences considerable revenue losses due to aggressive tax planning strategies employed by MNEs, particularly in the mining sector. One of the major challenges has been transfer pricing abuse, where MNEs overprice imported machinery, services, and other inputs from related entities based in low-tax jurisdictions (Readhead 2016; Mwape, Hamalengwa and Mwange 2025). These practices artificially inflate operational costs, reduce taxable profits, and ultimately diminish government revenues. Recent estimates suggest that approximately USD 156.3 million in tax revenue was shifted out of Zambia by MNEs in 2021 to potentially low-tax jurisdictions (Tax Justice Network 2024).

Complex financial arrangements within multinational groups complicate the Zambian Revenue Authority's (ZRA) ability to assess the true value of intra-group transactions, exacerbating the country's vulnerability to base erosion and profit shifting. Zambia is not a signatory to the OECD's Multilateral Competent Authority Agreement, which facilitates the automatic exchange of CbCR data among tax administrations for risk assessment purposes. As a result, Zambia lacks access to aggregated CbCR data for MNEs operating within and outside its jurisdiction, severely limiting the country's capacity to detect profit-shifting behaviours among MNEs.

Although Zambia has implemented domestic CbCR regulations and has been receiving CbCR data since 2022, technical and administrative challenges remain. The data submitted by MNEs is commonly provided in PDF format, which is difficult to process and analyse for risk detection purposes. Additionally, many companies flagged for audit based on the ZRA's risk assessment criteria do not appear among the entities submitting local CbCR reports. This suggests that high-risk taxpayers may not be fulfilling their CbCR reporting obligations, or that enforcement and data collection mechanisms are insufficient, resulting in inconsistencies in identifying MNEs subject to reporting requirements. These issues highlight the need to revise the criteria used to determine which companies are required to file CbCR reports, ensuring that all eligible entities are appropriately captured².

Beyond its local CbCR initiatives, Zambia has developed robust transfer pricing regulations aligned with OECD guidelines to address tax avoidance by MNEs. While this is a noteworthy advancement in curbing tax abuse, the ZRA continues to face significant capacity constraints in executing comprehensive transfer pricing audits. These audits require a high level of technical expertise, especially in assessing complex cross-border financial transactions. The limited availability of specialised staff and advanced data analytics capabilities undermines the ZRA's effectiveness in scrutinising MNE operations. Without adequate capacity to identify and respond to profit shift and enforce transfer pricing rules, MNEs will continue to exploit regulatory loopholes, compromising Zambia's tax sovereignty and eroding its revenue base.³

The Zambian tax authority has identified significant policy gaps in the areas of beneficial ownership transparency and anti-avoidance measures, which require urgent attention and reform. Strengthening the legal and regulatory framework governing beneficial ownership is crucial for enhancing transparency and ensuring that individuals and entities exerting control over corporate structures are accurately identified for tax purposes. Improved transparency in this area will reduce the use of complex corporate arrangements for tax avoidance.

² The content of this paragraph was developed using information from Zambia's Country Survey Responses (2025).

³ The content of this paragraph was developed using information from Zambia's Country Survey Responses (2025).

Furthermore, the tax authority has emphasised the need for the effective implementation of interest limitation rules, in line with OECD BEPS Action 4, as well as thin capitalisation rules. These measures are essential to counteract excessive intra-group debt financing practices commonly employed by MNEs to artificially reduce their taxable income in Zambia. When effectively enforced, such rules limit the ability of MNEs to erode the domestic tax base through inflated interest deductions.

For Zambia, a multifaceted approach is required to address the challenges it faces in mitigating profit shifting by MNEs. Key policy priorities include strengthening the capacity of tax authorities, investing in data processing and analytical tools, and enhancing international cooperation and data sharing. Increasing the country's participation in global tax transparency initiatives and leveraging technology to automate and digitise its local CbCR processes will significantly enhance risk assessment capabilities and improve tax compliance, resulting in a corresponding increase in tax revenue.

Ghana: Ghana faces significant challenges in addressing profit shifting, particularly in its oil and gas sector. MNEs operating in this industry have strategically registered subsidiaries in jurisdictions such as Mauritius, exploiting tax treaty benefits to lower their effective tax rates (Addo 2012). Recent estimates suggest that approximately USD 93.4 million in profits were shifted out of Ghana in 2021 (Tax Justice Network 2024). Such practices erode Ghana's tax base, reduce government revenue, and create an uneven competitive environment, where domestic firms, lacking similar tax advantages, struggle to compete. The reduction in taxable profits further strains public resources, impacting infrastructure development and the delivery of essential social services.

A key challenge in curbing profit shifting by MNEs in Ghana is limited access to relevant data. Ghana is not a signatory to the OECD's Multilateral Competent Authority Agreement, and therefore lacks access to aggregate CbCR data. This restriction affects the Ghana Revenue Authority's (GRA) ability to analyse and detect mismatches between MNEs' reported revenues and their actual economic activities in Ghana and other jurisdictions. While Ghana is taking steps to sign the MCAA, it has already implemented robust transfer pricing guidelines and is in the process of developing domestic CbCR regulations to mandate MNEs operating within the country to submit detailed reports on economic activities and revenues for tax compliance and monitoring purposes.⁴

Although Ghana currently uses data from corporate income tax returns and transfer pricing disclosures to support risk assessments, its capacity to enforce compliance remains limited. Currently, there is a shortage of technical expertise and the absence of sophisticated risk assessment tools, especially when dealing with MNEs that operate through complex corporate structures and across multiple jurisdictions. In addition to the technical deficit, existing policy gaps further hinder effective corporate income risk assessments. Current regulations on thin capitalisation, permanent establishment, and income attribution are not only insufficient but also outdated in addressing modern forms of tax avoidance, particularly in light of global tax reforms and the increasingly aggressive tax planning strategies employed by MNEs. There is a need to amend these regulatory frameworks to reflect contemporary tax challenges.⁵

⁴ The content of this paragraph was developed using information from Ghana's Country Survey Responses (2025).

⁵ The content of this paragraph was developed using information from Ghana's Country Survey Responses (2025).

The country survey also highlights a significant regional issue in the area of transfer pricing that also affects Ghana: the lack of comparable firm-level transactional data within the region. This deficiency complicates the benchmarking of intercompany transactions against reliable market indicators, particularly in the extractive sector, making it challenging to identify pricing anomalies that could signal tax abuse. Establishing regional data-sharing platforms and enhancing data comparability are essential steps in addressing these regional challenges. Strengthening collaboration and improving access to consistent, high-quality data will bolster risk assessments and help ensure that transfer pricing adjustments effectively counter aggressive tax planning and profit-shifting strategies, while better aligning transfer prices with regional market realities.

Tanzania: Tanzania faces a pressing challenge in addressing profit shifting by MNEs, particularly in high-value sectors such as telecommunications. Many MNEs strategically locate intangible assets, such as trademarks, patents, and proprietary technologies, in low-tax jurisdictions. This arrangement enables them to shift substantial profits offshore by charging royalties and other fees to their Tanzanian subsidiaries, thereby inflating deductible expenses and resulting in the country losing billions in tax revenue in recent years (Readhead 2016).

Recent estimates based on OECD CbCR data indicate that Tanzania lost approximately USD 469.9 million in potential corporate tax revenue in 2021 due to profit shifting by MNEs operating in the country (Tax Justice Network 2024). This scale of tax base erosion severely undermines the country's capacity to mobilise domestic resources for sustainable development.

Despite the significant revenue loss attributed to profit shifting, Tanzania lacks access to aggregate and jurisdiction-specific CbCR data beyond the limited information submitted by MNEs through corporate income tax returns. As a result, Tanzanian tax authorities have limited visibility into the global operations of MNEs and lack a reliable mechanism for determining whether aggressive tax planning and profit shifting occur on a meaningful scale.

The country survey also reveals considerable institutional capacity gaps in managing transfer pricing-related risks. There is a limited human resource and technical capacity for identifying and managing transfer pricing-related risks. This observed challenge highlights the importance of investing in developing robust institutional capabilities for transfer pricing documentation and enforcement. In particular, there is a need for the effective application of internationally recognised methodologies, such as the Comparable Uncontrolled Price (CUP), Cost-Plus, and Profit Split methods. Proficiency in these tools, they noted, is important for benchmarking intercompany transactions against arm's length market prices, identifying pricing irregularities, and evaluating the economic substance of reported intercompany dealings.⁶

Furthermore, it is essential to strengthen analytical capabilities by improving access to and use of CbCR data. Doing so would enhance the ability of tax authorities to understand how MNEs allocate profits, expenses, assets, and personnel across jurisdictions, and to assess whether these allocations reflect genuine economic activity or are indicative of tax avoidance strategies.

Benin: Benin continues to face significant challenges in enforcing transfer pricing regulations, creating vulnerabilities that MNEs exploit to shift profits out of the country. A particularly pervasive strategy involves the mispricing of intra-group transactions, such as inflated import costs or payments for the use of intangible assets, including trademarks or proprietary technologies provided by related entities. These artificially priced transactions erode Benin's corporate tax

⁶ The content of this paragraph was developed using information from Tanzania's Country Survey Responses (2025).

base by reducing the taxable income reported domestically.⁷

According to the Tax Justice Network (2024), an estimated USD 41.3 million in profits were shifted out of Benin in 2021 alone. This loss significantly reduced the public revenues available to finance essential services such as education, healthcare and infrastructure. The cumulative impact weakens Benin's ability to pursue sustainable development through domestic revenue mobilisation.

The root cause of these revenue losses lies in the country's limited technical and institutional capacity to effectively enforce transfer pricing rules. Tax auditors often lack the specialised skills needed to analyse complex transfer pricing documentation and to determine whether intra-group transactions adhere to the arm's length principle. Strengthening enforcement will therefore help protect the country's tax base as well as contribute to broader fiscal sustainability by reducing reliance on external resources.⁸

Despite these challenges, Benin is well placed to advance its tax transparency agenda. As a signatory to the OECD's Multilateral Competent Authority Agreement, the country has a framework in place to access CbCR data to support improved risk assessment. However, the effectiveness of this framework is currently limited by infrastructural and technical limitations, particularly with respect to the hosting, security, and integration of data into analytical workflows.⁹

To overcome these barriers, strategic investment in digital infrastructure and human capital is essential. By leveraging international support and adopting global best practices, Benin can fully realise the potential of CbCR as a tool to uncover and address profit shifting behaviours, ultimately paving the way for a more equitable and efficient tax system.

2.2. Country-by-Country Reporting as a Solution to Profit Shifting: Opportunities to Realising its Potential and Overcoming Structural Barriers

Country-by-Country Reporting (CbCR) was introduced under the G20/OECD BEPS Action 13 framework as a significant step toward enhancing global tax transparency and curbing corporate tax avoidance.¹⁰ CbCR requires MNEs with annual consolidated revenues exceeding €750 million to report detailed financial and tax-related data on a country-by-country basis. This includes information such as revenue, profit before tax, taxes accrued and paid, stated capital, accumulated earnings, number of employees, and tangible assets in each jurisdiction. CbCR was designed to improve tax compliance and revenue collection by equipping tax officials with critical data to assess transfer pricing risks and detect potential profit shifting by MNEs.

⁷ The content of this paragraph was developed using information from Benin's Country Survey Responses (2025).

⁸ The content of this paragraph was developed using information from Benin's Country Survey Responses (2025).

⁹ The content of this paragraph was developed using information from Benin's Country Survey Responses (2025).

¹⁰ For a detailed description of the OECD CbCR, see: [Country-by-country reporting for tax purposes | OECD](#)

However, the current OECD CbCR format has important limitations, and the implementation of CbCR in developing countries, particularly among the ATI partner countries, remains limited. As of March 2025, only six ATI partner countries (Cameroon, Kenya, Nigeria, Liberia, Senegal, and Mauritania) could access the reciprocal exchange of CbCR information.¹¹ The limited access to CbCR data impairs tax administrations' ability to conduct effective risk assessments and audits of MNE operations. Without timely and comprehensive access to such data, tax authorities are disadvantaged in identifying aggressive tax planning schemes and challenging profit-shifting structures by MNEs operating in their jurisdictions.

Despite the promise of CbCR in advancing tax transparency and curbing base erosion and profit shifting, many developing countries, including ATI partner countries, encounter systemic and structural barriers that limit their ability to fully access and utilise this information. One of the most significant barriers is the stringent confidentiality and data security requirements of the OECD's Multilateral Competent Authority Agreement, which are such that most of the participating ATI partner countries are currently prevented from receiving CbCR data via automatic exchange. As of early 2025, only six ATI partner countries (Cameroon, Kenya, Nigeria, Liberia, Senegal, and Mauritania) could establish reciprocal exchange relationships.

Secondly, developing countries operate in environments of significant resource constraint, where tax administrations must make difficult decisions about how to allocate scarce personnel, technical infrastructure, and political capital. In this context, investments in CbCR access and analysis must be weighed against other pressing needs. Finally, many of the tools needed to interpret CbCR, such as misalignment indicators or benchmarking techniques, are relatively new and often remain confined to academic or specialist circles, limiting their uptake in day-to-day tax administration.

These findings point to opportunities for progressive engagement to unlock the full potential of CbCR and address the structural barriers that constrain developing economies, including ATI partner countries, as discussed throughout this project and summarised in this report.

2.3. International Tax Negotiations: the OECD's Two Pillar Agreement and the UN Tax Convention

One of the key milestones in recent international tax policy was the introduction of the Global Minimum Tax (GMT) under the OECD's Pillar Two framework. The GMT aims to curb tax competition and halt the "race to the bottom" by ensuring that large multinational enterprises (MNEs) are taxed at a minimum effective rate of 15%, regardless of where they operate.¹² However, for developing countries - including ATI partner countries - the GMT poses more risks than opportunities.

The OECD's Two-Pillar agreement is now effectively defunct following the U.S. withdrawal under the Trump administration, accompanied by threats of economic retaliation against countries implementing the Global Minimum Tax (GMT). Given that the U.S. is home to many of the world's largest MNEs, its non-cooperation seriously undermines the legitimacy and enforceability of the GMT. This breakdown risks eroding international consensus and reigniting harmful tax compe-

¹¹ For the list of countries that signed on the MCAA, see: <https://www.oecd.org/content/dam/oecd/en/topics/policy-issues/tax-transparency-and-international-co-operation/cbc-mcaa-signatories.pdf>

¹² For a complete overview of the Global Minimum Tax, visit: [Global Minimum Tax | OECD](#).

tition. However, this impasse has opened a critical window of opportunity for the UN Tax Convention, which offers a more inclusive and representative platform for shaping international tax standards. Approved by an overwhelming majority of countries at the United Nations in November 2023, including the participating ATI partner countries, the Convention represents a chance to move toward a genuinely global and equitable tax governance system.¹³

One of the central criticisms of the OECD's Pillar Two process was its lack of inclusivity. Not all countries participated equally, with many developing countries excluded from meaningful decision-making. As a result, the GMT reflects priorities that may not align with the fiscal realities of countries in the Global South. A key concern is the relatively low minimum rate of 15%, which falls well below the average statutory corporate tax rate of 25% in many ATI partner countries. This means the GMT is unlikely to significantly reduce profit shifting and may, in some cases, exacerbate revenue losses. Even more problematic is the allocation of taxing rights: under the current framework, most additional tax revenue accrues to the headquarters jurisdictions of MNEs, rather than the source countries where actual economic activity takes place. This design risks leaving ATI partner countries with minimal or no gains from the GMT's implementation.

In addition, effective implementation of the GMT depends on technical capacity and access to granular tax data—particularly CbCR data—to monitor compliance and apply topup tax rules. Yet all participating ATI partner countries are currently excluded from receiving CbCR data through automatic exchange due to the confidentiality and data security requirements of the OECD's Multilateral Competent Authority Agreement. Even if the GMT were rolled out today, these countries would lack the necessary information and institutional capacity to fully apply its provisions or benefit from them.

This is why the ongoing UN Tax Convention, presents a major opportunity. Unlike the OECD framework, the UN process offers a more inclusive forum where all countries participate on equal footing. Concerns about duplication should not deter progress; instead, the Convention can build on the strengths of existing initiatives while addressing their most serious shortcomings. Moving forward, the focus must remain on strengthening countries' ability to counter base erosion and profit shifting. This includes reducing incentives for profit shifting to low- or no-tax jurisdictions, levelling the playing field for countries that have avoided aggressive tax incentives, and encouraging greater transparency and international cooperation, and developing automatic exchange of information (including of CbCR data) without artificial barriers.

In this context, one of our key policy recommendations will be to actively engage with the UN Tax Convention process as a platform to build on what works, correct the deep structural imbalances of current frameworks, and advance global tax cooperation that reflects the priorities and realities of developing countries.

¹³ The International Tax Consequences of President Trump. Available at: [The international tax consequences of President Trump - Tax Justice Network](#) (accessed 30 August 2025).

2.4. Strategic Importance of this Project for ATI Partner Countries

For ATI partner countries, this project plays a crucial role in strengthening domestic resource mobilisation by building the capacity of tax authorities to detect, assess, and counter profit shifting by MNEs using CbCR data. Aggressive tax planning, such as shifting profits to low- or no-tax jurisdictions, has long undermined national tax bases and eroded the fiscal space needed for essential investments in health, education, infrastructure, and climate resilience.

The project tackles these challenges by enabling access to voluntary CbCR data and developing the technical skills needed to use it effectively. Participating tax administrations are equipped to estimate revenue losses from base erosion and profit shifting and design informed countermeasures. For example, by calculating effective tax rates from CbCR data, officials can identify when profits are being shifted abroad, which allow for estimates of how much domestic tax revenues could increase if these were taxed at home.

The project adopts a context-sensitive approach, tailoring capacity-building activities to each country's legal, institutional, and technical realities. Through a blend of in-person workshops and structured virtual sessions, tax officials engage in hands-on training using real CbCR data. Exercises simulate risk assessments, such as identifying cases where reported profits are misaligned with economic activity (e.g., employees or assets), and allow participants to flag potential profit shifting and estimate tax gaps with greater precision.

The virtual sessions reinforced learning throughout the project cycle. Topics include interpreting effective tax rates, applying misalignment methodologies, discussions regarding past and ongoing international tax negotiations, and addressing structural barriers in the current CbCR exchange of information framework. As a result, countries are better positioned to develop targeted audit strategies, monitor compliance risks, and implement data-driven tax reforms.

Beyond technical training, the project also addresses deeper structural inequalities in the global tax system. All participating ATI countries are currently excluded from automatic CbCR exchanges under the OECD's Multilateral Competent Authority Agreement due to stringent confidentiality and data security requirements. By addressing these constraints, the project helps level the playing field – offering tools, knowledge, and policy engagement opportunities that enable countries to shape, not just implement, international tax rules.

In the long term, this project supports the development of stronger, more equitable, and more autonomous fiscal systems. By improving corporate tax enforcement, it reduces dependence on aid and debt, supports progress toward the Sustainable Development Goals, and enables greater investment in public services. It also enhances transparency and public trust in tax systems, reinforcing the legitimacy and accountability of domestic revenue mobilisation efforts.

3. Data

Since Tax Justice Network first proposed Country-by-Country Reporting Data back in 2003, several landmark initiatives have introduced CbCR requirements for different industries. Figure 1 below shows a summarised timeline of major legislative changes on CbCR. In 2010, the United States introduced CbCR on extractive industries through the Dodd-Frank Act; the EU introduced CbCR for extractive industries and the financial sector in its Transparency Directive in 2013. On that same year, the G20 mandated the OECD to tackle base erosion and profit shifting (BEPS); in 2015, OECD BEPS Action 13 established CbCR rules for Multinational Enterprises (MNEs) with a turnover above €750 million; in 2016, MNEs started reporting to their tax authorities, and a public dataset with aggregate values is available since 2019. Finally, in 2021, the EU adopted a Public CbCR Directive, and in 2024 Australia passed a Public CbCR legislation; in both cases, public CbCRs will be available in 2026.

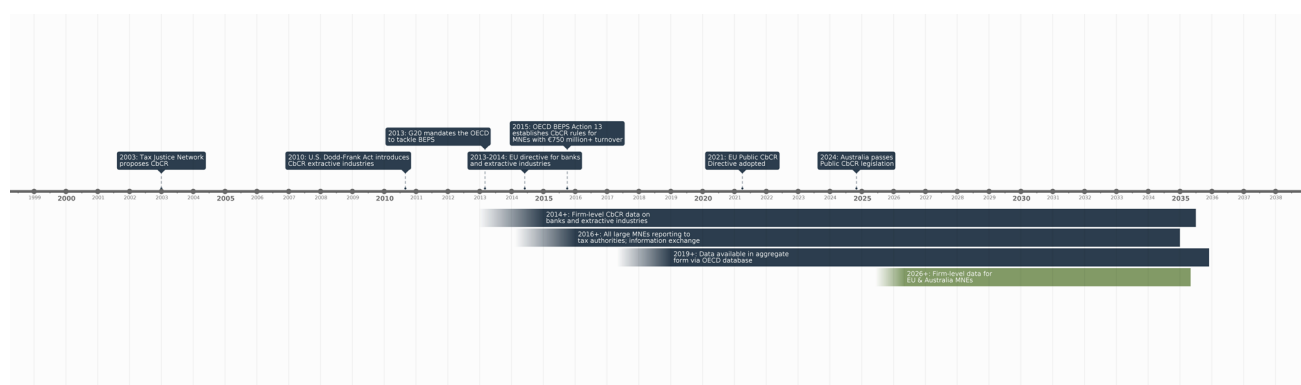


Figure 1: Timeline of key CbCR Legislation, 2003-2025.

Source: Tax Justice Network.

The implementation of CbCR legislation has been accompanied with the elaboration of CbCR databases. Some are publicly available databases, which can be freely downloaded. These include the OECD CbCR dataset; the Extractive Industries Transparency Initiative's CbCR dataset; the MNEs CbCR voluntary disclosures compiled by the EU Tax Observatory; and the EU banks' CbCR dataset.¹⁴ Other datasets are confidential and generally in the hands of tax administrations; while unpublished, some tax administrations grant access to researchers under certain conditions.

¹⁴ In these last two cases, both the MNEs that voluntarily disclose their Country-by-Country reporting and European banks do not report to a central body or repository, but they publish their report in public. The EU Tax Observatory collects these reports and harmonizes the variables across reports to provide a public dataset with comparable statistics.

A growing body of economic literature uses CbCR data to study profit shifting. The Tax Justice Network (2023, 2024) and García-Bernardo and Janský (2024) use the OECD CbCR data to calculate global profit shifting estimates. At the national level, there are studies using CbCR data from the US (Clausing 2020; Cobham, Faccio and Fitzgerald 2019; De Mooij, Liu and Prihardini 2019; Garcia-Bernardo, Janský and Torslov 2021; Garcia-Bernardo, Janský and Zucman 2022; Nessa, Persson, Song, Towery and Vernon 2022); from Italy (Bratta, Santomartino and Acciari 2021); and from Germany (Fuest, Hugger and Neumeier 2022; and Fuest, Greil, Hugger and Neumier 2022). Papers analysing the voluntarily disclosed CbCR include Aliprandi and Zedlitz (2023) and Godar, Aliprandi, Faccio, Janský and Toledo Ruiz (2024). Relevant literature on CbCR in the EU Banking Sector include Barake (2022), Aliprandi et al. (2021), Fatica and Gregori (2021), Bouvatier, Capelle-Blancard and Delatte (2025); Janský (2020) and Dutt, Nicolay, Vay and Voget (2019).

This section will describe in detail the OECD CbCR database, which is the larger and more encompassing publicly available database. Since all databases contain very similar variables, and to avoid repetition, it will describe the other publicly available databases more succinctly.

3.1. OECD CbCR Database

Introduction. The OECD compiles and publishes anonymised and aggregated country-by-country reporting (CbCR) data as part of its efforts to address base erosion and profit shifting (BEPS), in line with the commitments made under Action 13 of the OECD/G20 BEPS initiative. This framework requires all large MNEs to produce a Country-by-Country Report containing consolidated information on the distribution of income, profits, taxes paid, and economic activity across the jurisdictions in which they operate. These reports are shared with tax authorities to support preliminary transfer pricing assessments and to help identify potential BEPS risks. In addition, participating countries have committed to releasing aggregated statistics derived from these reports to facilitate further economic and statistical research on MNE behavior and profit shifting.

The most recent release, the 2024 edition of the OECD Corporate Tax Statistics, covers reporting years from 2016 through 2021. The scope of the dataset has expanded significantly over time, with the number of jurisdictions submitting data rising from 26 in 2016 to 52 by 2021. Nonetheless, jurisdictions having enacted mandatory CbCR requirements, meaning that the number of jurisdictions submitting data should continue to increase. For the 2021 fiscal year, the 52 jurisdictions which submitted CbCR data to the OECD provide insight into the operations of more than 8,000 multinational groups. An additional five jurisdictions indicated that they had received no Country-by-Country reports for that year.¹⁵

Data. The database is structured in the following way: each entry reflects data reported by a “parent jurisdiction” – the country where a multinational enterprise is headquartered – on its activities in a “partner jurisdiction,” meaning the foreign country where that enterprise operates. All entries are annual, and the data is presented as aggregate totals by jurisdiction. To illustrate, imagine Country A is home to five multinational corporations, each operating in five different countries. The OECD data consolidates the information from all five corporations for each of those partner countries.

¹⁵ For further information, consult OECD (2024), Corporate Tax Statistics 2024, p. 73.

The OECD dataset contains 28 variables in total, of which 13 are particularly relevant for analyses on profit shifting. These variables provide insights into the financial performance, tax contributions, and structural characteristics of multinational enterprises. A brief description of each is provided below:

- **Unrelated party revenues:** Revenues generated from transactions with independent third parties.
- **Profit (loss) before income tax:** The total profit or loss reported before tax obligations are deducted.
- **Adjusted profit (loss) before income tax:** A version of pre-tax profit that excludes certain distortive items, such as dividends. Not all countries provide data on this variable, only those which performed analyses to estimate the double counting of dividends.
- **Income tax paid (on cash basis):** The amount of tax actually paid in cash during the reporting period.
- **Income tax accrued – current year:** The amount of tax expenses recognized for the current year, regardless of whether the payment was made.
- **Employees:** The number of full-time equivalent staff employed by the MNE in a given jurisdiction.
- **Tangible assets other than cash and cash equivalents:** The value of physical assets held, excluding cash holdings and near-cash instruments.
- **Stated capital:** The equity capital reported for legal and accounting purposes.
- **Total revenues:** The combined revenue from both related and unrelated party transactions.
- **Related party revenues:** Revenues earned from transactions with entities within the same corporate group.
- **Holding or managing intellectual property business activity:** A binary indicator reflecting whether the MNE engages in the ownership or management of intellectual property in that jurisdiction.
- **Multinational enterprise groups:** The number of distinct MNE groups operating in a given jurisdiction.
- **Multinational enterprise sub-groups:** The number of sub-groups (entities within MNE groups) operating in the jurisdiction.

All monetary values in the dataset are reported in US dollars. Moreover, reports are categorized into 3 groups: Sub-groups with negative profits; Sub-groups with positive profits; Total (All sub-groups). In other words, entities with negative and positive profits are aggregated separately, alongside a combined total.

Limitations. There are relevant limitations to the OECD CbCR database, and two are particularly important when analysing profit shifting.¹⁶ Firstly, some reporting countries do not truly pub-

¹⁶ For a detailed discussion of the limitations of the Country-by-Country Reporting (CbCR) data, see Box 7.2 in OECD, Corporate Tax Statistics 2024, pp. 76–77, as well as the “Important disclaimer regarding the limitations of the Country-by-Country report statistics,” available at: [Important disclaimer regarding the limitations of the Country-by-Country report statistics](#).

lish Country-By-Country reports but aggregate at the continent level instead. 13 out of the 52 reporting countries in 2021 do not publish country-by-country reports; three countries publish on a limited amount of countries and then at the continent or the world level. The lack of disaggregation will be problematic for the profit shifting analysis: take the United Kingdom, with 390 reports, but that only reports on the Rest of the World. Since we cannot allocate the variables to the countries where British MNEs operate, we cannot estimate profit shifting occurring in these countries. Hence, these reports are excluded from the analysis, which only offers a conservative lower-bound estimate of profit-shifting.

The second relevant limitation is that the relationship between profits and taxes can be distorted under certain circumstances. The relationship between profits and taxes is one of the key insights provided by the CbCR databases, because they are used to obtain the Effective Tax Rates (ETRs) by dividing profit by taxes. There are two situations that can lead to a distortion in the relationship between profits and taxes. Firstly, some institutions which are exempt from paying Corporate Income Tax, such as pension funds or university hospitals, are still required to file CbCRs and are included in the aggregate statistics. Secondly, up until 2019, there was a persistent issue of double counting of intracompany dividends. These two distortions are likely to increase the profits reported by multinationals without affecting taxes and will thus artificially increase ETRs.

Take the following example: Company A in Country I reports a US\$ 100 million profit, pays US\$ 20 million in taxes and has an ETR equal to 20% ($=20/100$). Assume now that Company B in the same Country I is a University Hospital, and also reports US\$ 100 million profit, but in this case it is tax-exempt. Since the OECD data would report the aggregate values in country I, Country I would see two MNEs with US\$ 200 million in profits and paying US\$ 20 million in taxes, and a resulting ETR of 10%. Since low ETRs of 10% or lower are generally prevalent in tax haven countries, an analysis of the ETR of Country I could flag it as a Tax Haven, even if it is not. Hence, the inclusion of institutions exempt from paying corporate income tax in the databases can lead to distortions in the ETRs and the subsequent analysis.

Regarding the double counting of intracompany dividends, in practice, dividends paid to a parent company by any of its holdings are tax-exempt. These dividends are what a holding distributes from its profit after taxes; in some cases, they might be subject to a withholding tax depending on the country from which they are paid to the parent company. However, once in the parent company's books, they are tax-exempt. The problem with the OECD's CBCR data is that some parent companies include these taxexempt dividends from their subsidiaries in their reported total profits. Since including the dividends increases a parent company's total profits in its reporting country, it will have significant distortions on the calculations of ETRs, as it will make profits look artificially higher than they are.

Take the following example: Company C in Country J has a US\$ 500 million profit, pays US\$ 150 million in taxes and has an ETR equal to 30% ($=150/500$). After that, it receives another US\$ 1 billion in tax-exempt dividends from its foreign subsidiaries. However, in some cases, the CbCR will report US\$ 1.5 billion in profit and only US\$ 150 million in taxes, with a resulting ETR of 10%. Again, this could flag the country as a tax haven when it pays a normal amount of corporate income tax in the first place.

The initial OECD guidelines were unclear on how reporting companies had to deal with the reporting of intracompany dividends, leading to different interpretations. On paper, the problem is solved since 2020, when the rules were revised: they now explicitly states that companies should not include them in their total profits in their CbCRs. However, the OECD still warns about the possibility of an implementation lag and about the persistence of the problem.

Sadly, aggregation already takes a lot of nuances out of the data, but these two set of limitations add another layer of complexity to accurately estimate profit shifting. Nonetheless, as we will see in Section 4 below, these limitations can be mitigated in order to produce estimates of profit shifting.

3.2. EU Tax Observatory’s Voluntarily Disclosed CbCR Database

The voluntarily disclosed CbCR dataset compiled by the EU Tax Observatory consists of information from CbCR reports typically published as PDFs by MNEs.¹⁷ The database covers 153 MNEs, spans 28 headquarter jurisdictions and 177 partner jurisdictions over the 2016–2021 period. Like the OECD’s aggregated CbCR database, the EU Tax Observatory’s database includes key firm-level indicators such as profit or loss before tax, tax accrued, total revenue, number of employees, taxes paid, tangible assets excluding cash, related and unrelated party revenues, stated capital, and accumulated earnings. Additionally, the database provides industry classifications on the reporting MNEs, offering deeper insights into sector-specific patterns.

However, despite its granularity, the voluntary nature of the EUTO CbCR data presents several limitations that affect its comprehensiveness and comparability. The sample is relatively small compared to the over 8,000 firms included in the OECD’s database. There is significant variability in disclosures across firms and over time. Reporting MNEs exercise discretion over which data points to disclose and how to present them. This discretion leads to inconsistencies in the variables reported, variations in the level of geographic disaggregation (e.g., reporting by region rather than by country), and occasional deviations from OECD-recommended definitions and formats. In some cases, firms omit sensitive data or consolidate jurisdictions, further limiting the dataset’s utility for precise jurisdiction-level analysis and robust cross-firm comparisons.

3.3. CbCR databases on the Extractive Industries Sector

Several CbCR databases with different information standards contain information on the Extractive Industries sector. The highest and most comprehensive information standard is the Global Reporting Initiative (GRI 207-4: 2019). Companies typically publish reports on their websites as part of their sustainability reporting. The EU Tax Observatory’s Voluntarily Disclosed CbCR Database, which aims to include all GRI 207-4: 2019 aligned reports and provides industry classifications on the reporting MNEs includes data for 24 multinational companies operating in mining, oil and gas.

The Extractive Industries Transparency Initiative (EITI) provides publicly available data on the extractive industries sector. However, this data is not consolidated into a single, harmonised database for all participating countries; instead, it is presented on a country-by-country basis.¹⁸ The 57 member countries are required to annually disclose information on payments and government

¹⁷ The data and the methodology are available at Taxplorer: <https://www.taxplorer.eu/> and <https://www.taxplorer.eu/Methodology>.

¹⁸ See Extractive Industries Transparency Initiative (EITI), “Open Data,” <https://eiti.org/open-data>. To reconstruct the activities of a particular company across multiple countries, one must manually compile and reconcile data from individual country files.

revenues received from the extractive industries companies active in their countries, which is reconciled with disclosures made by companies on the payments made at the project level in the country in question. The data includes payments made by companies and payments received by government, such as tax payments disaggregated by type, royalties, dividends, bonuses, income (such as on rent), but no data on employees, wages and tangible assets - crucial variables for any analysis of profit shifting patterns using the "misalignment" method.

Some jurisdictions have introduced CbCR legislation that either directly targets the Extractive Industries Sector, or at least encompasses it, although the disclosure requirements are typically limited to mining royalties, dividends, production entitlements and taxes paid and licence fees paid to the host government and subsidies received, without requiring full geographic disaggregation, nor information on company sales, employment, tangible assets, or profits or losses before tax. Canada approved its Extractive Sector Transparency Act of 2014 and Statistics Canada provides Extractive Sector Transparency Act (ESTMA) data on bonuses, dividends, fees, infrastructure improvement, production entitlements, royalties and taxes.¹⁹ Similarly, the European Union approved a "Transparency Directive" in 2013 (EU Directive 2013/34); it has fully been transposed by all countries, but there is no public repository for this data.

3.4. EU Bank's CbCR Dataset²⁰

Since 2014, financial institutions in the European Union have been required to publicly disclose their activities on a country-by-country basis, following Article 89 of the CRD IV Directive (2013/36/EU). This mandate emerged in the aftermath of the global financial crisis as part of the EU's broader agenda to enhance transparency and financial stability. The Directive explicitly states that "increased transparency regarding the activities of institutions, and in particular regarding profits made, taxes paid and subsidies received, is essential for regaining the trust of citizens of the Union in the financial sector." The Country-by-Country Reporting (CbCR) requirement is intended to enable the public to assess whether banks are paying their fair share of taxes where they operate, thereby reinforcing corporate responsibility and accountability.

Under this CbCR obligation, European banks must disclose annually – on a consolidated basis – detailed information for each country where they operate, including tax havens. Specifically, they must report their turnover (net banking income), number of employees (on a full-time basis), profit or loss before tax, tax on profit or loss, and any public subsidies received. The requirement also extends to listing the name, geographical location, and nature of activities of all subsidiaries and branches. Bank groups headquartered in the EU must report on all entities within the group, while those based in third countries are only required to report on their EU entities. Importantly, these disclosures must be audited and published with the financial statements, either as part of the annual report or as a separate document.

Researcher Dr. Mona Barake from the EU Tax Observatory manually collected the data, compiling a database that covers 51 European banking groups between 2014 and 2020, along with several foreign banks operating in the EU. This includes all 37 of the largest and systemically relevant international banks headquartered in Europe, as identified by the European Banking Authority, as well as other non-systemic banks based in the EU. These large banks are headquartered in 11

¹⁹ Available at: [Extractive Sector Transparency Measures Act Data Portal](#)

²⁰ The following section draws extensively on the work of Barake (2022). For additional data, explanatory notes, and further literature, see: www.taxobservatory.eu/repository/banks-country-by-country-reporting/

European countries – Austria, Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Spain, Sweden, and the United Kingdom – and operate across 90 jurisdictions worldwide. Additionally, the sample includes data on 14 non-systemic European banks headquartered in 10 countries: Austria, Bulgaria, Luxembourg, Cyprus, Belgium, Denmark, Finland, Greece, Hungary, and Ireland.

The data were extracted from banks’ annual reports or from separate filings submitted under “capital requirements” or “country-by-country reporting.” Reporting practices are generally consistent across banks, although some banks disaggregate information by business segments or report assets by country, while others do not. For taxes, certain banks differentiate between total taxes paid, current taxes, and deferred taxes. The sample reveals substantial variation in the geographical spread of banks’ operations: some banks operate in up to 79 countries, while others are present in only one country outside their domestic market. Notably, some banks avoid operating in tax havens altogether, while others have a presence in as many as 18 different tax haven countries. This publicly available, audited dataset, accessible since 2014, offers a unique and reliable foundation for estimating the magnitude of profit shifting by European banks on a global scale.

4. Methodologies to Identify Profit Shifting using CbCR

This section explains the “misalignment method” that can be applied to CbCR data to estimate profit shifting patterns. The “misalignment method” has several variations. The section also shows solutions to overcome some of the common data limitations.

4.1. The misalignment method

The misalignment method is based on the principle that profits should be recorded where the economic activity occurs. Consequently, profit misalignment quantifies shifted profits as the discrepancy between the reported profit (π) and the theoretical profit (p), which is the profit we expect given the observed economic activity.

The method’s first step consists in computing theoretical profits. In principle, a jurisdiction’s theoretical profits can be estimated based on a combination of labour, capital and revenue the multinational has in this jurisdiction. In this report, we follow the Tax Justice Network’s State of Tax Justice (SOTJ) formula which assigns an equal weight of 50% to the number of employees (E) and 50% to wages (W). We calculate theoretical profits using two employment-related variables because they are more difficult to artificially manipulate than capital: the number of employees represents an MNE’s workforce in each country, whereas wages account for differences in labour productivity.

The rationale of the methodology is the following: if 10% of the employees of a Ghanaian MNE are based in Zambia and 10% of their payroll are paid in Zambia, then the theoretical profits in Zambia should amount to 10% of the total profits generated by this Ghanaian MNE. Writing this in more formal economic notation: for each country i in which MNE from parent jurisdiction j operate, we calculate the theoretical profits j ’s MNE generate in i as follows. Note that MNE from parent jurisdiction j operate in countries $i = 1, i = 2, \dots, i = I$.

$$p_{ij} = \sum_{i=1}^I \pi_{ij} \times \left(0.5 \times \frac{W_{ij}}{\sum_{i=1}^I W_{ij}} + 0.5 \times \frac{E_{ij}}{\sum_{i=1}^I E_{ij}} \right)$$

Importantly, because MNCs may report zero or negative profits in a country to avoid taxes, we include data from all sub-groups in this calculation.

In a second step, we estimate profit shifting on a bilateral level. Profit shifted into country i or out of country i by MNCs from parent jurisdiction j (S_{ij}) is calculated as the difference between profits reported by MNCs from parent jurisdiction j in country i (π_{ij}) and theoretical profits in that country (p_{ij}):

$$S_{ij} = \pi_{ij} - p_{ij}$$

S_{ij} is negative if less profits are reported in country i than we would expect, given the economic activity. A negative S_{ij} thus indicates that profit is shifted out of jurisdiction i . S_{ij} is positive if more profits are reported in country i than we would expect, given the economic activity. A positive S_{ij} thus indicates that profit is shifted into jurisdiction i .

As we only aim to capture misaligned profits which are due to tax considerations, we set S_{ij} to zero whenever the ETR of the destination country of shifted profits is higher than 15%. We thereby assume that MNCs only involve in tax induced profit shifting if they can realize an ETR below 15% in the destination of profit shifting.

In a third step, we obtain the total profit shifted out of a country. We aggregate all misalignment estimates of country i , i.e. misalignment generated by MNCs from all parent jurisdictions $j = 1, j = 2, \dots, j = J$ that report activity in country i . Total profit shifting estimates for jurisdiction i are consequently calculated as:

$$\text{Profit shifted out of country}_i = \sum_{j=1}^J X_{S_{ij}}$$

In a final step, we translate profits shifted out of a country in tax revenue losses. We calculate tax revenue losses suffered by country i by multiplying profits shifted out of the country by the country's CIT ($(CIT)_i$).

$$\text{Tax loss incurred}_i = \text{Profit shifted out of country}_i \times CIT_i$$

Alternative weights to the SOTJ method. The “misalignment method” can be applied using different weights. Tax Justice Network uses the SOTJ formula, but there are at least four alternative combinations of weights:

- The “Canadian” formula, which gives 50% to employees and 50% to sales;
- The “CCCTB” formula, which gives 1/6 to employees, 1/6 to payroll, 1/3 to sales and 1/3 assets;
- The “double-weighted sales” formula gives 25% to employees, 50% to sales and 25% to assets;
- The “three-factor” formulas, with 1/3 to employees, 1/3 to sales and 1/3 to assets.

In Section 5 where we implement the misalignment method, we will show by default the SOTJ formula, but we will also show the different results offered by the four alternative formulas. Ideally, when all of them are applied, they offer a range of estimates of profit shifting. Moreover, when practical applications are done to individual multinationals of sectors, some formulas might be more precise than others. For instance, in capitalintensive industries, formulas that include assets might offer a better proxy of the true economic activity in a country and might be more precise when it comes to estimate profit shifting.

Ensuring consistency of the global positive and negative misalignment. One important aspect to consider is that the sum of the global positive misalignment equals the sum of the global negative misalignment. In other words, every "excess profit" reported in one jurisdiction (positive misalignment) must be matched by a "missing profit" (negative misalignment) somewhere else in the world. This is crucial because misalignment is a redistribution, not the creation or destruction of profit. Misalignment estimates whether the profits were booked in the wrong place.

Take Country A and assume it has positive misalignment, but an ETR above 15%. Under this methodology, we do not consider it to have profits shifted inward. Assume Country A operates in only two other countries, Country B and Country C. Assume Country A has a negative misalignment of US\$ 10 million in Country B, and a positive misalignment of US\$ 2 million in Country C, which does have an ETR below 15%; thus we consider it a tax haven and any positive misalignment as profits shifted inwards. In other words, profits equivalent to US\$ 10 million are missing in Country B, but only US\$ 2 million are reported in Country C. We correct conservatively, by implementing a coefficient of reduction to Country B with the negative misalignment of US\$ 10 million. We make sure it goes down to US\$ 2 million, or a value that is equal to the sum of all the other countries. In short, we will correct downwards all the negative misalignments, ensuring our estimates are conservative. For clarity, we will show the misalignment with and without the corrections.

4.2. Overcoming data limitations and methodological considerations

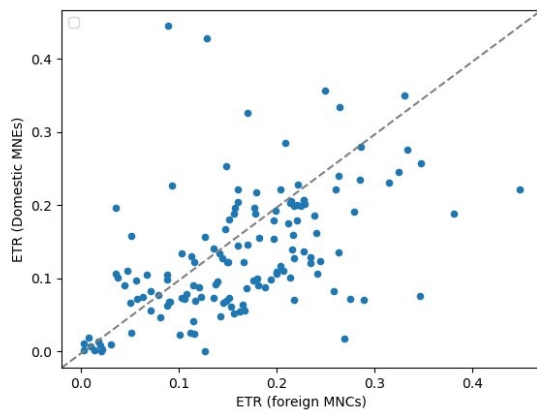
Double counting of intracompany dividends. As mentioned in Section 3, the double counting of intracompany dividends potentially artificially inflates profits in some jurisdictions, which will have an impact not only on effective tax rates but also on the total estimated shifted profits values. Technically, the issue is resolved for the years 2020 and 2021, following the new OECD guidance. While the OECD reports that the issue may persist, we assume that it has been resolved for 2020 and 2021, in line with the high reporting standards the OECD promotes. It is not possible to identify which jurisdictions (if any) continue to misreport; thus, we proceed under the assumption that compliance has improved from 2020 onward. Any resulting bias is beyond the scope of this report.

We correct the double counting of intracompany dividends to obtain the corrected total profits for the years 2016-2019 by subtracting the value of tax-exempt dividends from the total profits by following a methodology suggested by García-Bernardo and Janský (2024).²¹

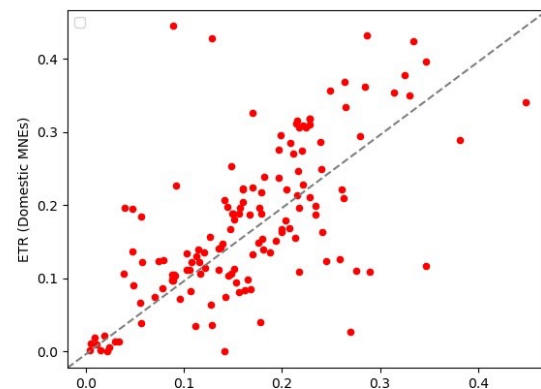
We estimate tax-exempt dividends to be on average 35% of domestic profits, meaning that we reduce domestic profits in a parent country by 35% for each country and year where the foreign MNEs' ETR are bigger than the domestic MNEs' ETR. We do not apply any correction when the domestic-MNEs ETR is lower than the foreign-MNEs ETRs. We include a correction of 10% for the profits of foreign companies booked in tax havens. All corrections to the domestic operations and foreign operations of MNCs are applied independently.

²¹ García-Bernardo and Janský (2024) remove between 35% and 50% of domestic profits in most reporting countries and remove 10% of profits in tax havens for non-US MNCs. García-Bernardo and Janský (2024) also remove double counting of US profits using previous research (54% of US domestic profits (as estimated by García-Bernardo, Janský and Zucman (2022) using the methodology of Horst and Curatolo (2020) and 10% of profits in tax havens.); and by including corrections from countries which have investigated the extent of double counting in domestic profits (namely, Sweden, the Netherlands, Italy and the United Kingdom).

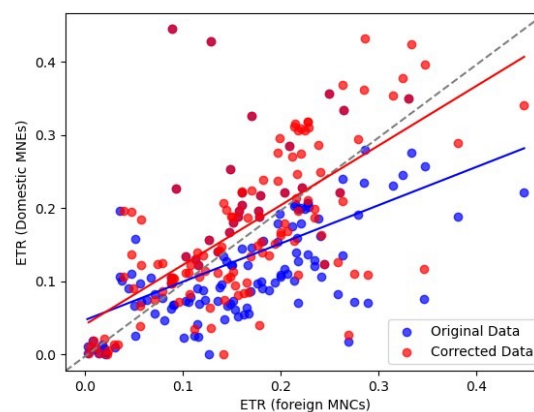
The rationale to reduce the profits of domestic MNEs if their ETR is lower than the ETR than foreign MNEs can be explained with the following example: in 2017, the ETR of Brazilian companies operating in Brazil is equal to 7.16% whereas the ETR of foreign companies operating in Brazil is equal to 27.52%. The two ETRs indicate that either domestic Brazilian MNEs operating companies pay much lower taxes than foreign MNEs - which is unlikely, as it will be discriminatory - or that Brazilian MNEs are repatriating intracompany dividends from abroad, declaring them as profits, although there are tax-exempt. Hence, in this case, the domestic profits of Brazilian companies should be reduced, which would increase the ETR faced by domestic MNEs, bringing it closer to the ETR faced by foreign companies.



(a) Original Data.



(b) Corrected for Double Counting.



(c) Both Panels Combined..

Figure 2: Domestic and foreign ETRs before and after correction for double counting.

This is better illustrated by Figure 2, which shows the relationship between domestic MNEs ETRs and foreign-MNEs ETRs before and after the correction. The 45° line represents the situation where domestic-MNEs ETRs and foreign-MNEs ETRs are the same. Panel A shows the original data: we observe that domestic ETRs are consistently below foreign ETR, with 98 observations below the 45° line and 42 observations above. Panel B depicts the relationship after correcting for the double counting of dividends. Now there are 55 observations below the line and 85 observations above. Panel C shows both figures together, with a regression line. One can see how it has moved upwards, and towards greater “equalisation”. Thus, our correction is useful to make the effective tax rates faced by foreign multinational corporations in the parent countries similar to the effective tax rates faced by domestic multinational corporations.

Transforming aggregate values to country-by-country values for the countries that do not report correctly. In the OECD database, 13 reporting countries in 2021 do not provide disaggregated country-by-country data. Instead, they aggregate data under labels such as “Rest of the World” or “Continents.” This lack of disaggregation poses challenges for analysing profit shifting. For example, the United Kingdom submitted 390 reports, yet only reported on the “Rest of the World.” Because it is impossible to allocate the reported variables to specific countries where British MNEs operate, we cannot accurately estimate the extent of profit shifting occurring in those jurisdictions. In Section 5, we present the estimated profit shifting patterns using data only from countries that report on a fully country-by-country basis. However, we also demonstrate how the estimated patterns would appear if we incorporated data from jurisdictions that do not provide fully disaggregated reporting – hereafter referred to as “incomplete reporters.”

To incorporate these incomplete reporters, we assign their aggregate values proportionally across all countries using the following procedure. First, we aggregate the variables reported by the countries that do provide disaggregated reports – hereafter referred to as “complete reporters.” For example, in 2021, all complete reporters collectively accounted for 80 million employees. Second, we examine the distribution of these employees across countries. For instance, of the 80 million employees, 18 million – equivalent to 24% – were reported in the United States. In the third step, we assume that 24% of the employees of each incomplete reporter can be assigned to the United States. We repeat this procedure for each variable of interest. In implementing this approach, we assume that MNEs from the incomplete reporters behave similarly to the “average” MNE operating in the countries that report correctly.

One shortcoming of this correction is that it assumes that MNEs from incomplete reporters have a presence in all world countries. Such an assumption is plausible for economies with a large numbers of MNEs, such as the United Kingdom or Korea, but more implausible for economies with a small numbers of MNEs, such as Hungary or Morocco. Nonetheless, since the values of those MNE are small, they are unlikely to massively distort the profit shifting patterns of particular countries. Hence, it remains a relevant adjustment to estimate an upper bound of profit shifting patterns using all OECD reporting countries.

Missing countries. While there are ways for treating missing countries, we decide not to do so in this report as this involves assumptions difficult to defend. Nonetheless, it is important to bear in mind that the OECD database covers around 8,000 MNEs above the threshold of 750€ million. Although there is no precise estimate of the total number of multinational enterprises (MNEs) globally, it is likely to be approximately 10,000. If the 2,000 non-reporting MNEs exhibit similar profit-shifting behaviors as the 8,000 that do report, one might estimate that global profit shifting could be up to 25% higher than current figures suggest. The absence of data from countries with a significant presence of MNEs – such as Russia – likely leads to an underestimation of the true extent of profit shifting. Therefore, all estimates presented here should be interpreted as conservative lower bounds.

5. Practical uses and analyses of CbCR Data applied to ATI Partner Countries

This section presents an example of practical uses and analyses of CbCR data, using the OECD's CbCR database. We chose to focus on the OECD's CbCR database because it is the largest database, encompassing the most countries and years; yet the profit misalignment methodology can be applied to other relevant CbCR databases. We present relevant results for ATI partner countries.

We focus on three relevant analyses that can be undertaken on CbCR data: firstly, CbCR variables offer a snapshot of the economic activities of multinationals in each jurisdiction - in the case of the OECD's CbCR database, an overview of a given country's multinationals. The variables alone do not offer any evidence of profit shifting; yet they are useful to map the worldwide economic activities of multinationals and already offer some insights of their activities in tax havens and non-tax havens. Secondly, Effective Tax Rates can be calculated if there is data on taxes paid and profits, allowing for comparisons between Effective Tax Rates and Statutory Tax Rates. Thirdly and most importantly, profit shifting patterns can be identified by applying the most recently developed profit shifting methodologies. Together, the three analyses offer key insights into the profit shifting strategies of multinationals.

The section will present profit shifting patterns, first for all 33 ATI countries as a group, and then individually for Benin, Ghana, Tanzania and Zambia. We use 2021 as the benchmark year for our main analytical comments. This is the most recent year for which data is available, and for which a larger number of countries report. We will also present evidence on evolution of profit shifting over time, but these figures should be interpreted with caution throughout the whole section: all will show increases between 2016 and 2021. Since the number of reporting countries in the OECD database has steadily increased since 2016, the increase in these figures does not necessarily mean that there is more profit shifting over time, rather than more countries and MNEs are reporting. All figures are lower-bound estimates given the data limitations, but the values for the first years must be even lower bounds than the rest.

5.1. Profit Shifting Patterns in the 33 ATI Partner Countries and in Benin, Ghana, Tanzania and Zambia

5.1.1. Profit Shifting Patterns in the 33 ATI Partner Countries

In 2021, there were 6320 Country-by-Country Reports for the 33 ATI Partner Countries. Multinationals from the reporting countries operating in the ATI partner countries reported total revenues of US\$758 billion, income tax accrued at US\$20 billion, profits of US\$82 billion and 4.5 million employees. Table 2 presents statistics on the MNEs that operate in the ATI Partner

Countries. The US, Japan and China are the three countries with more MNEs operating and highest total revenues in the 33 ATI countries, while Indonesia, the US and South Africa report the highest profits. A relevant observation from these initial summary statistics - and which shows the potential of raw CbCR data by itself - is that the Cayman Islands, a notorious tax haven, report an aggregate loss of US\$ 961 billion in the 33 ATI countries.

Table 1 presents the profit misalignment estimates of MNEs from the reporting countries in the 33 ATI Partner Countries. The table should be interpreted as follows: the MNEs from each country have a certain level of theoretical profits, obtained from the methodology in Section 4, and their reported profits, obtained from the OECD CbCR database. From that, we obtain the negative misalignment, which is the difference between theoretical and reported profits, and we adjust to ensure consistency of the global positive and negative misalignment (see Section 4). The last column estimates the tax revenue losses for the 33 ATI countries as a group, taking into account the different Statutory Corporate Income Taxes. The table shows that all countries except Argentina report lower profits than expected from their theoretical profits. The country with the biggest negative misalignment between its theoretical and reported profits is the United States, at a staggering US\$ 13.8 billion even after adjustment, and provoking tax revenue losses above US\$ 4 billion in the 33 ATI partner countries. They are followed by Japan and the Cayman Islands, which have negative misalignments above US\$ 6 billion. The Bermudas, Denmark and Hong Kong have negative misalignments above US\$ 2 billion. Summing up the tax revenue losses caused by the MNEs of these reporting countries, the 33 ATI these countries lost over US\$ 10 billion in taxes in 2021. Figure 3 shows the evolution between 2016 and 2021.

Table 1: Estimated Profit Misalignment and Associated Tax Revenue Losses in the 33 ATI Partner Countries in 2021. All values are expressed in US\$ million.

Country	Theoretical Profits	Reported Profits	Negative Misalignment	Adjusted Negative Misalignment	Tax Revenue Loss
Argentina	36.96	96.62	0.00	0.00	0.00
Australia	1,385.85	377.53	1,036.65	317.89	84.98
Azerbaijan	522.10	41.94	480.16	248.53	37.30
Bahrain	26.70	8.89	17.81	6.52	0.98
Bermuda	5,032.18	2,610.95	2,421.54	2,117.59	523.98
Brazil	136.79	281.38	10.50	2.40	0.60
Cayman Islands	7,151.40	-961.95	8,120.84	8,016.40	2,042.20
Chile	236.44	133.48	102.96	93.69	23.42
China	7,155.94	7,748.86	2,185.80	1,905.24	541.27
Denmark	2,564.80	325.45	2,398.99	2,383.21	546.80

Country	Theoretical Profits	Reported Profits	Negative Misalignment	Adjusted Negative Misalignment	Tax Revenue Loss
France	3,035.30	1,686.89	1,501.86	767.05	225.31
Germany	1,438.74	1,279.50	551.71	216.10	59.92
Greece	-1.26	-26.09	24.85	17.31	4.42
Hong Kong	3,721.83	1,316.51	2,471.72	2,402.79	570.18
India	623.85	414.01	367.98	9.39	2.78
Indonesia	16,492.09	35,888.32	783.65	272.28	84.23
Italy	797.44	866.51	430.36	349.16	96.51
Japan	11,599.95	3,718.98	8,213.74	6,417.82	1,629.57
Luxembourg	171.40	244.11	101.84	65.19	18.56
Malaysia	3,310.55	1,531.79	1,778.76	623.00	144.70
Mexico	503.76	233.32	284.75	61.30	15.27
Norway	284.09	31.68	252.41	12.07	3.52
Panama	1.62	-3.87	5.48	4.07	0.90
Peru	150.55	72.30	78.25	78.25	19.56
Portugal	34.46	-12.63	47.15	14.59	4.38
Romania	997.66	323.52	766.91	76.65	21.49
Saudi Arabia	6,632.34	95.53	6,538.90	18.61	4.82
Singapore	2,943.43	2,455.62	487.82	246.83	70.04
South Africa	1,912.50	4,061.24	440.40	361.08	117.60
Spain	1,547.51	1,981.01	230.39	53.57	12.27
Switzerland	2,841.29	2,905.35	621.80	462.30	132.91
Türkiye	115.73	31.32	84.41	4.10	0.72
UAE	1,637.57	465.89	1,551.88	838.70	217.62
USA	24,959.23	11,829.99	16,798.14	13,759.65	4,124.93

Notes: All values are expressed in US\$ million. *Theoretical Profits* are estimated using the Misalignment Methodology and the SOTJ formula. *Reported Profits* are sourced from the OECD CbCR database. *Negative Misalignment* represents the difference between theoretical profits and reported profits when theoretical profits exceed reported profits. *Adjusted Negative Misalignment* ensures consistency between global positive and negative misalignments (see Section 4). *Tax Revenue Loss* is calculated by applying each country's statutory Corporate Income Tax rate (obtained from the OECD Corporate Income Tax database and the Tax Foundation) to the adjusted negative misalignment.

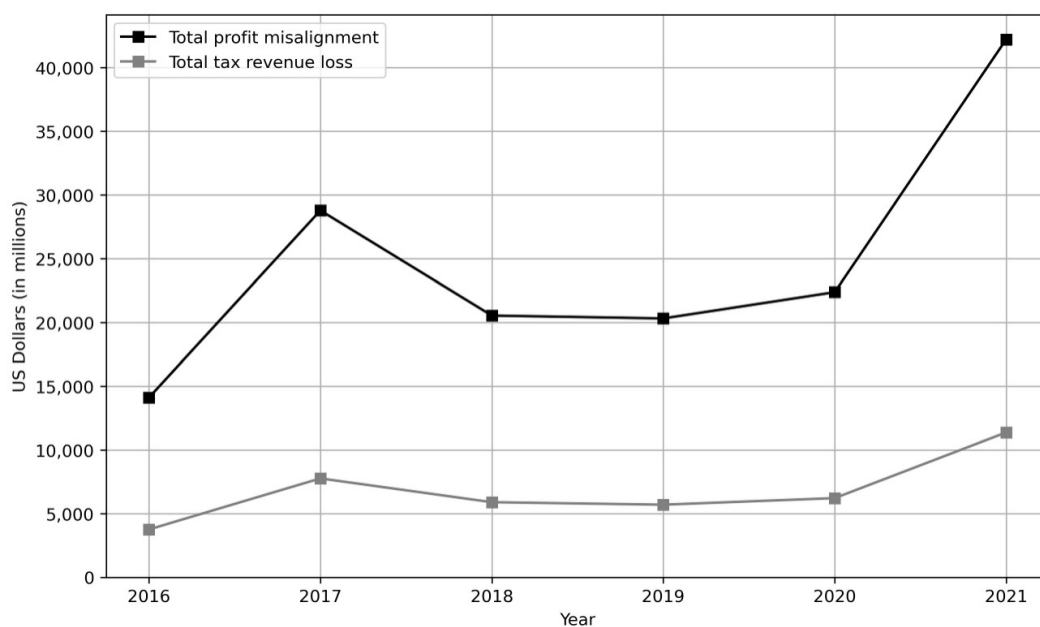


Figure 3: Estimated Profit Shifting (using the SOTJ Formula) and Tax Revenue Losses in the 33 ATI Partner Countries, 2016–2021 (US\$ millions).

Tabelle 2: Summary Statistics of MNEs from OECD CbCR Reporting Countries in the 33 ATI Countries in 2021.

Country	Unrelated Party Revenues	Profit or Loss Before Income Tax	Income Tax Paid	Income Tax Accrued	Tangible Assets	Stated Capital	Total Revenues	Related Party Revenues	Employees	IP	CbCR	CbCR Groups	Entities
(US\$ Million)									(Full Units)				
Argentina	486.81	96.62	14.19	17.11	456.76	222.92	543.26	56.44	2,283	0	16	16	29
Australia	2,753.00	377.53	125.47	122.61	3,647.09	1,350.81	3,240.08	487.08	34,868	1	110	110	198
Azerbaijan	802.21	41.94	0.00	0.08	543.53	891.80	955.32	153.12	5,641	0	3	3	23
Bahrain	23.48	8.89	1.19	1.30	16.61	1.77	23.48	0.00	581	0	1	1	1
Bermuda	20,073.50	2,610.95	385.38	619.82	17,461.00	12,676.05	25,335.72	5,262.22	151,257	1	63	63	470
Brazil	2,067.31	281.38	0.70	14.63	1,037.01	547.25	2,250.13	182.83	6,167	7	23	23	57
Cayman Islands	9,007.74	-961.95	141.78	115.46	4,487.74	12,380.35	11,281.97	2,274.23	132,493	10	102	102	260
Chile	1,234.29	133.48	41.22	39.18	543.60	161.22	1,347.94	113.65	3,139	0	12	12	27
China	160,349.43	7,748.86	1,701.10	1,809.69	53,453.43	19,164.26	200,074.04	38,974.50	232,319	58	700	700	1,342
Denmark	2,030.13	325.45	-5.62	-19.00	1,075.61	386.16	2,871.23	841.10	69,674	0	92	92	198
France	16,306.94	1,686.89	480.41	550.27	7,179.97	4,817.92	20,557.20	4,250.26	194,092	11	371	371	858
Germany	13,660.16	1,279.50	429.57	514.17	6,503.93	4,115.82	18,148.79	4,488.63	98,935	10	543	543	907
Greece	7.76	-26.09	0.98	0.98	118.76	269.78	8.00	0.24	95	0	6	6	15
Hong Kong	17,236.95	1,316.51	459.75	356.24	14,775.81	21,924.47	22,429.15	5,192.20	140,232	2	129	129	464
India	3,541.60	414.01	134.55	136.66	3,926.46	1,134.80	4,290.64	749.04	70,163	0	202	202	303
Indonesia	98,811.90	35,888.32	4,245.13	5,356.59	118,966.89	90,604.88	131,234.66	32,006.80	1,286,017	17	71	71	1,505
Italy	3,051.12	866.51	238.38	311.09	5,644.47	990.64	5,336.99	2,285.88	26,351	0	64	64	115
Japan	68,472.85	3,718.98	1,666.25	1,345.93	49,218.47	46,134.70	107,070.25	38,597.40	721,78	9	1,042	1,042	2,420
Luxembourg	3,000.54	244.11	36.30	38.80	2,713.22	873.93	3,473.33	472.79	25,747	6	137	137	229
Malaysia	9,077.37	1,531.79	403.75	423.01	10,936.99	4,445.19	11,801.56	2,724.18	129,147	1	52	52	279
Mexico	2,496.62	233.32	83.08	88.76	1,386.23	571.13	2,956.79	460.17	19,700	1	25	25	75
Norway	494.12	31.68	9.78	11.24	253.84	59.05	523.97	29.86	3,020	0	23	23	42
Panama	10.70	-3.87	0.51	0.00	11.37	3.87	10.70	0.00	267	0	1	1	1
Peru	1,855.92	72.30	27.96	18.33	755.64	320.67	2,438.74	582.82	3,809	0	7	7	14
Portugal	102.31	-12.63	1.40	0.29	54.77	53.15	111.92	9.60	2,381	0	6	6	17
Romania	3,032.12	323.52	132.79	108.39	508.47	16.23	3,357.35	325.23	4,530	0	30	30	32
Saudi Arabia	594.62	95.53	23.49	15.38	1,230.58	5,963.52	720.86	126.24	7,608	0	36	36	93
Singapore	12,609.18	2,455.62	322.56	497.13	11,107.89	4,221.43	37,102.12	24,492.94	126,737	2	57	57	270
South Africa	18,599.33	4,061.24	119.63	1,235.37	11,532.89	4,716.68	19,101.29	501.96	76,801	3	194	194	376
Spain	7,437.24	1,981.01	327.96	272.95	10,643.07	7,648.95	9,472.24	2,035.00	68,920	5	120	120	392
Switzerland	19,895.65	2,905.35	941.04	891.49	13,685.23	2,343.56	24,679.71	4,784.07	113,009	0	344	344	796
Türkiye	1,007.57	31.32	444.86	20.73	857.31	474.21	1,190.75	183.18	6,302	0	19	19	41
UAE	5,226.19	465.89	301.59	253.17	4,899.69	1,766.21	5,400.87	174.69	55,58	0	141	141	334
USA	47,288.39	11,829.99	4,029.72	4,522.27	59,735.24	37,917.01	78,507.30	31,218.91	709,997	0	1,578	0	2,536

Notes: Certain variable names have been abbreviated for brevity. *Income Tax Paid* corresponds to income tax paid on a cash basis; *Income Tax Accrued* refers to income tax accrued in the current year; *Tangible Assets* refers to Tangible Assets without Cash; *IP* denotes holding or managing intellectual property. *CbCR* represents the number of Country-by-Country Reports; *CbCR Groups* indicates the number of CbCR Groups; and the total number of constituent entities. UAE stands for the United Arab Emirates, and USA denotes the United States of America.

5.1.2. Profit Shifting Patterns in Benin

Five countries report data on Benin for 2021: the United Arab Emirates, China, Germany, France and Romania. The number of countries that report between 2016 and 2021 never exceeds five. China reports between 2017 and 2021, Germany between 2017 and 2021, France between 2019 and 2021 and Romania between 2018 and 2021; the United Arab Emirates report in 2021 for the first time; South Africa, Switzerland and Japan reported on Benin in the past, but not in 2021. Table 4 presents statistics on the MNEs operating in Benin from the five countries reporting activity in Benin to the OECD in 2021. With 17 reports, French MNEs have the largest presence in Benin. French MNEs also have the highest values of tangible assets, related and unrelated revenues, as well as the highest number of employees.

Table 3 shows the profit misalignment and the tax revenue loss estimates for Benin in 2021. Three countries report profits below the theoretical profits: UAE, China and France. The magnitudes of the differences are relatively small for the UAE and China, they are important for France; French MNEs' theoretical profits in Benin in 2021 are estimated to be US\$ 81.5 million, yet they only report US\$ 33.3 million. Given Benin's Corporate Income Tax of 30%, the tax revenue losses due to profit shifting from French MNEs is equivalent to US\$ 7.4 million in 2021. Together with the tax revenue loss caused by profit shifting from UAE and German multinationals, the total tax revenue loss Benin in 2021 is equivalent to US\$ 7.6 million.²²

Figure 4 shows the evolution of profit shifting in Benin between 2016 and 2021. The figure depicts an increasing trend overall, but with important fluctuations: the peak of profit shifting in 2020 is twice as important as the numbers for 2019 and 2021 – which could be attributed to the Covid-19 pandemic. As mentioned in the introduction of this section, more reporting countries in recent years might drive the fluctuation. Figure 5 shows the evolution of profit shifting using alternative misalignment formulas. Trends are similar but the orders of magnitude change depending on the formulas. Taking 2021, the SOTJ formula finds a negative misalignment equivalent to US\$ 25 million. The other formulas expand the range from slightly above US\$ 20 million to US\$ 40 million. Finally, Figure 6 depicts an upwards adjustment where we include data on the 13 incomplete reporters (see Section 4).²³ Using the SOTJ formula, the profit shifting figure for 2021 increases to US\$ 40 million, a 40% increase relative to the number obtained using just the countries that report truly country-by-country.

²² The statutory corporate income tax rate for Benin is 30 percent, based on data from the OECD's *Corporate Income Tax Rates Database*.

²³ Note the caveat presented in Section 4 that this approach assumes that multinational enterprises from the 13 incomplete reporters have operations in Benin.

Table 3: Estimated Profit Misalignment and Associated Tax Revenue Losses in Benin in 2021. All values are expressed in full units.

Country	Theoretical Profits	Reported Profits	Negative Misalignment	Adjusted Negative Misalignment	Tax Revenue Loss
China	4,239,781	4,490,176	0	0	0
France	81,539,701	33,271,440	48,268,261	24,652,248	7,395,674
Germany	1,908,588	704,000	1,204,588	471,825	141,547
Romania	632,317	1,700,539	0	0	0
UAE	3,351,772	3,015,187	336,585	181,906	54,572

Notes: All values are expressed in full units. *Theoretical Profits* are estimated using the misalignment methodology and the SOTJ formula. *Reported Profits* are sourced from the OECD CbCR database. *Negative Misalignment* represents the difference between theoretical profits and reported profits when theoretical profits exceed reported profits. *Adjusted Negative Misalignment* ensures consistency between global positive and negative misalignments (see Section 4). *Tax Revenue Loss* is calculated by applying Benin's statutory Corporate Income Tax rate obtained from the OECD Corporate Income Tax database to the adjusted negative misalignment.

Table 4: Summary Statistics of Multinational Enterprises from OECD CbCR Reporting Countries Operating in Benin in 2021.

Country	Unrelated Party Revenues	Profit or Loss Before Income Tax	Income Tax Paid	Income Tax Accrued	Tangible Assets	Stated Capital	Total Revenues	Related Party Revenues	Employees	IP	CbCR	CbCR Groups	Entities
(US\$ Million)									(Full Units)				
China	48.96	4.49	0.38	1.89	195.66	2.55	84.96	36.00	144	0	8	8	10
France	458.75	33.27	8.15	7.84	112.58	277.36	499.24	40.48	5,391	1	17	17	41
Germany	50.06	0.70	1.03	0.68	18.68	3.40	53.83	3.77	136	0	4	4	7
Romania	3.51	1.70	0.14	0.76	0.81	0.02	5.77	2.26	9	0	1	1	1
UAE	143.46	3.02	0.08	2.15	106.10	21.81	147.35	3.89	160		1	1	2

Notes: Certain variable names have been abbreviated for brevity. *Income Tax Paid* corresponds to income tax paid on a cash basis; *Income Tax Accrued* refers to income tax accrued in the current year; *Tangible Assets* refers to Tangible Assets without Cash; *IP* denotes holding or managing intellectual property. *CbCR* represents the number of Country-by-Country Reports; *CbCR Groups* indicates the number of CbCR Groups; and the total number of constituent entities. UAE stands for the United Arab Emirates.

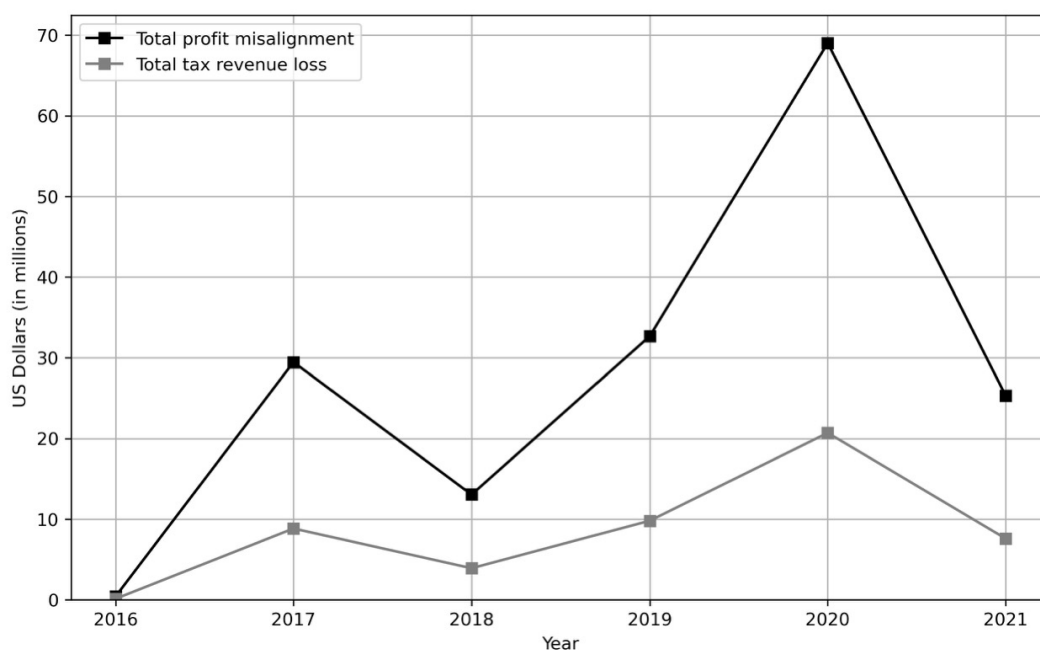


Figure 4: Estimated Profit Shifting (using the SOTJ Formula) and Tax Revenue Losses in Benin, 2016–2021 (US\$ millions).

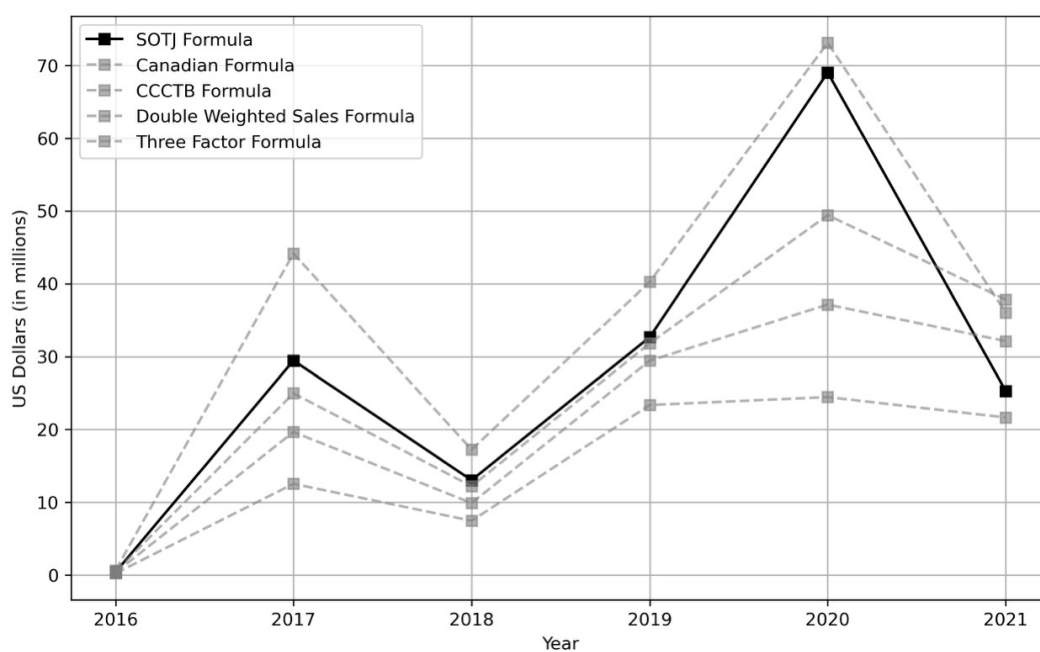


Figure 5: Estimated Profit Shifting in Benin, 2016–2021 (US\$ millions), using Alternative Formulas.

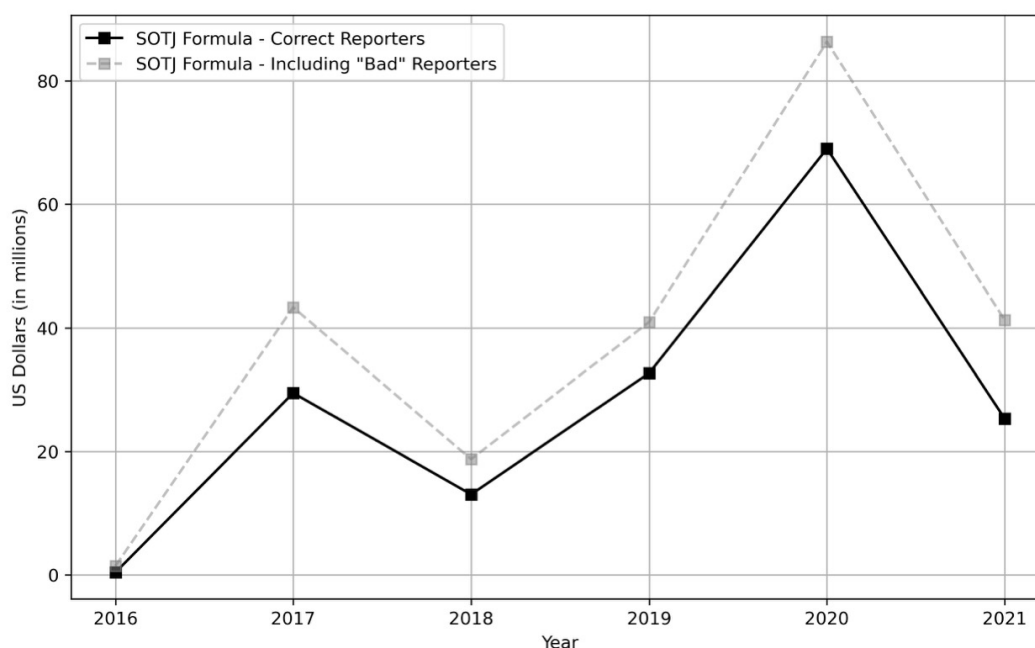


Figure 6: Estimated Profit Shifting in Benin, 2016–2021 (US\$ millions), including "Incomplete Reporters" and using the SOTJ Formula.

5.1.3. Profit Shifting Patterns in Ghana

Twenty countries report data on Ghana for 2021, and between 2016 and 2021, 23 unique jurisdictions report information on Ghana at some point. Table 6 presents statistics on the MNEs that operate in Ghana in 2021. With 71 reports, US MNEs are the most present in Ghana, whereas South African MNEs have the most employees. Some countries, such as Spain and Greece, report that their MNEs have losses on aggregate. Among the reporters, there are six jurisdictions that are considered secretive and tax haven jurisdictions: UAE, Bermuda, Switzerland, Cayman Islands, Hong Kong, and Luxembourg. Together, the six jurisdictions have 49 reports. The Cayman Islands MNEs report losses before income tax. Once again, while this data offers a good preliminary picture of the large MNEs panorama in Ghana, one needs to delve into the profit shifting estimates to find potential evidence of profit shifting.

Table 5 shows the profit misalignment and the tax revenue loss estimates for Ghana in 2021. 50% of countries report profits below their theoretical levels. Chinese MNEs have a negative misalignment of US\$ 24.5 million, closely followed by Australian MNEs with US\$ 22 million. In total, around US\$ 90 million are shifted out of the country in 2021, causing a loss of US\$ 22.5 million.²⁴

Figure 7 shows the evolution of profit shifting in Ghana between 2016 and 2021. The figure depicts a relatively stable trend, hovering around US\$ 100 million for the whole period except for a massive spike in 2020, where shifted profits are multiplied by eight, reaching US\$ 800 million. The spike is driven by the United States's CbCR: US MNEs tend to declare profits above their theoretical profits, so they do not flag as profit shifting. However, in 2020, US MNEs declare sub-

²⁴ The statutory corporate income tax rate for Ghana is 25 percent, based on data from the Tax Foundation's *Corporate Tax Rates Around the World, 2024*.

stantial losses, which hold even under adjustment, with no significant change in their theoretical profits. Under the profit misalignment formula, this automatically flags as profit shifting, and thus the shifted profit values for Ghana in 2020 skyrocket. Naturally, this could be a consequence of the COVID-19 pandemic; but it could also be that the COVID-19 pandemic provided a golden occasion to shift profits abroad. The magnitude of the shift is enormous and creates a significant outlier; however, it is important to keep the US data in the raw analysis to obtain an all-encompassing picture. Moreover, the magnitude of the fluctuation might warrant an in-depth analysis from the Ghana Revenue Authority to evaluate whether something happened, or it was just a data fluke.

Figure 8 shows the evolution of profit shifting using alternative misalignment formulas. Trends are similar but the orders of magnitude change depending on the formulas. In 2021, the SOTJ formula finds profit shifting equivalent to US\$ 90 million, which is the lower bound of the five formulas in this case, whereas the other formulas expand the range, with the Three-Factor formula finding profit shifting equal to US\$ 283 million. The Figure shows another interesting trend: while in 2018 profit shifting calculated with the SOTJ formula does not increase substantially, it does so when calculated under the other three formulas. A possible explanation is that wages and employees were constant or experimented little change (hence the stable trend under the SOTJ formula) but that either assets or sales (or both), which are components of the other four formulas, did increase in those years, this indicating higher economic activity and higher theoretical profits, which reflect into more profit shifting. Lastly, Figure 9 depicts an upwards adjustment where we include data on the 13 incomplete reporters (see Section 4).²⁵ Using the SOTJ formula, the profit shifting figure for 2021 does not change and superposes with the initial line. In other words, we do not find that the countries that report incorrectly have theoretical profits above what we estimate they should report in Ghana.

²⁵ Note the caveat presented in Section 4 that this approach assumes that multinational enterprises from the 13 incomplete reporters have operations in Ghana.

Table 5: Estimated Profit Misalignment and Associated Tax Revenue Losses in Ghana in 2021. All values are expressed in full units.

Country	Theoretical Profits	Reported Profits	Negative Misalign-ment	Adjusted Negative Misalign-ment	Tax Revenue Loss
Australia	72,244,050	384,200	71,859,850	22,035,902	5,508,975
Bermuda	2,587,193	2,891,176	0	0	0
Cayman Islands	959,941	535,593	1,495,534	1,476,301	369,075
China	66,389,095	38,201,754	28,187,341	24,569,418	6,142,354
Denmark	14,679,842	108,747,384	0	0	0
France	108,026,830	91,166,847	16,859,983	8,610,969	2,152,742
Germany	17,320,523	95,967,000	0	0	0
Greece	948,185	16,671,578	15,723,393	10,952,089	2,738,022
Hong Kong	1,458,962	599,637	859,325	835,360	208,840
India	33,269,066	4,895,932	28,373,134	723,742	180,935
Italy	8,991,065	251,533,040	0	0	0
Japan	29,596,516	69,059,743	0	0	0
Luxembourg	5,221,725	100,300,419	0	0	0
Romania	14,517,146	33,654,772	0	0	0
Saudi Arabia	40,727,702	843,777	41,571,479	118,299	29,575
South Africa	309,707,368	1,432,835,265	0	0	0
Spain	19,131,847	5,437,390	24,569,237	5,713,104	1,428,276
Switzerland	78,584,392	58,640,368	19,944,024	14,828,181	3,707,045
UAE	20,669,633	42,836,685	0	0	0
United States	267,151,288	461,485,578	0	0	0

Notes: All values are expressed in full units. *Theoretical Profits* are estimated using the misalignment methodology and the SOTJ formula. *Reported Profits* are sourced from the OECD CbCR database. *Negative Misalignment* represents the difference between theoretical profits and reported profits when theoretical profits exceed reported profits. *Adjusted Negative Misalignment* ensures consistency between global positive and negative misalignments (see Section 4). *Tax Revenue Loss* is calculated by applying Ghana's statutory Corporate Income Tax rate obtained from the Tax Foundation's database to the adjusted negative misalignment.

Table 6: Summary Statistics of Multinational Enterprise from OECD CbCR Reporting Countries Operating in Ghana in 2021.

Country	Unrelated Party Revenues	Profit or Loss Before Income Tax	Income Tax Paid	Income Tax Accrued	Tangible Assets	Stated Capital	Total Revenues	Related Party Revenues	Employees	IP	CbCR	CbCR Groups	Entities
(US\$ Million)									(Full units)				
Australia	288.80	0.38	13.21	15.34	130.93	143.49	300.56	11.76	1,836	0	7	7	15
Bermuda	5.45	2.89	0.00	0.74	47.05	28.11	54.83	49.38	77		4	4	7
Cayman Islands	5.56	-0.54	0.01	0.00	0.81	7.24	5.56	0.00	36	0	3	3	5
China	264.62	38.20	10.80	25.47	78.94	62.66	309.85	45.24	2,111	1	21	21	33
Denmark	224.09	108.75	0.57	-1.61	283.53	113.61	264.15	40.06	398	0	5	5	17
France	1,296.92	91.17	30.98	38.75	438.25	194.45	1,435.89	138.97	6,999	1	31	31	59
Germany	555.37	95.97	25.49	23.73	117.89	76.36	582.67	27.30	1,212	0	23	23	32
Greece	4.33	-16.67	0.98	0.00	0.20	0.00	4.33	0.00	71	0	1	1	2
Hong Kong	2.75	0.60	-0.10	-0.08	2.65	1.11	3.60	0.85	55	0	2	2	2
India	95.12	4.90	1.01	0.87	47.08	23.99	121.65	26.53	3,778	0	8	8	13
Italy	374.73	251.53	2.42	1.40	1,809.07	17.27	892.17	517.44	296		4	4	5
Japan	662.39	69.06	14.01	18.48	120.73	44.31	980.08	317.69	1,864	0	20	20	32
Luxembourg	109.90	100.30	6.63	1.19	1,398.59	9.21	145.82	35.93	797	0	11	11	22
Romania	90.81	33.65	6.97	7.81	7.73	0.05	109.07	18.26	195	0	1	1	1
Saudi Arabia	4.12	-0.84	0.00	0.05	7.64	0.05	4.96	0.84	136	0	2	2	2
South Africa	4,200.13	1,432.84	103.80	384.33	4,378.69	1,187.59	4,267.85	67.72	12,931	0	28	28	46
Spain	179.07	-5.44	0.59	-1.82	68.08	67.20	310.33	131.26	899	0	9	9	12
Switzerland	733.89	58.64	19.77	16.65	316.64	102.51	1,003.55	269.66	3,125		19	19	49
UAE	358.25	42.84	5.36	9.12	206.98	76.87	362.22	3.97	960		10	10	19
USA	1,271.63	461.49	372.55	319.07	4,765.40	752.56	3,135.53	1,863.90	7,764		71		143

Notes: Certain variable names have been abbreviated for brevity. *Income Tax Paid* corresponds to income tax paid on a cash basis; *Income Tax Accrued* refers to income tax accrued in the current year; *Tangible Assets* refers to Tangible Assets without Cash; *IP* denotes holding or managing intellectual property. *CbCR* represents the number of Country-by-Country Reports; *CbCR Groups* indicates the number of CbCR Groups; and the total number of constituent entities. UAE stands for the United Arab Emirates, and USA denotes the United States of America.

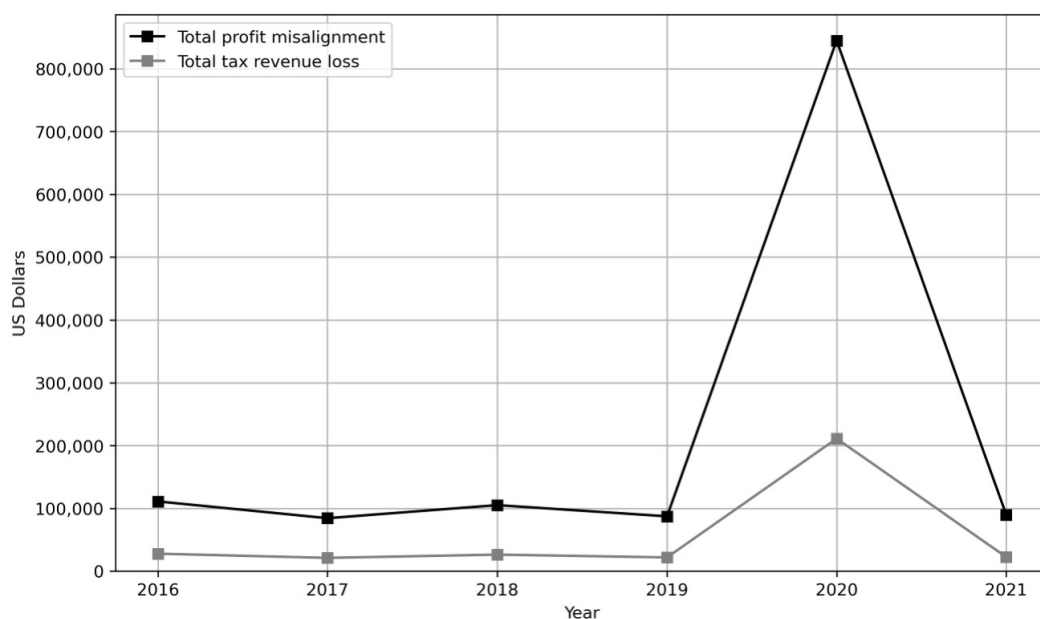


Figure 7: Estimated Profit Shifting (using the SOTJ Formula) and Tax Revenue Losses in Ghana, 2016–2021 (US\$ millions).

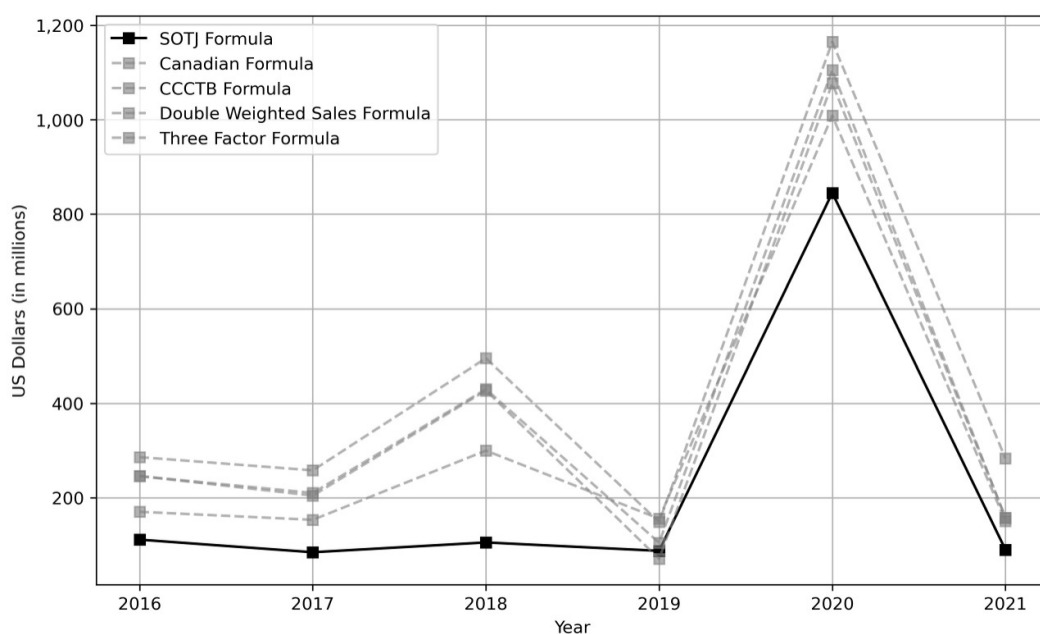


Figure 8: Estimated Profit Shifting in Ghana, 2016–2021 (US\$ millions), Using Alternative Formulas.

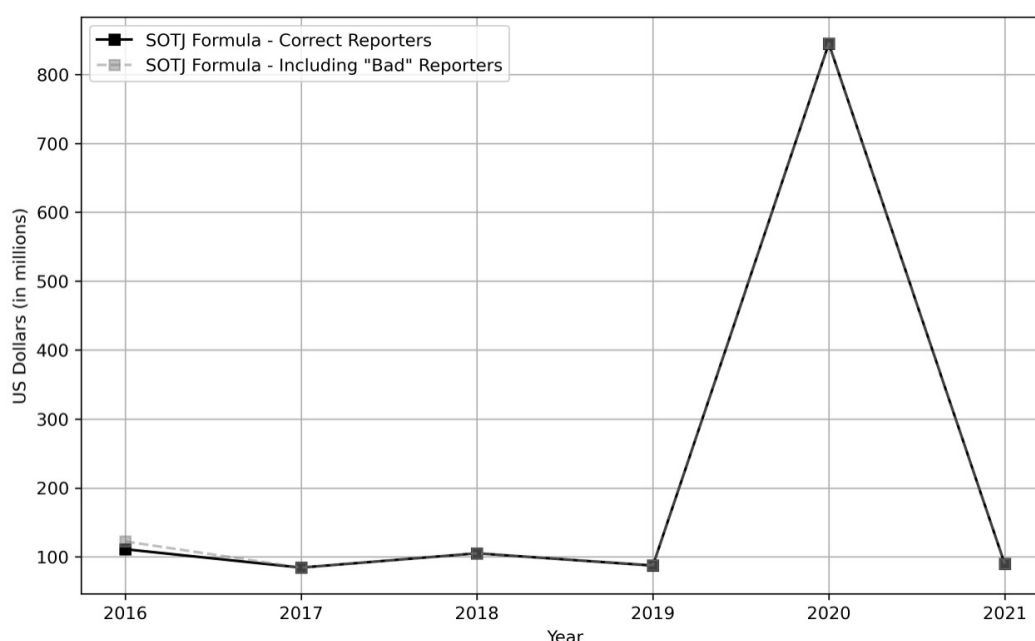


Figure 9: Estimated Profit Shifting in Ghana, 2016–2021 (US\$ millions), including “Incomplete Reporters” and using the SOTJ Formula.

5.1.4. Profit Shifting Patterns in Tanzania

Fifteen countries report data on Tanzania for 2021 and between 2016 and 2021, 18 unique jurisdictions report information on Tanzania at some point. Table 8 presents statistics on the MNEs that operate in Tanzania in 2021. With 40 reports, US MNEs are the most present in Tanzania, but only boast 3,102 employees compared to the more than 8,000 from Chinese and South African MNEs with twice less MNEs present. Indonesia reports one MNE with only 3 employees but more than US\$ 4 million in assets. South African companies are the most profitable, have the largest amounts of assets and the largest tax paid and accrued. Among the reporters, there are four jurisdictions that are considered secretive and tax haven jurisdictions: UAE, Switzerland, Cayman Islands and Hong Kong.

Table 7 shows the profit misalignment and the tax revenue loss estimates for Tanzania in 2021. Almost 50% of countries report profits below their theoretical levels and with large magnitudes, even after including adjustments. Chinese MNEs have a negative misalignment of US\$ 222 million; US multinationals have a negative misalignment of US\$ 104.5 million; Swiss MNEs have a negative misalignment of \$56.5 million. In total, around US\$ 409 million are estimated to be shifted out of the country, the equivalent of a staggering loss of \$122.5 million in taxes in Tanzania.²⁶

²⁶ The statutory corporate income tax rate for Ghana is 30 percent, based on data from the Tax Foundation’s *Corporate Tax Rates Around the World, 2024*.

Figure 10 shows the evolution of profit shifted in Tanzania between 2016 and 2021. Like for the other countries, the depicted upward trend must be interpreted with caution, as this could be driven by more reporters over time. Figure 11 shows the evolution of profit shifting using alternative misalignment formulas. Trends are similar but the orders of magnitude change depending on the formulas. In 2021, the SOTJ formula finds profit shifting equivalent to US\$ 409 million, which is the upper bound of the five formulas in this case, whereas the other formulas expand the range downwards, with the CCCTB formula as the lower bound finding profit shifting equal to US\$ 241 million. All formulas follow the same trend between 2016 and 2021, but ranks change; for instance, the SOTJ formula values move between second and third position in the six-year period.

Lastly, Figure 12 depicts an upwards adjustment where we include data on the 13 incomplete reporters (see Section 4).²⁷ Using the SOTJ formula, the profit shifting figure for 2021 finds a profit shifting equivalent to US\$ 465 million, an increase of 13.7%. The adjustment is minimal in 2016, 2019 and 2020, and larger in 2017, 2018 and 2021.

²⁷ Note the caveat presented in Section 4 that this approach assumes that multinational enterprises from the 13 incomplete reporters have operations in Tanzania.

Table 7: Estimated Profit Misalignment and Associated Tax Revenue Losses in Tanzania in 2021.
All values are expressed in full units.

Country	Theoretical Profits	Reported Profits	Negative Misalignment	Adjusted Negative Misalignment	Tax Revenue Loss
Australia	15,256,520	16,010,188	0	0	0
Cayman Islands	15,313,266	22,291,404	0	0	0
China	260,436,208	5,313,776	255,122,432	222,376,764	66,713,029
Denmark	1,873,679	4,307,908	0	0	0
Germany	23,280,866	53,000,000	0	0	0
Hong Kong	16,132,301	22,392,984	0	0	0
India	57,222,009	9,750,462	47,471,547	1,210,904	363,271
Indonesia	37,977	1,983,500	2,021,477	702,351	210,705
Japan	27,479,369	48,990,889	0	0	0
Romania	5,741,027	11,458,356	0	0	0
South Africa	211,081,694	422,577,411	0	0	0
Spain	6,793,007	5,997,121	795,886	185,068	55,520
Switzerland	77,203,774	1,022,403	76,181,371	56,640,084	16,992,025
UAE	32,934,059	9,778,974	42,713,033	23,084,079	6,925,224
USA	106,351,570	21,237,576	127,589,146	104,510,537	31,353,161

Notes: All values are expressed in full units. *Theoretical Profits* are estimated using the misalignment methodology and the SOTJ formula. *Reported Profits* are sourced from the OECD CbCR database. *Negative Misalignment* represents the difference between theoretical profits and reported profits when theoretical profits exceed reported profits. *Adjusted Negative Misalignment* ensures consistency between global positive and negative misalignments (see Section 4). *Tax Revenue Loss* is calculated by applying Tanzania's statutory Corporate Income Tax rate obtained from the Tax Foundation's database to the adjusted negative misalignment.

Table 8: Summary Statistics of Multinational Enterprises from OECD CbCR Reporting Countries Operating in Tanzania in 2021.

Country	Unrelated Party Revenues	Profit or Loss Before Income Tax	Income Tax Paid	Income Tax Accrued	Tangible Assets	Stated Capital	Total Revenues	Related Party Revenues	Employees	IP	CbCR	CbCR Groups	Entities
(US\$ Million)									(Full units)				
Australia	100.15	16.01	0.29	2.01	32.31	61.45	101.18	1.03	389	0	7	7	13
Cayman Islands	97.82	22.29	8.32	7.50	54.26	0.97	97.82	0.00	581	0	3	3	4
China	553.39	5.31	10.63	10.08	350.51	142.12	606.93	53.54	8,389	3	21	21	43
Denmark	3.37	4.31	-1.38	-1.68	3.31	2.96	13.06	9.70	51	0	4	4	8
Germany	315.85	53.00	18.91	20.34	289.23	51.28	347.40	31.55	1,635	0	21	21	34
Hong Kong	99.94	22.39	8.33	7.49	55.02	2.45	99.95	0.01	615	0	4	4	4
India	272.69	9.75	5.48	3.37	53.44	58.14	322.88	50.19	6,599	0	14	14	20
Indonesia	0.00	-1.98	0.00	0.00	4.62	0.01	0.00	0.00	3	0	1	1	7
Japan	244.38	48.99	26.63	31.23	143.30	180.74	309.74	65.36	1,740	0	12	12	24
Romania	39.33	11.46	3.63	3.55	1.89	0.16	44.21	4.88	78	0	1	1	1
South Africa	1,203.24	422.58	78.06	131.72	469.62	378.99	1,212.42	9.18	8,907	0	20	20	31
Spain	19.62	6.00	0.47	1.87	104.45	15.75	20.60	0.98	321	0	5	5	6
Switzerland	231.38	1.02	12.75	7.30	325.93	57.34	315.88	84.50	3,082		16	16	58
UAE	140.87	-9.78	2.38	4.13	170.81	80.16	143.23	2.36	1,538		13	13	36
USA	187.54	-21.24	4.24	2.08	137.42	233.91	271.74	84.20	3,102		40		

Notes: Certain variable names have been abbreviated for brevity. *Income Tax Paid* corresponds to income tax paid on a cash basis; *Income Tax Accrued* refers to income tax accrued in the current year; *Tangible Assets* refers to Tangible Assets without Cash; *IP* denotes holding or managing intellectual property. *CbCR* represents the number of Country-by-Country Reports; *CbCR Groups* indicates the number of CbCR Groups; and the total number of constituent entities. UAE stands for the United Arab Emirates, and USA denotes the United States of America.

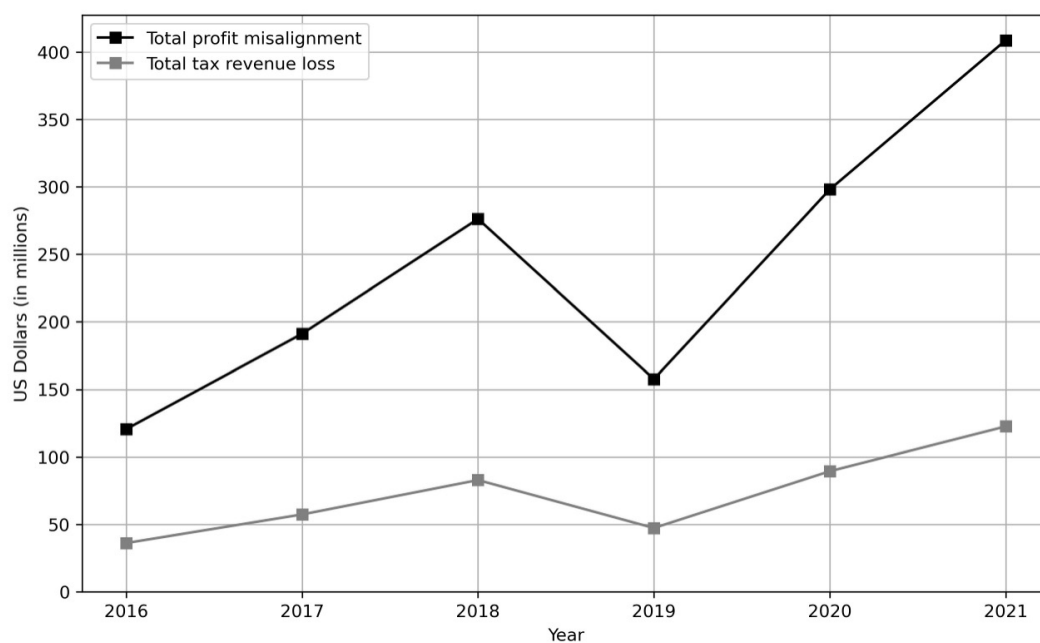


Figure 10: Estimated Profit Shifting (using the SOTJ Formula) and Tax Revenue Losses in Tanzania, 2016–2021 (US\$ millions).

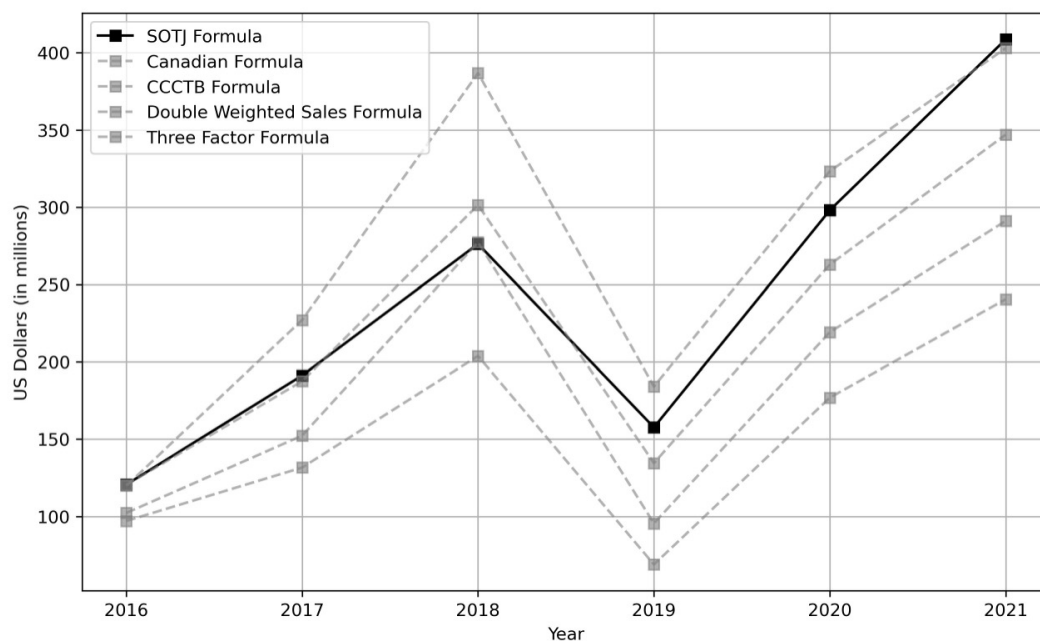


Figure 11: Estimated Profit Shifting in Tanzania, 2016–2021 (US\$ millions), using Alternative Formulas.

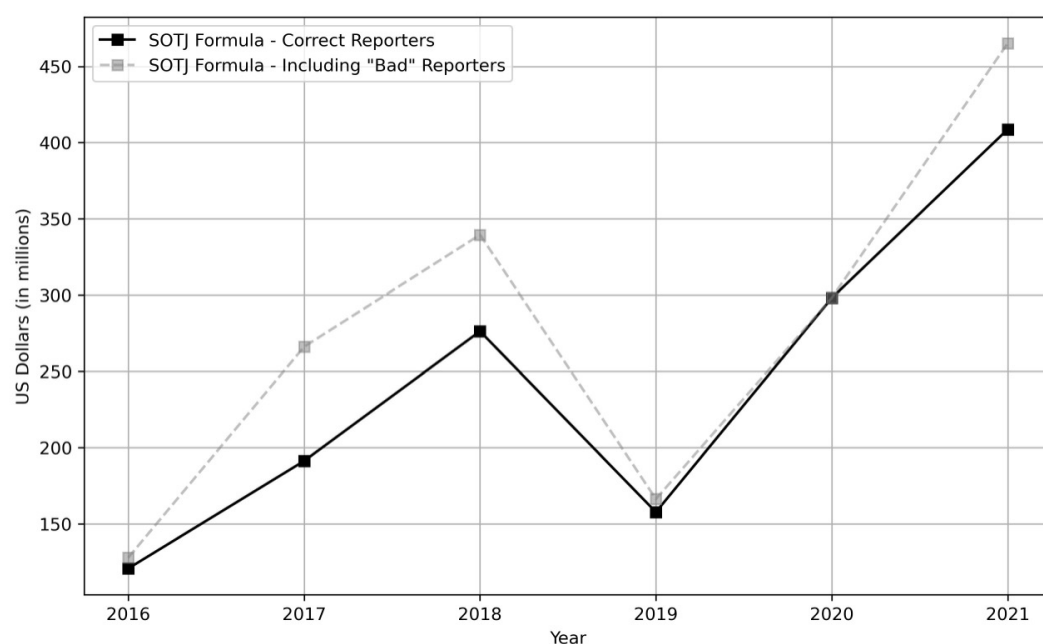


Figure 12: Estimated Profit Shifting in Tanzania, 2016–2021 (US\$ millions), including “Incomplete Reporters” and using the SOTJ Formula.

5.1.5. Profit Shifting Patterns in Zambia

Eleven countries report data on Zambia for 2021, and between 2016 and 2021, 13 unique jurisdictions report information on Zambia at some point. Table 10 presents statistics on the MNEs that operate in Zambia in 2021. With 35 reports, South African MNEs have the largest presence in Zambia, with over 11,000 employees. Two reporting jurisdictions are regularly considered secretive and tax haven jurisdictions: Switzerland and the Cayman Islands. The most striking aspect of the summary statistics is that Chinese MNEs report US\$ 117 billion in unrelated party revenues, an astronomic figure compared to the figures reported by the other countries. South African MNEs, in comparison, reports US\$ 1.5 billion in unrelated party revenues with six times as many employees but lower asset values. Moreover, despite the astronomic figure, Chinese MNEs “only” report US\$ 34 million in profits, compared to US\$ 183 million in profits for South African MNEs. Either that figure is a typo, or we can already infer from the summary statistics that Chinese MNEs shift massive profits out of Zambia. The number will not affect the SOTJ formula, which does not consider unrelated party revenues, but it will affect the four other formulas that weight for sales.

Table 9 shows the profit misalignment and the tax revenue loss estimates for Zambia in 2021. 81% of countries report profits below their theoretical levels – only Switzerland and Japan do not. South African MNEs have a negative misalignment of US\$ 68.5 million; Chinese multinationals have a negative misalignment of US\$ 39 million; US MNEs have a negative misalignment of \$20 million. In total, around US\$ 128 million might be shifted out of the country, the equivalent of a loss of \$45 million in taxes in Zambia.²⁸

²⁸ The statutory corporate income tax rate for Benin is 35 percent, based on data from the OECD’s *Corporate Income Tax Rates Database*.

Figure 13 shows the evolution of profit shifting out of Zambia between 2016 and 2021. The figure is shaped like a camel, with two peaks of profit shifting in 2018 and 2020 at around \$1.2 billion, slightly less than \$1 billion, and then a massive decrease in 2021. The massive decrease from 2018-2020 to 2021 is due to the Swiss MNEs which report astronomic losses for those three years – more than US\$ 1 billion in losses in 2018 and 2020. The Swiss MNEs single-handedly drive the numbers to be ten times larger in 2018/2020 than in 2021. Like for the Chinese value in Table 9, this could either be a mistake in the data, or a very extreme case of losses before income tax, or an extreme case of profit shifting. Figure 14 shows the evolution of profit shifting using alternative misalignment formulas. The trends are similar until 2020, before sharply diverging in 2021 due to the Chinese sales numbers in 2021.

Like for Ghana before, while the differences across years are massive in both figures, it is important to show the data in this way to obtain an all-encompassing picture. Moreover, the magnitude of the fluctuations across years might warrant an in-depth analysis from the Zambian Revenue Authority to evaluate whether something happened, in particular year for the MNEs of particular countries, or these were just reporting mistakes.

Lastly, Figure 15 depicts an upward adjustment where we include data from the 13 incomplete reporters (see Section 4).²⁹ Using the SOTJ formula, we estimate profit shifting for 2021 to be equivalent to US\$ 156 million, representing an increase of 22 percent from the previous estimate of US\$ 128 million.

²⁹ Note the caveat presented in Section 4 that this approach assumes that multinational enterprises from the 13 incomplete reporters have operations in Zambia.

Table 9: Estimated Profit Misalignment and Associated Tax Revenue Losses in Zambia in 2021.
All values are expressed in full units.

Country	Theoretical Profits	Reported Profits	Negative Misalignment	Adjusted Negative Misalignment	Tax Revenue Loss
Australia	6,197,940	7,988,258	14,186,198	4,350,213	1,522,575
Cayman Islands	128,922	602,240	731,162	721,758	252,615
China	71,949,506	34,276,909	37,672,597	32,837,215	11,493,025
Germany	3,747,863	2,145,000	1,602,863	627,825	219,739
India	8,370,707	1,778,034	10,148,741	258,874	90,606
Japan	14,680,802	26,327,565	0	0	0
Romania	5,834,899	2,598,825	3,236,074	323,451	113,208
Saudi Arabia	14,993,703	1,256,654	16,250,357	46,243	16,185
South Africa	266,840,951	183,167,444	83,673,507	68,602,754	24,010,964
Switzerland	7,634,961	17,631,610	0	0	0
United States	68,857,880	44,229,832	24,628,048	20,173,272	7,060,645

Notes: All values are expressed in full units. *Theoretical Profits* are estimated using the misalignment methodology and the SOTJ formula. *Reported Profits* are sourced from the OECD CbCR database. *Negative Misalignment* represents the difference between theoretical profits and reported profits when theoretical profits exceed reported profits. *Adjusted Negative Misalignment* ensures consistency between global positive and negative misalignments (see Section 4). *Tax Revenue Loss* is calculated by applying Zambia's statutory Corporate Income Tax rate obtained from the OECD Corporate Income Tax database to the adjusted negative misalignment.

Table 10: Summary Statistics of Multinational Enterprises from OECD CbCR Reporting Countries Operating in Zambia in 2021.

Country	Unrelated Party Revenues	Profit or Loss Before Income Tax	Income Tax Paid	Income Tax Accrued	Tangible Assets	Stated Capital	Total Revenues	Related Party Revenues	Employees	IP	CbCR	CbCR Groups	Entities
(US\$ Million)									(Full units)				
Australia	12.36	-7.99	0.51	-2.46	14.31	21.78	16.35	3.99	159	0	7	7	7
Cayman Islands	1.24	-0.60	0.00	0.00	0.17	0.00	1.24	0.00	5	0	1	1	1
China	117,000.00	34.28	4.92	11.81	559.93	44.41	143,000.00	25,249.89	2,375	1	24	24	41
Germany	36.13	2.15	0.76	0.32	17.22	4.29	45.11	8.98	265	0	16	16	19
India	44.66	-1.78	0.61	0.47	59.76	18.73	58.91	14.26	994	0	6	6	10
Japan	153.35	26.33	8.77	9.13	75.91	2.07	260.84	107.49	939	0	9	9	19
Romania	5.95	2.60	1.32	1.12	1.67	0.00	21.79	15.83	81	0	1	1	1
Saudi Arabia	59.35	-1.26	0.00	0.00	14.15	0.08	63.35	4.00	51	0	1	1	1
South Africa	1,441.28	183.17	47.76	73.70	431.33	218.15	1,519.12	77.84	11,487	0	35	35	60
Switzerland	61.10	17.63	8.00	8.98	30.65	6.22	61.64	0.55	307		11	11	15
USA	420.04	44.23	7.04	10.70	232.72	366.01	481.87	61.83	2,022		31		
Notes: Certain variable names have been abbreviated for brevity. <i>Income Tax Paid</i> corresponds to income tax paid on a cash basis; <i>Income Tax Accrued</i> refers to income tax accrued in the current year; <i>Tangible Assets</i> refers to Tangible Assets without Cash; <i>IP</i> denotes holding or managing intellectual property. <i>CbCR</i> represents the number of Country-by-Country Reports; <i>CbCR Groups</i> indicates the number of CbCR Groups; and the total number of constituent entities. USA denotes the United States of America.													

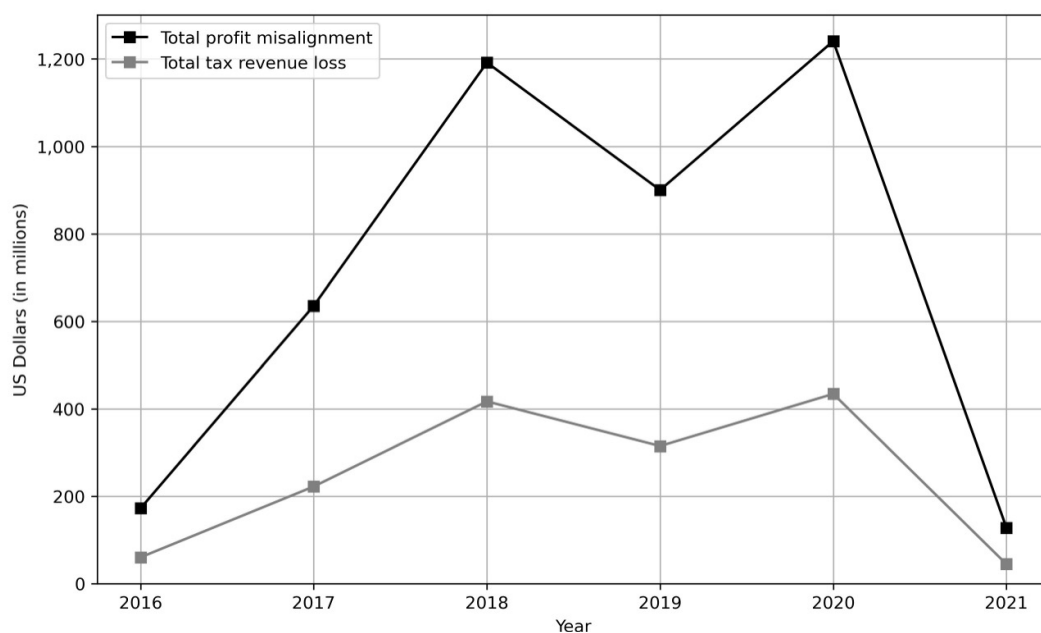


Figure 13: Estimated Profit Shifting (using the SOTJ Formula) and Tax Revenue Losses in Zambia, 2016–2021 (US\$ millions).

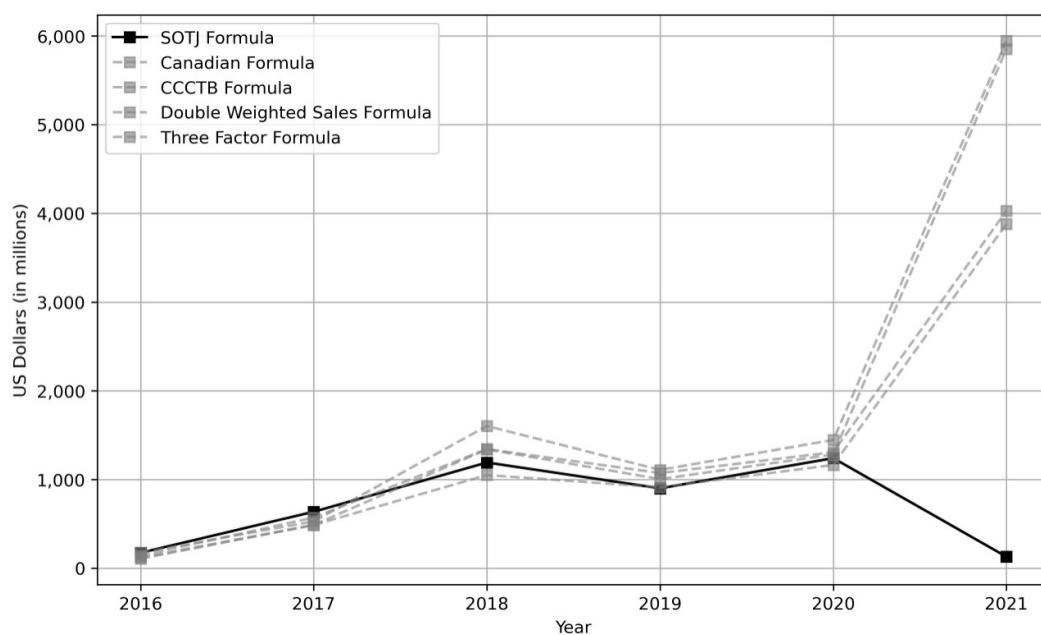


Figure 14: Estimated Profit Shifting in Zambia, 2016–2021 (US\$ millions), using Alternative Formulas.

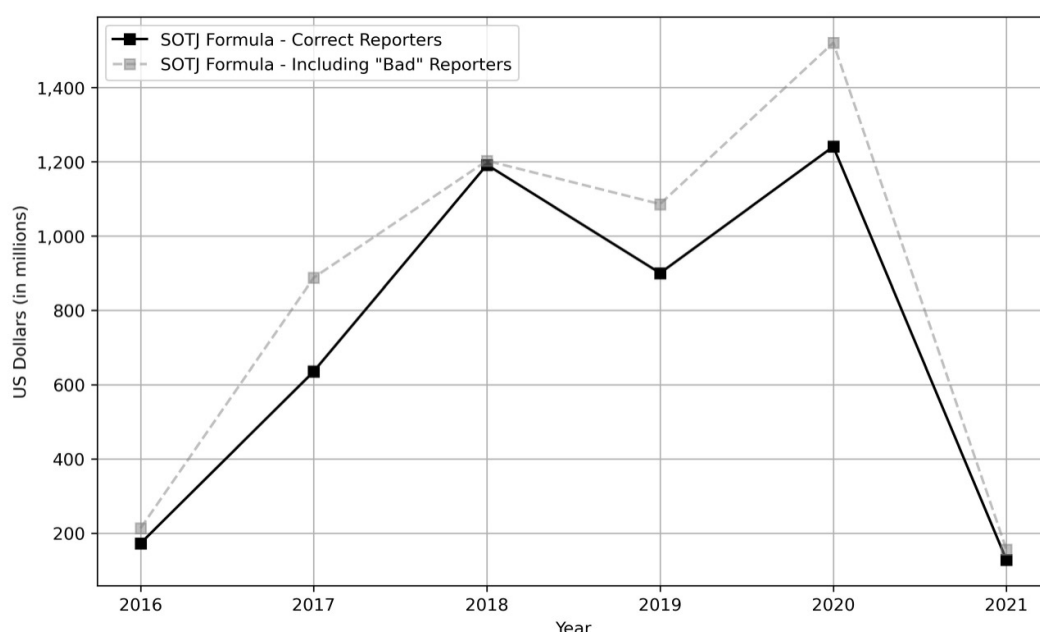


Figure 15: Estimated Profit Shifting in Zambia, 2016–2021 (US\$ millions), including "Incomplete Reporters" and using the SOTJ Formula.

5.2. Statutory vs Effective Tax Rates

In this subsection, we calculate the Effective Tax Rates by dividing the Income Tax Accrued by the Profit Before Income Tax and we compare it to the Statutory Corporate Income Tax. As mentioned in the introduction of this section, this comparison offers another relevant use of CbCR data that can offer tax administrations another image of the tax incentives and the difference between *de jure* corporate income taxes and *de facto* income taxes.

Figure 11 shows the comparison between Statutory Corporate Income Taxes and the Effective Tax Rates in 2021. The Statutory Corporate Income Tax for Benin and Zambia are obtained from the OECD Corporate Income Tax database; the Statutory Corporate Income Tax for Ghana and Tanzania are obtained from the Tax Foundation database. The Corporate Income Tax Rate for the four countries is comprised between 25% and 35%; the average is equal to 30%. The ETRs are comprised between 22.2% and 30.2%; the average is equal to 25.4%, this is 4.6 percentage points below the Statutory Corporate Income Tax. Indeed, for Benin, Ghana and Zambia, the ETR is below the Statutory Corporate Income Tax. Only for Tanzania is the ETR 0.2 percentage points above its Statutory Corporate Income Tax.

The lower ETRs indicate that MNEs attempt to lower their taxes paid with respect to the Statutory Corporate Income Tax. However, the ETR is not below the threshold usually observed in aggressive tax havens which can have ETRs around or below 10%. It is also worth noting that ETRs for the 4 countries have increased from 2016 to 2021, which could indicate either enhanced compliance from MNEs or better enforcement strategies.

Table 11: Statutory vs. Effective Corporate Income Tax Rates and Their Difference in Benin, Ghana, Tanzania and Zambia in 2021.

Country	Statutory Corporate Income Tax Rate	Effective Tax Rate	Difference (expressed in percentage points)
Benin	30%	22.6%	-7.4
Ghana	25%	22.2%	-2.8
Tanzania	30%	30.2%	+0.2
Zambia	35%	26.6%	-8.4

Notes: *Statutory Corporate Income Tax Rates* are sourced from the OECD Corporate Income Tax Database and the Tax Foundation Database. The *Effective Tax Rates* are calculated by dividing income tax accrued by profits before income tax, using data from the OECD CbCR database. The *Difference* (expressed in percentage points) is computed by subtracting the Effective Tax Rate from the corresponding Statutory Corporate Income Tax Rate.

5.3. How Orbis data complements CbCR data and viceversa

CbCR databases are useful complements to the Orbis database - and viceversa. The Orbis database, developed by Bureau van Dijk (a Moody's Analytics company), is a global resource for comprehensive company information. It includes data on over 400 million companies worldwide, from small private firms to large publicly traded corporations. The database provides comprehensive firm-level information, allowing users to access detailed company profiles, including legal status, ownership structure, and financial performance. It offers standardized financial statements for private and public companies, with historical records typically available for up to 10 years. Key financial indicators include profits, revenues, assets, and the number of employees - just like CbCR databases. Additionally, researchers can explore ownership details, gaining insights into corporate structures, ultimate beneficial owners, and relationships between parent companies and their subsidiaries.

This subsection shows how the information contained in Orbis complements our analyses of profit shifting patterns. To ensure comparability with the OECD CbCR data, we extract subsidiaries located in the four ATI partner countries that are owned by foreign Global Ultimate Owners with revenues exceeding 750 million euros. Global Ultimate Owners in Orbis data can be considered multinationals due to their ownership and control of subsidiaries across multiple countries, making them a reliable proxy for MNEs in empirical research. The final sample comprises 908 subsidiaries, distributed as follows: 60 in Benin, 338 in Ghana, 286 in Tanzania and 224 in Zambia. In comparison, there are 31 Country-by-Country reports in Benin, 281 in Ghana, 182 in Tanzania and 142 in Zambia. Table 12 shows the two databases compared, as well as the matching rate between the two databases. There are more observations in the Orbis data than in the OECD CbCR data, but in general, the two samples are close to each other.

Table 12: Coverage of OECD CbCR Data Relative to Orbis Data for MNEs in the Four ATI Partner Countries

Country	MNEs in the OECD CbCR Database	MNEs in the Orbis Database	Coverage Ratio (OECD/Orbis)
Benin	31	60	52%
Ghana	281	338	83%
Tanzania	182	286	64%
Zambia	142	224	63%

Notes: MNEs in the OECD CbCR Data refer to the number of Country-by-Country Reports submitted by multinational enterprises in each country as recorded in the OECD CbCR database. MNEs in the Orbis Database correspond to the number of subsidiaries located in the four ATI partner countries that are owned by foreign global ultimate owners with revenues exceeding 750 million euros. OECD CbCR to Orbis Ratio represents the ratio of the number of MNEs in the OECD CbCR database to the number of MNEs in the Orbis database, providing an indication of the relative coverage of OECD reporting compared to Orbis data.

For brevity, we report only the findings on Ghana; the country is a good representative case as it has the larger number of companies available in Orbis for the four countries. A full exposition of the results for Benin, Tanzania and Zambia is available in Appendix A. In Ghana, the United Kingdom leads with the highest number of subsidiaries, totaling 55, which makes up 16% of the total. This is very relevant observation, since the United Kingdom does not correctly report Country-by-Country in the OECD CbCR database. Hence, this is an observation we cannot obtain from the OECD CbCR database, but that is provided to us by the Orbis database. It is followed by the United States with 46 subsidiaries (14%) and South Africa with 44 subsidiaries (13%). There are significant contributions from France (8%), China (6%), and Switzerland (5%); Germany, Sweden, and Togo contribute around 2-3%. The remaining countries, including well-known tax havens like Bermuda, the Cayman Islands, the Netherlands, Hong Kong, Singapore, and Luxembourg, each account for a small share. Overall, the structure reveals a concentration of subsidiaries in a few major economies, with a long tail of smaller contributors.

In many cases, the countries of the Global Ultimate Owner and the Immediate Ultimate Owner do not match, indicating that foreign MNEs frequently invest in Ghana through intermediary subsidiaries. The total number of subsidiaries using an intermediary in a third country is 102, representing approximately 30% of the initial sample. The Immediate Ultimate Owner country structure is predominantly dominated by tax havens, with Mauritius and the Netherlands holding the largest shares. The Cayman Islands, Singapore, and the British Virgin Islands also play important role in channeling investment into Ghana.

Overall, the data shows that 15.4% of the initial sample of 338 subsidiaries in Ghana are controlled by Immediate Ultimate Owners located in countries different from their Global Ultimate Owners and identified as tax havens or secrecy jurisdictions. The significant presence of tax haven jurisdictions among Immediate Ultimate Owners points to potential profit-shifting strategies, whereby MNEs structure their investments through intermediary jurisdictions with stronger tax

haven characteristics before ultimately entering Ghana. Indeed, multi-tiered ownership structures are often indicative of profit-shifting strategies.

Table 13 presents a geographical analysis of subsidiaries whose Global Ultimate Owners and Immediate Ultimate Owners are in different countries, with the Immediate Ultimate Owner located in a tax haven. Mauritius and the Netherlands are particularly widely used by foreign MNCs as intermediaries for investing in Ghana. The geographical range of the Global Ultimate Owners selecting these tax havens for routing their investments is quite diverse, spanning countries such as Australia, South Africa, Russia, Japan, the USA, and Finland. This broad usage suggests that both Mauritius and the Netherlands offer advantages that attract MNEs across different regions. Mauritius might be often chosen due to its network of double tax treaties, especially with African countries, which provides a favorable tax environment for MNEs seeking to invest in emerging African markets like Ghana. Additionally, Mauritius offers low corporate tax rates and financial secrecy, making it an attractive destination for profit-shifting strategies. Similarly, the Netherlands is a popular choice due to its business-friendly environment, extensive treaty network, and favorable tax laws, which help MNEs minimize their tax burden while maintaining a strong legal and financial infrastructure. Ghana has Double Taxation Agreements (DTAs) with Mauritius and the Netherlands to prevent double taxation and promote investment. The Mauritius DTA offers tax credits and exemptions, attracting MNEs to invest in Africa. The Netherlands DTA fosters trade by providing tax relief on dividends, interest, and royalties, making it a key hub for investments into Ghana.

Table 13: Ownership Structure of Ghanaian Subsidiaries by Global and Immediate Ultimate Owners, with Immediate Ultimate Owners in Selected Tax Haven Jurisdictions.

Country of Global Ultimate Owner	Number of subsidiaries located in Ghana	Country of Immediate Ultimate Owner
South Africa	4	Mauritius (14)
United Kingdom	3	
Australia	2	
United States	2	
China	1	
India	1	
Japan	1	
United States	3	Netherlands (14)
United Kingdom	2	
Germany	1	
Spain	1	
Finland	1	
Hong Kong	1	

Country of Global Ultimate Owner	Number of subsidiaries located in Ghana	Country of Immediate Ultimate Owner
Italy	1	
Japan	1	
Norway	1	
Russia	1	
South Africa	1	
India	1	United Kingdom (12)
Ireland	1	
Jamaica	1	
Japan	3	
Malaysia	1	
Norway	1	
South Africa	3	
United States	1	
China	3	Cayman Islands (5)
Switzerland	2	
South Africa	4	British Virgin Islands (4)
United States	2	Singapore (4)
India	1	
Japan	1	
South Africa	1	United Arab Emirates (3)
United Kingdom	2	
China	2	Hong Kong (2)
Morocco	1	Luxembourg (1)
United Kingdom	1	Malta (1)
Belgium	1	Switzerland (1)
Notes: <i>Country of Global Ultimate Owner</i> identifies the jurisdiction of the multinational enterprise's ultimate parent entity. <i>Number of subsidiaries located in Ghana</i> indicates the count of subsidiaries owned by the global ultimate owner in Ghana. <i>Country of Immediate Ultimate Owner</i> refers to the jurisdiction of the entity that directly owns each subsidiary. Countries in the third column are classified as tax havens, defined as jurisdictions ranked among the top 20 in the Tax Justice Network's Corporate Tax Haven Index (CTHI).		

5.4. Some general conclusions on profit shifting patterns

This section has shown how to practically use and analyse CbCR data using the OECD CbCR database. The analyses can be replicated using other databases. Overall, CbCR data is useful to observe the economic activities of MNEs in countries, to obtain Effective Tax Rates and to identify profit shifting patterns, such as by using the misalignment methodology. The analyses can be complemented using other datasets such as Orbis.

The analyses of this section have shown several findings. The key findings are summarised here: in 2021, more than US\$ 40 billion of profits were shifted out of the 33 ATI partner countries, amounting to tax revenue losses over US\$ 10 billion. For the four ATI partner countries of interest, profit shifting patterns fluctuated between US\$ 10 million in Benin to US\$ 122.5 million in Tanzania. The results also show how different formulas affect the total profit shifted. The analysis also showed that ETRs are on average lower than the statutory Corporate Income Tax. Orbis can be used to complement the analysis by illustrating the significant presence of tax haven jurisdictions among Immediate Ultimate Owners, which points to potential profit-shifting strategies. Multinational enterprises (MNEs) frequently structure their investments through intermediary jurisdictions with stronger tax haven characteristics before ultimately entering Ghana. Indeed, the existence of multi-tiered ownership structures is often indicative of such profit-shifting practices. The implications of these findings are discussed in the next sections.

6. Training Program Design and Implementation

The in-person training component is a cornerstone of the project's capacity-building strategy, providing the ATI partner countries with a context-specific hands-on opportunity to strengthen their ability to analyse and use CbCR data for risk profiling. Designed to meet the practical needs of tax administrators and policymakers, the training convenes participants for a structured three-day workshop focused on applying international tax standards to local contexts. Drawing on real-world case studies, disaggregated voluntary CbCR data, and interactive exercises, the sessions deepened participants' understanding of MNEs tax structures, risk indicators, and audit strategies. Delivered by leading experts in tax policy and data analysis, the training also serves as a platform for peer learning and regional knowledge exchange, ensuring that participating countries can translate global tax transparency norms into actionable strategies that enhance domestic revenue mobilisation.

6.1. Objectives and Structure

Strengthening Capacity in CbCR Data Analysis: The training aims to enhance the technical capacity of tax authorities in the ATI partner countries to analyse and interpret CbCR data effectively. Participants gained practical knowledge and analytical skills to assess key indicators within CbCR datasets, such as revenue distribution, profit before tax, effective tax rates, and economic activities across jurisdictions. These skills will enable tax officials to identify red flags related to profit shifting, aggressive tax planning, and other compliance risks posed by MNEs. By improving their understanding of CbCR data, participants are better equipped to perform risk assessments, prioritize audits, and contribute to evidence-based policy development aimed at reducing tax base erosion.

Supporting the Integration of CbCR Data into National Frameworks: A second objective of the training is to support tax authorities in integrating CbCR data into national tax administration systems and policy frameworks. This includes providing comprehensive guidance on aligning international tax standards, such as the OECD's Pillar Two rules, with domestic laws and enforcement strategies. The training explores how CbCR data can inform legislative reforms, tax incentive reviews, and audit planning, particularly in the context of implementing the Global Minimum Tax. By building their capacity in this area, the training programme empowers tax administrations to develop more coherent and robust responses to global tax reforms, enhance interagency coordination, and position themselves to benefit from increased transparency in multinational taxation.

Promoting Tax Governance and Fiscal Transparency: Finally, the training also seeks to advance broader goals of tax governance and fiscal transparency by equipping participants with tools to understand and monitor MNE behaviour. Through case studies, practical exercises, and peer learning, participants learn how to analyse corporate structures, evaluate mismatches between reported profits and real economic activity, and detect the use of low-tax jurisdictions or offshore financial centres. These insights enable tax authorities to conduct more targeted, risk-based audits and improve compliance oversight. In doing so, the training contributes to international efforts to combat tax avoidance and fosters trust in the fairness and effectiveness of domestic tax systems, ultimately supporting long-term domestic resource mobilisation.

6.2. Training Content

The in-person workshop is structured around four interlinked modules designed to provide a practical and systematic learning experience. These include: (1) an introduction to CbCR and the Global Minimum Tax; (2) practical application of CbCR data to assess MNE behaviour; (3) in-depth regional and firm-specific analyses; and (4) a review of the broader implications of CbCR, including recent international transparency initiatives such as the ongoing UN negotiations on a tax convention. Together, these modules deliver a comprehensive and hands-on training programme tailored to the specific needs and policy environments of the participating ATI partner countries. The sections below describe each module in more detail.

6.2.1. Introduction to Country-by-Country Reporting

The workshop's first session provided participants with a comprehensive introduction to CbCR data and its critical role in addressing profit shifting by MNEs. The session began with an overview of the OECD's CbCR framework, including its historical development under the BEPS Action 13 initiative, the scope and structure of the data, its current availability and the global status of implementation, particularly among ATI partner countries. Notably, none of the participating ATI countries currently have access to CbCR data through automatic information exchange under the OECD's Multilateral Competent Authority Agreement, highlighting a significant barrier to tax transparency and risk assessment in these jurisdictions.

The session further explored alternative and supplementary sources of CbCR data, including voluntary firm-level disclosures and country-level aggregate reporting made publicly available by some jurisdictions and multinational corporations. Participants were introduced to ways in which such data can be combined with corporate income tax return information to identify tax risks, detect mismatches between profits and real economic activity, and enhance audit targeting. The use of such data is particularly valuable in contexts where access to OECD-shared CbCR reports is not yet available.

International experts shared practical insights and best practices from countries such as Slovakia, Czechia, France, Italy, and Germany, where tax authorities have actively used firm-level CbCR data for audit risk assessment and enforcement actions. These examples highlighted the value of proactive regulatory frameworks and strong data-sharing mechanisms. Encouraged by these experiences, participating ATI countries were urged to consider developing domestic CbCR legislation that would require MNEs to file reports locally, thereby increasing their access to relevant tax information and strengthening their capacity to combat cross-border tax abuse.

Participants also engaged in a hands-on exercise using visualisation tools developed by the EU Tax Observatory. This interactive component enabled attendees to explore the OECD's aggregate CbCR database, analyse global MNE activity and profit reporting, and identify key misalignments between reported profits and the location of real economic activity. These analyses are based on methodologies used in the State of Tax Justice reports, which measure the scale and distribution of profit shifting globally. In addition, experts introduced the Atlas of the Offshore World, an innovative tool that maps the flow of profits into offshore financial centres, using complementary data and techniques to illustrate the scale and complexity of global tax avoidance.³⁰

³⁰

For an overview, see Atlas of the Offshore World: <https://atlas-offshore.world>.

6.2.2. Regional Profit Shifting Dynamics

The second module of the workshop focused on regional analysis, examining patterns of profit shifting in participating ATI partner countries and across Africa more broadly. It also addressed the role of offshore financial centres in facilitating the outflow of MNEs profits from the region. The session aimed to contextualise global tax challenges within African economies, offering participants a deeper understanding of how international tax dynamics impact domestic revenue mobilisation.

Participants were introduced to the various channels through which MNEs shift profits, including transfer pricing manipulation, the strategic use of intangible assets and intellectual property, the creation of shell companies, and the utilization of offshore financial centres. The session highlighted how weaknesses in the current international tax architecture, such as inadequate rules for taxing digital services or income from intangibles, create loopholes that MNEs exploit to reduce their tax liabilities in source countries. In addition, participants received updates on ongoing global tax reforms, including the OECD/G20 inclusive framework's two-pillar approach and the evolving negotiations under the UN on a proposed global tax convention.

A key area of discussion centred on the implementation of the OECD's proposed Global Minimum Tax under Pillar Two, which sets a 15% minimum corporate tax rate for large MNEs. The aim of this reform is to curb harmful tax competition and discourage profit shifting to low- or no-tax jurisdictions. However, participants raised critical concerns about its implications for African countries. The chief among these is that the proposed 15% minimum rate is significantly lower than the statutory corporate tax rates in many African countries, which often exceed 25%. As a result, the GMT may fail to meaningfully curb profit shifting and, in some cases, could even exacerbate revenue losses for African jurisdictions. This is largely due to the way the GMT allocates taxing rights, favoring headquarter countries of MNEs (typically in the Global North) rather than source countries where the actual economic activity takes place.

This disparity in revenue allocation raises legitimate concerns that African economies may see little to no fiscal benefit from the GMT, despite bearing the brunt of profit shifting. In addition, effective implementation of the GMT requires strong technical capacity and access to detailed tax data, particularly CbCR data to conduct risk assessments and apply top-up tax rules. Unfortunately, none of the participating ATI partner countries currently receive CbCR data via automatic exchange, primarily due to limited infrastructure and capacity to meet the confidentiality and data security requirements under the OECD's Multilateral Competent Authority Agreement. This lack of access further limits the ability of tax administrations in these countries to enforce international tax standards or challenge aggressive tax planning by MNEs.

6.2.3. Working with Voluntary CbCR Data (Practical Sessions)

The final module of the workshop focused on hands-on exercises aimed at equipping participants with practical analytical skills to effectively use CbCR data in detecting potential profit shifting. These interactive sessions provided tax authorities with tools to analyse and interpret CbCR data, identify profit misalignments, and assess the tax risks associated with multinational enterprises.

Using voluntarily published CbCR data, participants gained valuable insights into how MNEs structure their operations and report profits between jurisdictions. They applied apportionment methodologies developed in the Tax Justice Network's State of Tax Justice reports to estimate

the expected distribution of profits based on economic activity, such as employee numbers, assets, and revenue and then compared these theoretical allocations to actual reported profits in each jurisdiction. This comparison helped to reveal potential indicators of profit shifting and aggressive tax planning.

The analysis was further enriched by integrating ‘Haven Scores’ from the Corporate Tax Haven Index and the effective tax rate data into the profit apportionment exercise. This allowed participants to explore the relationship between profit misalignment, the likelihood of a jurisdiction functioning as a tax haven, and the extent to which MNEs reduce their tax burdens through strategic reporting. The module also included targeted case studies from the extractive industries, particularly oil and mining, where corporate structures are often complex and high-risk. These case studies enabled participants to identify sector-specific tax avoidance risks and assess how profit shifting in resource-rich countries undermines domestic revenue mobilisation.

The final exercise centred on identifying companies with the highest levels of profit misalignment, examining both their operating locations and headquarter jurisdictions, and evaluating available policy tools to mitigate tax risks. The discussions included the effectiveness of withholding taxes, thin capitalisation rules, and the challenges of applying transfer pricing regulations in contexts where comparable data is limited, particularly in the African extractive sector. Countries such as Ghana, Zambia, and Tanzania shared their practical experiences and best practices in combating cross-border tax abuse, offering peer learning opportunities and reinforcing the importance of regional collaboration in strengthening tax enforcement capacity.

6.3. Participant Engagement

The workshop brought together participants from six countries that are partners in the Addis Tax Initiative including Zambia, Tanzania, Benin, Ghana, Malawi, and Ethiopia, along with representatives from regional and international organisations. This diverse participation facilitated a comprehensive exchange of experiences and perspectives on international tax cooperation, profit-shifting risks, and the practical application of Countryby-Country Reporting data.

Zambia had strong representation from both the Ministry of Finance and National Planning and the Zambia Revenue Authority. Representatives from these institutions shared valuable insights into Zambia’s ongoing efforts to strengthen tax compliance, improve transfer pricing regulations, and engage with global tax reforms such as the Global Minimum Tax. The participants active involvement reflected Zambia’s commitment to addressing base erosion and profit shifting in both domestic and cross-border contexts while sharing experience with peers in the same areas.

Tanzania was represented by officials from the Tanzania Revenue Authority, who shared their experience in tax administration, risk assessment, and audit strategies. The country representatives highlighted the practical challenges they faced in accessing and using disaggregated tax data, particularly in the absence of automatic information exchange mechanisms for the OECD CbCR data. The Tanzanian delegation also actively engaged in peer learning on how to apply CbCR data to identify misalignments in MNE profit reporting while sharing experience in managing audit-related conflicts.

Benin was represented by officials from the Direction Générale des Impôts (DGI) and GIZ Benin. Their contributions focused on domestic policy reforms and the technical capacity required to implement local CbCR frameworks. Benin’s interest in leveraging international transparency tools to strengthen its tax base was evident through its active participation in sessions on voluntary CbCR disclosures and regional cooperation.

Ghana was represented by members of the Ghana Revenue Authority, who shared experiences with transfer pricing audits and data-driven risk assessments. Their input was particularly valuable in discussions on implementing thin capitalisation rules and tracking profit shifting in high-risk sectors such as extractives. Ghana's engagement in international tax forums also enriched discussions on aligning national frameworks with OECD and UN-led initiatives.

Malawi participated through its Revenue Authority, with a focus on understanding the implications of the Global Minimum Tax for small and resource-constrained economies. Malawian participants actively participated in exercises on data visualisation and profit apportionment, and contributed to discussions on the relevance of simplified compliance tools for low-capacity tax administrations.

Ethiopia was represented by officials from the Ministry of Finance, reflecting the country's broader interest in international tax reform and its ongoing efforts to enhance domestic revenue mobilisation. Ethiopia's contribution added value to policy discussions, particularly those centred on fiscal planning and integrating CbCR data into national tax strategies.

In addition to the national delegations, the workshop featured experts from regional and international organisations, including the Addis Tax Initiative Secretariat, the Tax Justice Network, the EU Tax Observatory, and GIZ. These institutions provided technical guidance and shared global best practices, helping to contextualise the training within the broader international efforts to advance tax transparency, equity, and sustainable development.

6.4. Lessons Learned

The implementation of the training provided valuable insights into both the challenges and opportunities related to the use of CbCR data in the ATI partner countries. Following the training sessions, it became clear that access to detailed tax data, such as CbCR, is a fundamental step toward strengthening domestic revenue mobilisation, but it is not sufficient on its own. While CbCR data offers valuable insights into the operations of MNEs, its full potential can only be harnessed if tax authorities have the technical expertise to analyse, interpret, and act on the information. In many participating countries, this technical capacity remains limited, highlighting the urgent need for continuous capacity-building in data analysis, transfer pricing, and international tax law. Equipping tax administrations with these advanced skills is essential to ensure they effectively use CbCR data to identify risks, improve compliance, and ultimately enhance revenue collection.

Another key lesson learned is the importance of expanding access to both firm-level CbCR data and aggregate OECD data through strengthened international cooperation. ATI partner countries expressed their interest in joining the OECD's Multilateral Competent Authority Agreement to fully benefit from the training and analytical tools introduced during the training session. Membership in the MCAA enables the reciprocal exchange of CbCR data, providing tax authorities with detailed, jurisdiction-specific information on the activities of MNEs, which is necessary for practical risk assessment and informed profit-shifting mitigation strategies. In addition to leveraging OECD aggregate data, participating countries are encouraged to deepen their engagement in global tax reform processes, such as the UN Tax Convention, where they can push for CbCR to be public and for automatic exchange of information processes without artificial and stringent confidentiality standards.

Furthermore, there is significant potential to establish regional data-sharing frameworks, particularly in the area of transfer pricing. Such a collaboration can help participating countries overcome individual resource data constraints, promote peer learning, and strengthen collective capacity to identify and respond to profit-shifting strategies employed by MNEs. Developing this regional mechanism should be accompanied by continued investment in both infrastructure and technical training. This includes ensuring secure and reliable IT systems for data storage and exchange, as well as equipping tax officials with the advanced skills necessary to analyse complex cross-border tax arrangements and implement effective enforcement measures.

In summary, the training session highlighted that while access to CbCR data is an essential first step for corporate risk assessment, the ability of ATI partner countries to fully leverage this information depends on broader systemic readiness, including technical expertise, legal frameworks, and international cooperation. Investing in long-term capacity building for tax authorities, exploring opportunities for regional collaboration, and deepening the engagement in global tax reform processes to ensure open access to CbCR databases are all critical. However, these efforts must be supported by ongoing improvements in IT infrastructure and policy alignment to ensure the sustainability and long-term success of the knowledge acquired through the training, while empowering tax administrations to effectively detect profit shifting, enhance tax compliance, and build more resilient and equitable tax systems.

7. Policy Recommendations

This section presents a set of policy recommendations informed by our findings, the existing literature, and the insights gathered through the in-person training program, as well as extensive exchanges and feedback with several ATI partner countries' tax administrations. Based on this comprehensive analysis, seven key policy recommendations have been identified to guide future action.

Building Access and Capacity for Effective Use of CbCR Data. One of the key challenges identified during the project is that, in many ATI partner countries, the practical use of Country-by-Country Reporting (CbCR) data remains limited. This is often not due to a lack of willingness or understanding, but rather reflects systemic constraints such as the non-availability of data, restrictions on its use for tax assessment, and the need to prioritise limited resources toward the most immediate revenue-generating activities. Where CbCR data is available, it might be underutilised because many of the analytical tools and methodologies required to make effective use of it, such as those used to detect profit misalignment, are relatively new, often developed in academic or specialist policy settings, and have not yet become mainstream in tax administration practice.

To unlock the full potential of CbCR data, ATI partner countries could adopt an incremental approach that begins with improving access, both legal and technical, to the data itself, and gradually builds the capacity to analyse and apply it in practice. Current capacity limitations are not fixed deficiencies and represent opportunities for sustained investment in data use capabilities, aligned with countries' broader revenue priorities.

Digitalisation and e-declarations. Tax administration officials confirmed during our discussions that some tax administrations currently have access to individual CbCRs submitted by multinational enterprises. However, these reports are often maintained in separate PDF files, and in some cases, multinationals submitted them in paper format, which the tax administration subsequently scanned into digital files. Consequently, to access each CbCR, officials must manually open each individual file. Furthermore, scanned reports can complicate the extraction of digital information.

Therefore, a crucial and easily implementable step for tax administrations with access to CbCRs is to digitize all reports in a format that facilitates data processing. This requires establishing a database with standardized variables across reports. Such a database would enable tax officials to analyze the CbCRs using both basic and advanced statistical software, thereby supporting the implementation of the methodologies described above. Ideally, mandatory online submission of Country-by-Country reports should be considered. Tax administrations could develop electronic declaration portals, allowing multinationals to input data directly into standardized fields that would be automatically stored in a centralised database. Over time, this process would build a comprehensive and consistent dataset.

Establish a regional data sharing platform for transfer pricing, with a focus on the extractive sector. We observed that a key challenge facing ATI partner countries is limited access to reliable, comparable data for transfer pricing analysis, particularly in the extractive sector, where profit-shifting risks are high and transactions are often complex. These countries lack the resources and infrastructure to independently collect and analyze sector-specific data, making it difficult to assess whether MNE intragroup pricing reflects arm's length standards. This data gap severely limits the effectiveness of audits and undermines efforts to curb base erosion, especially in the extractive sector.

To overcome this challenge, ATI partner countries should collaborate to establish a regional data-sharing platform focused on transfer pricing information, with an initial emphasis on the extractive sector. Such a platform would facilitate the exchange of key data points, including production volumes, pricing benchmarks, royalty rates, and MNE cost structures, while enabling peer learning and joint analysis. The platform could also support the development of regional comparable and shared audit tools, helping countries overcome resource constraints and build collective capacity. By promoting transparency and consistency in transfer pricing practices, a regional platform would strengthen tax enforcement and compliance efforts and enhance domestic revenue mobilisation across the region.

Leverage CbCR analyses to more efficiently target audits. Tax audits are a crucial component of a tax administration’s enforcement toolkit. However, they are timeconsuming, costly, and require careful decisions on which entities to target. If audits are too broad in scope, they risk diverting valuable resources from other essential tasks and may take excessive time to complete. Conversely, overly narrow audits risk failing to identify any significant findings, rendering the effort and resources spent ineffective.

CbCR analysis offers an additional layer of information that can significantly enhance audit targeting. By leveraging CbCR data and applying the “misalignment method,” tax administrations can estimate profit shifting patterns, as well as access detailed information on profits, assets, taxes paid, and employees—enabling the calculation of effective tax rates. This report has demonstrated how profit misalignment can be estimated for MNEs from OECD reporting countries operating in ATI partner countries. Further in-depth analysis, using firm-level data at the global level and cross-referencing this information with internal documentation and various databases (including Orbis, as illustrated in this report), can help tax administrations build stronger evidence or suspicions of potential misconduct. This, in turn, allows audits to be more effectively targeted, focusing on MNEs whose reported data significantly deviate from expected patterns – for instance, cases of substantial negative profit misalignment in an ATI partner country combined with positive profit misalignment in a tax haven.

Implement Public Country-by-Country Reporting. CbCR data and analyses are most effective when the data is publicly available and disaggregated by MNE and by country. The aggregated data from the OECD obscures many details about multinational activities (see Section 5), and research shows that public CbCR, where implemented, has led to a decrease in profit shifting. CbCR legislation remains a dynamic process (see Section 3), and the latest approved legislation is moving toward greater transparency and public disaggregated CbCR, although it still falls short in some areas. For instance, the European Union adopted Directive 2021/2101 in 2021, and Australia passed new legislation in December 2024.

The EU’s Directive applies public CbCR only to very large multinationals headquartered in the EU. It does not require explanations for divergent Effective Tax Rates relative to Statutory Corporate Income Tax Rates. Additionally, disaggregated disclosures are only required for activities by MNEs in other EU countries and in a list of ‘non-cooperative jurisdictions’; for all other countries, only aggregated disclosures are required. Australia’s legislation, by contrast, requires companies to explain divergences in Effective Tax Rates relative to Statutory Corporate Income Tax Rates, and reporting applies to Australia and a broader list of ‘specified’ countries.

ATI partner countries should implement public CbCR in line with the highest and most comprehensive information standard available, namely the Global Reporting Initiative (GRI) Standard 207-4:2019. This standard includes a requirement for companies to explain divergences be-

tween Effective Tax Rates and Statutory Corporate Income Tax Rates. All MNEs should report public CbCR in all countries where they operate. In parallel, ATI partners should pursue the most advanced public CbCR legislation domestically while also advocating globally for comprehensive and consistent implementation of public CbCR standards. They should call on other countries to address the shortcomings in their own public CbCR legislation or to implement such legislation where it is lacking.

Advocate globally for more precise Public Country-by-Country Reporting data, including beneficial ownership information. Current CbCR legislation has significant shortcomings, in addition to the fact that it is not yet universally public. Notably, there is the problem of double counting dividends in profits, compounded by weak enforcement by countries in addressing this issue. Moreover, not all countries report on a truly country-by-country basis, with some exploiting non-disclosure rules to withhold information. A major limitation of current CbCR is its failure to disclose the beneficial owners behind MNEs. Including beneficial ownership data in CbCR would greatly increase global asset transparency and could be particularly valuable for supporting wealth tax initiatives.

ATI partners should advocate for these shortcomings to be addressed. While they are not solely responsible for resolving these issues, they should use international fora to push for improvements. They can also incorporate these enhancements into their own public CbCR legislation. Where possible, tax administrations should push within the Inclusive Framework for a comprehensive reform of the current OECD CbCR framework, and they should advocate for a truly global and encompassing CbCR regime within the context of the United Nations Tax Convention.

Deepen Engagement in Global Tax Reform Processes. The OECD's Two Pillars agreement effectively collapsed following the withdrawal of the United States under President Donald Trump in early 2025. The design of the agreement had already posed challenges for many developing economies, including ATI partner countries. Moreover, most ATI partner countries were not directly involved in shaping the OECD-led process, or did not formally subscribe to the initiative. Nonetheless, the US decision to exit from international tax negotiations has opened a valuable opportunity to advance the United Nations Tax Convention.

ATI partner countries must now actively engage in the ongoing negotiations for the UN Tax Convention and advocate for more inclusive and transparent global tax governance. This includes championing reforms that address the specific needs of developing countries, such as simplified implementation mechanisms, a more equitable allocation of taxing rights, and measures to increase fiscal space. Greater South-South cooperation, peer dialogue, and regional coordination should also be prioritised to build a shared position on emerging global tax issues. In parallel, countries should invest in administrative readiness, such as enacting legal reforms, and enhancing technical capacity, to reduce dependence on external processes.

8. Conclusion

The globalisation of economic activities and the expansion of multinational enterprises (MNEs) have posed substantial challenges to tax governance worldwide, with developing countries being particularly vulnerable to profit shifting. When MNEs relocate profits to low-tax jurisdictions, they significantly erode domestic tax bases and deprive countries of critical revenue for infrastructure, healthcare, education, and other public services. Addressing this issue is essential to safeguarding fiscal stability and supporting sustainable development.

The report has highlighted the importance of accessing and effectively using available CbCR datasets, drawing on both the academic literature and practical experience to guide tax administrations. It has offered a detailed examination of the “misalignment method”, presenting various formulas and approaches to address data limitations and enhance analytical accuracy. Applying this methodology, the report has demonstrated how profit shifting affects ATI partner countries, revealing that in 2021, over US\$40 billion in profits were shifted out of the 33 ATI countries, resulting in tax losses exceeding US\$10 billion. Specifically, Benin faced losses of approximately US\$10 million, Ghana around US\$20 million, Tanzania experienced the highest loss at US\$122.5 million, and Zambia lost about US\$46 million. The findings also illustrate how profit shifting has evolved over time across the ATI countries and highlight the discrepancies between statutory and effective tax rates. Furthermore, the report has underscored the complementary value of Orbis data alongside CbCR information, showing how these datasets together provide a more comprehensive picture of profit shifting.

Through this project, technical and capacity-building support was provided to ATI partner countries, namely Benin, Ghana, Tanzania, and Zambia to enhance their use of CbCR data. A central component was a training program delivered in Lusaka in March, structured into four modules covering CbCR basics, the Global Minimum Tax, data analysis techniques, and risk assessment methodologies. This program, supported by virtual mentoring and follow-ups, equipped participants with essential tools and skills to analyse MNE tax structures, estimate revenue losses, and design more effective tax policies. The report captures the key elements of this training and demonstrates how it contributes to the broader objective of strengthening tax governance frameworks and supporting domestic revenue mobilisation.

In addition to the training and analysis, the report offers seven policy recommendations tailored to ATI partner countries. These include enhancing tax authorities’ capacity for data analysis and risk assessment, promoting digitalisation and e-declarations of CbCR data, developing regional data-sharing platforms with a focus on the extractive sector, using CbCR analyses to better target audits, advocating for the implementation of Public CbCR and more detailed Beneficial Ownership Information, and participating actively in global tax reform processes. Overall, Country-by-Country Reporting remains a vital instrument for tackling profit shifting and advancing domestic revenue mobilisation in developing countries. The billions in potential tax revenue at stake underscore the importance of continued efforts to strengthen the use of CbCR data and to push for more transparency in multinational tax practices.

Appendices

Appendix A: Additional Set of Results from Section 5

Benin. In Benin, France leads with the highest number of subsidiaries, totaling 26, which makes up 43% of the total, followed well behind by Japan and Morocco each with 5 subsidiaries (8%), and Germany, the United Kingdom and the United States each with 3 subsidiaries (5%). Australia, India, Italy, the Cayman Islands, Nigeria, Sweden, and Togo each have a single subsidiary, making up 1.7% each.

The total number of subsidiaries using an intermediary in a third country is 17, representing approximately 28% of the initial sample, and three subsidiaries in Benin are linked to intermediary subsidiaries in tax havens: one from India via Singapore, one from South Africa via the UAE, and one from the Cayman Islands via Singapore. Table A1 presents a geographical analysis of subsidiaries whose Global Ultimate Owners and Immediate Ultimate Owners are in different countries, with the Immediate Ultimate Owner located in a tax haven.

Tanzania. In Tanzania, the United Kingdom leads with the highest number of subsidiaries, totaling 54, which makes up 19% of the total. It is followed by the United States with 32 subsidiaries (11%), South Africa with 28 subsidiaries (10%) and Canada with 25 subsidiaries (9%). There are also contributions from Japan (8%), India (7%), France (6%), Germany (6%), and Switzerland (3%).

The total number of subsidiaries using an intermediary in a third country is 103, representing approximately 36% of the initial sample. Overall, the data shows that 24% of the initial sample of 224 subsidiaries in Tanzania are controlled by Immediate Ultimate Owners located in countries different from their Global Ultimate Owners and identified as tax havens or secrecy jurisdictions. Table A2 presents a geographical analysis of subsidiaries whose Global Ultimate Owners and Immediate Ultimate Owners are in different countries, with the Immediate Ultimate Owner located in a tax haven. The United Kingdom and Mauritius are particularly widely used by foreign MNEs as intermediaries for investing in Tanzania, and to a lesser degree the Netherlands, the British Virgin Islands and the Cayman Islands.

Zambia. In Zambia, South Africa leads with the highest number of subsidiaries, totaling 67, which makes up 30% of the total. It is followed by the United Kingdom with 24 subsidiaries (11%) and the United States with 21 subsidiaries (9%). There are significant contributions from Canada (9%), Japan (8%), France (6%) and India (4%); other countries, including China, Switzerland, Ireland, and Australia, also make notable contributions. Overall, the data underscores Zambia's diverse investor base, with significant involvement from both Western and emerging market economies.

The total number of subsidiaries using an intermediary in a third country is 99, representing approximately 44% of the initial sample. Overall, the data shows that 22% of the initial sample of 224 subsidiaries in Zambia are controlled by Immediate Ultimate Owners located in countries different from their Global Ultimate Owners and identified as tax havens or secrecy jurisdictions. Table A3 presents a geographical analysis of subsidiaries whose Global Ultimate Owners and Immediate Ultimate Owners are in different countries, with the Immediate Ultimate Owner located in a tax haven. Mauritius is particularly widely used by foreign MNEs as intermediaries for investing in Zambia, and to a lesser but still important degree, so are the Netherlands, the United Kingdom and the British Virgin Islands.

Table A1: Ownership Structure of Beninese Subsidiaries by Global and Immediate Ultimate Owners, with Immediate Ultimate Owners in Selected Tax Haven Jurisdictions.

Country of Global Ultimate Owner	Number of subsidiaries located in Benin	Country of Immediate Ultimate Owner
India	1	Singapore (2)
Cayman Islands	1	
South Africa	1	United Arab Emirates
Notes: <i>Country of Global Ultimate Owner</i> identifies the jurisdiction of the multinational enterprise's ultimate parent entity. <i>Number of subsidiaries located in Benin</i> indicates the count of subsidiaries owned by the global ultimate owner in Benin. <i>Country of Immediate Ultimate Owner</i> refers to the jurisdiction of the entity that directly owns each subsidiary. Countries in the third column are classified as tax havens, defined as jurisdictions ranked among the top 20 in the Tax Justice Network's Corporate Tax Haven Index (CTHI).		

Table A2: Ownership Structure of Tanzanian Subsidiaries by Global and Immediate Ultimate Owners, with Immediate Ultimate Owners in Selected Tax Haven Jurisdictions.

Country of Global Ultimate Owner	Number of subsidiaries located in Tanzania	Country of Immediate Ultimate Owner
Canada	19	United Kingdom (27)
Japan	5	
South Africa	2	
United States	1	
China	1	Mauritius (14)
India	1	
Japan	2	
South Africa	8	
Thailand	1	
United Kingdom	1	
Belgium	1	Netherlands (9)
Finland	1	
Germany	1	
India	3	
Japan	2	
United States	1	

Country of Global Ultimate Owner	Number of subsidiaries located in Tanzania	Country of Immediate Ultimate Owner
Cayman Islands	1	British Virgin Islands (6)
South Africa	2	
Thailand	3	
Canada	1	Cayman Islands (4)
United Kingdom	3	
India	2	United Arab Emirates (4)
United States	2	
Germany	1	Luxembourg (2)
Morocco	1	
France	1	Belgium (1)
India	1	Singapore (1)
United Kingdom	1	Switzerland (1)
Notes: <i>Country of Global Ultimate Owner</i> identifies the jurisdiction of the multinational enterprise's ultimate parent entity. <i>Number of subsidiaries located in Tanzania</i> indicates the count of subsidiaries owned by the global ultimate owner in Tanzania. <i>Country of Immediate Ultimate Owner</i> refers to the jurisdiction of the entity that directly owns each subsidiary. Countries in the third column are classified as tax havens, defined as jurisdictions ranked among the top 20 in the Tax Justice Network's Corporate Tax Haven Index (CTHI).		

Table A3: Ownership Structure of Zambian Subsidiaries by Global and Immediate Ultimate Owners, with Immediate Ultimate Owners in Selected Tax Haven Jurisdictions.

Country of Global Ultimate Owner	Number of subsidiaries located in Zambia	Country of Immediate Ultimate Owner
Japan	3	Mauritius (18)
South Africa	10	
Thailand	1	
United Kingdom	2	
United States	2	
Belgium	2	Netherlands (11)
Germany	1	
India	4	
Norway	1	
South Africa	1	
Sweden	1	
United Kingdom	1	
France	1	United Kingdom (11)
India	1	
Japan	3	
South Africa	4	
United States	2	
Canada	6	British Virgin Islands (9)
Denmark	1	
South Africa	2	
Canada	7	Ireland
South Korea	1	Hong Kong
Denmark	1	Luxembourg
United Kingdom	1	Switzerland
South Africa	1	United Arab Emirates

Notes: *Country of Global Ultimate Owner* identifies the jurisdiction of the multinational enterprise's ultimate parent entity. *Number of subsidiaries located in Zambia* indicates the count of subsidiaries owned by the global ultimate owner in Zambia. *Country of Immediate Ultimate Owner* refers to the jurisdiction of the entity that directly owns each subsidiary. Countries in the third column are classified as tax havens, defined as jurisdictions ranked among the top 20 in the Tax Justice Network's Corporate Tax Haven Index (CTHI).

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