GTED Global Tax Expenditures Database

# SHEDDING LIGHT ON WORLDWIDE TAX EXPENDITURES

## GTED FLAGSHIP REPORT 2021

(Preliminary Version)

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# FOREWORD BY THE DIRECTORS OF CEP AND DIE

When CEP and DIE joined forces a few years ago to shed light on global tax expenditures, we knew that transparency in the field was limited. The level of opaqueness that our colleagues Agustín Redonda, Christian von Haldenwang and Flurim Aliu, with the support of many other experts, unearthed since then has nonetheless been striking.

As highlighted in the following report, governments around the world forgo trillions of dollars in fiscal revenues each year to a myriad of tax exemptions, deductions, credits and further tax breaks that are meant to benefit particular segments of society and the economy. Many of these "tax expenditures" are ineffective in reaching their stated goals and come with significant unintended consequences. The fact that they are often regressive and thus exacerbate inequality is a case in point. Environmentally harmful tax expenditures provide further illustration.

This state of affairs is even more alarming when considering the associated costs. As our colleagues highlight on the following pages, over the last 30 years, the global average of reported revenue forgone from tax expenditures was close to 4 per cent of GDP and more than 24 per cent of tax revenues. Given that available tax expenditure data is so limited, the actual numbers are most probably even higher.

These significant costs notwithstanding, a majority of governments worldwide does not report any data on the tax expenditures they offer. Those that do, often provide only limited information. With few exceptions, detailed official analysis of the effectiveness of tax expenditures and their side effects is non-existent.

This situation of intransparency is clearly untenable. Governments and society must know how public funds are allocated. In that context, tax expenditures must fall under the same scrutiny as direct spending. They must be subject to sound cost-benefit analysis. Some will be found to provide adequate public value for money. Those that are not, must be reformed or abolished.

Even more so now. As governments worldwide face growing funding needs to respond to the COVID-19 pandemic, they cannot afford to lose revenues to ill-designed tax breaks. They cannot afford to continue offering tax deductions that disproportionally benefit higher-income households. And they cannot afford to maintain tax incentives that harm the environment and thus the sustainability of their societies. To come back stronger, reforming tax expenditures is critical.

We trust that the "Global Tax Expenditures Database" (GTED) can make a contribution to these efforts by providing, for the first time, a comprehensive overview of worldwide tax expenditures, and thus add a key dimension to policy debates on tax systems and tax reforms in the future.

Prof. Dr. Anna-Katharina Hornidge
(Director, German Development Institute / Deutsches Institut für Entwicklungspolitik - (DIE))

Dr. Alexander Barkawi
(Director, Council on Economic Policies (CEP))

# ACKNOWLEDGEMENTS

The Global Tax Expenditures Database (GTED) has been a collective endeavour and we are grateful for the advice, comments and inputs provided by so many colleagues. Some of them have accompanied the project from the very beginning. Tom Neubig, a Senior Associate with CEP who is also the author of Chapter 6 of this report, has been a constant source of support over the years. Byung Jeon from the Korean Institute of Public Finance (KIPF) was one of the initial drivers of the project and helped to access information from several Asian countries. Mario Mansour (IMF) has taken a keen interest in the GTED early on and provided valuable inputs at several stages.

Tom, Byung and Mario are also members of the GTED Advisory Group that has been an important sounding board during the process and helped us to sort out several tricky questions. The other members of the group are (in alphabetical order) Jean François Brun (CERDI, Université Clermont Auvergne), Santiago Diaz de Sarralde (CIAT), Sanjeev Gupta (CGDEV), Tibor Hanappi (OECD), Sebastian James (World Bank), Nora Lustig (CEQ, Tulane University), Nara Monkam (ATAF), Grégoire Rota-Graziosi (CERDI, Université Clermont Auvergne), and Ronald Steenblik (IISD). We have greatly benefitted from their expertise.

The GTED project has been presented at several meetings and workshops with colleagues from the OECD, the World Bank, the IMF and members of the Addis Tax Initiative (ATI), among others. These events have provided us with the opportunity to introduce the database and to test different options of collecting and presenting the data. Participants in the events have given us helpful advice on how to sharpen the focus of the project and improve the database.

The GTED website is the platform through which data is presented and information made public. Andrew Colby has been the mastermind behind the website. His capacity to find innovative solutions for as many problems as presented themselves over the last year has been a constant source of inspiration for us.

Collecting data from 218 jurisdictions would not have been possible without our international team of highly motivated consultants. Anne Wanyagathi (Kenya), Axelle Kere (France), Clarice Cross (USA), Daniela de la Hoz (Colombia), Darron Seller-Peritz (Canada), Elena Isaeva (Russia), Gustavo Ariel Montero (Argentina), Jilmar Robledo Caicedo (Colombia), Moses Garai Chamisa (Zimbabwe), Paula Vijoditz (Argentina), and Seth Akuffo Anoff (Ghana): Thank you for your great job! At CEP, Nemo Krüger and Oliver Braunschweig provided vital assistance with the visualisation of data and the presentation of information.

Our communication teams at CEP and DIE, led by Dina El Halaby and Tanja Vogel, have been an unceasing source of support, not only orchestrating our communications strategy but also assisting us with the design of the GTED website, publications and presentations. Francesca Cattaneo produced the GTED video, and Michaela Keiser and Marie Philipsenburg at DIE worked with us on the publications. We thank all of them wholeheartedly.

Not least, the GTED has received funding from several donors. Over the last year, financial support by the German Federal Ministry for Economic Cooperation and Development (BMZ) has given us the opportunity to greatly accelerate the process of collecting data and constructing the website, and we gratefully acknowledge this support.

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| **BEPS** | Base Erosion and Profit Shifting |
| **BMF** | German Federal Ministry of Finance |
| **CGDEV** | Center for Global Development |
| **CIAT** | Inter-American Center of Tax Administrations |
| **CIT** | Corporate Income Tax |
| **DRM** | Domestic Revenue Mobilisation |
| **ECOWAS** | Economic Community of West African States |
| **EITC** | Earned Income Tax Credit |
| **EU** | European Union |
| **FDII** | Foreign Derived Intangible Income |
| **FHTP** | Forum on Harmful Tax Practices |
| **G20** | Group of Twenty |
| **GDP** | Gross Domestic Product |
| **GNI** | Gross National Income |
| **GTED** | Global Tax Expenditures Database |
| **HICs** | High-Income Countries |
| **IBP** | International Budget Partnership |
| **IEA** | International Energy Agency |
| **IMF** | International Monetary Fund |
| **IOs** | International Organisations |
| **IP** | Intellectual Property |
| **LCU** | Local Currency Unit |
| **LICs** | Low-Income Countries |
| **LMICs** | Lower Middle-Income Countries |
| **MENA** | Middle East & North Africa |
| **METR** | Marginal Effective Tax Rate |
| **MNEs** | Multinational Enterprises |
| **NGO** | Non-Governmental |
| **OBS** | Open Budget Survey |
| **ODA** | Official Development Assistance |
| **OECD** | Organisation for Economic Co-operation and Development |
| **PIT** | Personal Income Tax |
| **R&D** | Research and Development |
| **SDGs** | Sustainable Development Goals |
| **TE** | Tax Expenditure |
| **TEDLAC** | Tax Expenditure Database of Latin America and the Caribbean |
| **UMICs** | Upper-Middle-Income Countries |
| **UNESCO** | United Nations Economic and Social Council |
| **UNU-WIDER** | United Nations University World Institute for Development Economics Research |
| **USD** | US Dollar |
| **VAT** | Value-added Tax |
| **WAEMU** | West African Economic and Monetary Union |

# EXECUTIVE SUMMARY

This report presents insights from the newly released Global Tax Expenditures Database (GTED). Tax expenditures (TEs) are benefits granted to specific sectors, activities or groups through preferential tax treatments such as exemptions, deductions, credits, deferrals and lower tax rates. Governments use them, for example, to promote economic growth and attract investment, pursue social welfare objectives, and incentivise specific patterns of behaviour such as energy consumption from renewable sources. The GTED is the first database that documents TE reporting by governments worldwide, using a common set of criteria and indicators. It covers 218 countries and jurisdictions, 97 of which published at least some data on TEs since 1990.[1]

**1. TEs are highly relevant.** The data gathered in the GTED shows that the revenue forgone from TEs can amount to more than 13 per cent of GDP in some countries. The global average over the whole period covered by the GTED from 1990 to 2020 is 3.8 per cent of GDP and 24.2 per cent of tax revenue. With more and more governments reporting, worldwide figures on revenue forgone have been growing steadily over the years. Between 2014 and 2018, they averaged more than 3.5 trillion USD per year. At a moment when governments all over the world are mobilising resources to overcome the COVID-19 pandemic, this is clearly not a trivial issue.

It is important to note that these numbers, though impressive, do not necessarily imply a net loss of public revenue in each case. Some TEs may have a positive impact on investments and growth, help people to find employment, or replace direct social and welfare spending that would have taken place anyway. However, the available scientific evidence leads us to be skeptical about the efficiency and effectiveness of many TE measures (for instance, see Benzarti & Carloni, 2019; Kronfol & Steenbergen, 2020).

**2. We observe an upward trend in the total number of governments reporting**, reflecting a growing public interest in this dimension of public finance. In the 1990s there were never more than 12 governments that issued such reports. The 2000s saw a steady rise from 15 to 48 countries. In the last decade, numbers peaked at 85 in 2017. Given that some governments produce their reports with delay and that other governments are currently preparing their first reports (usually covering more than one budget year), we expect that numbers will continue to rise over the coming years. This is certainly good news with regard to the transparency of TEs.

**3. However, the GTED also reveals huge variation in the quality of TE reporting.** TE reports cover a large variety of public documents; ranging from annual, comprehensive reports on TEs that are part of governmental budget documentation to individual documents issued by public bodies and providing some aggregate information on a few specific TEs. Only a minority of 41 countries publishes reports with provision-level data on a regular basis. Though most of these countries are members of the Organisation for Economic Co-Operation and Development (OECD) or the European Union (EU), we do find high-income countries (HICs) with democratic governments that are, at the same time, highly reluctant to publish any meaningful data on the TE they use. Switzerland is a case in point. The only comprehensive federal report on tax expenditures dates back to 2011 and the revenue forgone estimates are based to a significant extent on 2005 figures from one single canton (Bern), extrapolated to the rest of the country.

Governments differ widely in what they publish. The GTED contains data on more than 20,800 individual TE provisions. If available, this includes the legal basis, duration, tax base, policy objective, targeted beneficiaries,

[1] A list with additional country-specific information can be found in Table A.1 in the Annex of this report

the type of TE used and revenue forgone estimates for each individual provision. Yet, very few TE reports provide information on all these dimensions. For instance, in 26.1 per cent of all provision-level data entries, no revenue forgone estimates are provided. More than two thirds of all provisions (69.1 per cent) do not combine revenue forgone estimates with information on the policy objective the measure is supposed to serve. It can be argued that hardly any TE report worldwide is fully comprehensive. Against this background, it is fair to say that real revenue forgone amounts are probably considerably higher than the numbers mentioned above, given widespread underreporting of TEs.

**4. The GTED only collects publicly available data on TEs published by national governments.** Information from third sources, such as academic studies, reports from international organisations, or unpublished governmental documents, is not used. One reason for this is that assessing the quality and credibility of information provided by third parties is often rather difficult. More importantly, however, we are convinced that it is a core government responsibility to publish timely, comprehensive and accurate data on TEs – just like publishing data on direct spending. This responsibility cannot be placed upon private companies, civil society organisations, international bodies or academic entities.

Further, data is collected from central government reports, excluding subnational levels. In several highly decentralised or federal countries, subnational units also grant extensive TEs, for instance to attract investments from abroad. However, only a handful of countries publishes information on subnational TEs and reports can vary widely, even between subnational governments in one and the same country. As a consequence, subnational level data is beyond the current scope of the GTED.

**5. There are important limits to data comparability, particularly across countries.** TEs are typically conceived as departures from a country-specific standard or benchmark tax system. With each country having its own individual tax system, benchmarks differ considerably. As a rule, the GTED inputs the data published by official governmental institutions, based on their own methodologies and benchmarks. This leads to situations where some governments consider a specific measure a TE while other governments classify a similar measure as part of their benchmark systems. Another issue triggered by benchmarking regards the fact that TE estimates can vary either because of changes in the magnitude of concessions relative to the benchmark tax treatment, or because of a variation in the benchmark itself, for instance by lowering statutory tax rates. All these limitations have to be borne in mind when comparing TE systems.

Even comparing TEs across time in individual countries may sometimes be challenging, as there can be changes in the methodology used by governments to estimate the revenue forgone or define specific benchmarks. For instance, in 2017, the Netherlands started reporting revenue forgone estimates on (general) tax credits. This change in TE reporting explains to a large extent the significant spike in the TE/GDP ratio, which jumped from roughly 3 percent in 2016 to roughly 13 percent in 2017.

This caveat notwithstanding, the GTED enables us to identify various patterns of TE use, which will be the object of the following two messages.

**6. Richer and poorer countries use TEs differently.** The GTED shows that HICs and upper-middle-income countries (UMICs) report higher revenue forgone averages measured against GDP than lower-middle-income and low-income countries (LMICs and LICs) – for instance 4.7 per cent of GDP (HICs and UMICs) against 2.3 per cent (LICs and LMICs) in 2018. In HICs and UMICs,

more money is spent on increasing access to goods and services, and TEs that target households play a bigger role. Given that richer countries tend to spend higher shares of their public budgets on social and welfare policies, this is not totally surprising. For instance, we observe that more than one half (51 per cent) of revenue forgone reported by HICs accrues to households. In contrast, LICs spend only 2 per cent of total revenue forgone on households.

Poorer countries focus relatively more on promoting growth and attracting investment through TEs. 35 per cent (LICs) and 44 per cent (LMICs) of their reported revenue forgone benefits businesses. This share is lower in UMICs (31 per cent) and HICs (23 per cent). Also, the GTED registers 804 provisions referring to customs duties in LICs – but only 30 such provisions in HICs. Finally, HICs and UMICs rely on a more diversified portfolio of TE types. Tax exemptions are the biggest type, but other types such as deductions, reduced or zero rates and tax credits play important roles as well. In LMICs and LICs, tax exemptions are far more important. Unfortunately, the share of provisions with unstated or unclear TE type is also considerably larger.

**7. The global composition of TEs changes over time.** In the 1990s, TEs on income taxes were responsible for 80 per cent or more of total revenue forgone, but their share declined consistently over the last two decades, to well under 50 per cent of total revenue forgone in recent years. Taxes on goods and services, on the other hand, followed exactly the opposite trend; starting at under 20 per cent in the 1990s and passing 50 per cent in recent years. Finally, property taxes played a more prominent role in the first years of our observation period, accounting for more than 10 per cent of total revenue forgone at the beginning of the 90s, but quickly declining to levels around 2-3 per cent.

Several factors may explain the observed change in the composition of TEs. First, the growing number of reporting countries may play an important role. In the early years, HICs and UMICs granting (or reporting) mainly income-related TEs dominated the picture. Second, changing patterns of TE use also seem to be a relevant factor. TEs have been increasingly used for social and welfare policy purposes. More and more countries report using TEs on goods and services taxes today, and we observe a growing relevance of TEs motivated by increasing access to goods and services or to housing. Third, the last 40 years have seen a worldwide decline of statutory CIT rates, while the CIT share of global tax revenue has remained largely stable over the same period. “With the global declining trend in corporate income tax (CIT) rates, including in LICs, it might indeed be that the benefit for investors of receiving tax incentives has somewhat diminished” (IMF et al., 2015, p. 8). This diminished benefit could be reflected in the declining share of income tax-related TEs.

**8. TEs are an important factor to increase domestic revenue mobilisation, which is particularly relevant in a post-COVID-19 world.** The COVID-19 pandemic has had an unprecedented economic impact, with developing countries being particularly affected. The need for resources has significantly increased among these economies, as governments face the challenge to provide income support and liquidity to individuals and businesses, while collecting the required revenue to finance spending programmes. While governments worldwide experience rising debt levels and widening budget deficits, the revenue position of developing countries seems to worsen more than that of advanced economies (Gupta & Jalles, 2021).

As the GTED reveals, LICs forgo more than 26 per cent of their tax revenue by using TEs, more than any other

country income group. This clearly indicates the reduced fiscal space these countries have, but also the potential that lies in reforming TE systems. LICs and LMICs often grant tax holidays and tax exemptions that have little impact on investment or growth, but significantly reduce the availability of public funds for public services and infrastructure. James (2013) shows that redundancy ratios (the share of investment projects that would have taken place even if no incentives were implemented) can be above 90 per cent in some LICs. Unfortunately, underreporting or non-reporting of TEs is especially widespread in this group of countries. Whereas 26 out of the 79 LICs and LMICs publish some type of disaggregated TE data, 8 countries only provide aggregated estimates or overall figures, and 45 do not report on TEs at all.

**9. As shown by the case of patent boxes, TEs are also key to reforming the international tax system.** "Patent boxes" are TEs that provide lower tax rates on the income of certain activities associated with research and development (R&D), patents, innovation, and inventions. A total of 20 OECD and G20 member countries have enacted patent box schemes. They are potentially a significant incentive for R&D investment, but can also end up being an incentive for the choice of location of patents with negligible impact on the underlying real R&D. Multinational corporations can easily shift patents and intangible income to lower tax rate countries, so patent boxes are a potential source of harmful tax competition and, as such, have been subject to scrutiny under the OECD/G20 base erosion and profit-shifting (BEPS) project. As shown by the GTED, only slightly over one-half of the patent boxes are reported by OECD and G20 countries. This highlights the fact that transparency in TE reporting is a universal challenge that involves richer as well as poorer countries and may influence how we approach future reforms of the international tax system.

**10. The GTED opens new avenues for policy debate and future research on TEs.** Worldwide TE reporting has been growing over the last decades, but it is still far from satisfying. In most cases, much more public information will be required to arrive at evidence-based assessments of the effectiveness and efficiency of individual measures – let alone informed analyses of national TE systems and their embeddedness in the respective public revenue and expenditure systems. Against this backdrop, the GTED prepares the ground for more in-depth analysis. Beyond the general trends and patterns discussed in this report, the data collected by the GTED allows for a much more focused exploration of specific aspects of TE use. For instance, future editions of the GTED may enable in-depth research and informed policy debate on the use of TEs in the context of the COVID-19 pandemic – without any doubt a field where many lessons are waiting to be learned. Combining GTED statistics with other data sources may create new opportunities for the generation of robust evidence on TE systems, and taxation in general, on a worldwide scale.

> *"A substantive contribution to the debate on the role and consequences of tax expenditures"*
>
> **MARIO MANSOUR, IMF**

# 1 INTRODUCTION

Governments pursue public policy objectives through direct spending, but also through tax policy and revenue collection. In this latter context, tax expenditures (TEs) often play a pivotal role. The term refers to benefits granted to specific sectors, activities or groups through preferential tax treatments such as exemptions, deductions, credits, deferrals and lower tax rates. Most importantly, governments use TEs to promote economic growth and attract investments, pursue social welfare objectives, and incentivise specific patterns of behaviour such as energy consumption from renewable sources.

This is certainly not a minor issue. In the United States alone, the federal government has forgone more than 1.4 trillion USD in 2019, according to figures provided by the Global Tax Expenditures Database (GTED) and based on information from the US Department of the Treasury. This equals almost one third of direct federal spending and roughly 7 per cent of the country's GDP. The data gathered in the GTED shows that TEs can amount to more than 10 per cent of GDP in some countries. The global average over the whole period covered by the GTED from 1990 to 2020 is 3.8 per cent of GDP and 24.2 per cent of tax revenue. Between 2014 and 2018, governments worldwide have forgone more than 3.5 trillion USD in tax revenue per year. As will be discussed in more detail in this report, real figures are probably even higher.

In spite of these significant fiscal costs, TE regimes suffer from a striking lack of transparency. Governmental information on TEs is altogether inexistent or not made public in 121 out of the 218 jurisdictions covered by the GTED.[2] In another 56 cases, some information has been published, but reports have been either irregular (covering only a limited number of budget years) or incomplete (for instance, providing only aggregate figures on revenue forgone) – or both. Only a minority of 41 countries publishes reports with provision-level data on a regular basis – though it can be argued that hardly any TE report worldwide is fully comprehensive. Governmental information on TEs is altogether inexistent or not made public in 121 out of the 218 jurisdictions covered by the GTED. In another 56 cases, some information has been published, but reports have been either irregular (covering only a limited number of budget years) or incomplete (providing only aggregate figures on revenue forgone) – or both. Only a minority of 41 countries publishes reports with provision-level data on a regular basis – though it can be argued that hardly any TE report worldwide is fully comprehensive.

Hence, it is fair to say that our knowledge about the worldwide range and magnitude of existing TEs is rather limited. Moreover, new provisions are being introduced regularly without adequate scrutiny. In some instances, this can be due to the urgency of the situation, as is the case for some TEs implemented during the COVID-19 pandemic (OECD, 2020c). However, in a majority of cases TEs are used to pursue more strategic goals, and they tend to persist over time. This makes TE reporting and transparency a very relevant issue, particularly for countries with narrow tax bases and limited domestic revenue mobilization (DRM) capacities. Still, deficient TE reporting is far from being restricted to low-income countries (LICs), as will be shown in more detail in Chapter 4 of this report.

TEs are typically conceived as departures from a

[1] If not stated otherwise, global averages in this report are unweighted, meaning that the same weight is given to each jurisdiction listed in the GTED.

[2] The list of jurisdictions can be found in the Annex 1 of this report. In several countries, no information from governmental sources is available, but some intelligence on investment incentives, etc. exists, published by big international consulting firms. For instance see https://taxsummaries.pwc.com/, accessed 20.04.2021. Such legal information from third sources is not included in the GTED, as will be explained in more detail in Chapter 2.

country-specific "normalstandard" or benchmark tax system. With each country having its own individual tax system, benchmarks differ considerably. This must be borne in mind when comparing TE regimes across countries. To give an example, some countries offer exemptions on energy taxes for specific purposes (thus, providing TEs), while other countries do not collect any energy taxes at all, which is economically equivalent to a tax exemption, but not a TE, since there is no energy tax baseline. Comparing TEs in the energy sector across countries without accounting for differences in the respective benchmark systems could thus lead to invalid inferences. Chapters 4 to 6 of this report will show, however, that we still see value in cross-country comparisons.

The GTED is, to the best of our knowledge, the first database that documents TE reporting by governments worldwide, using a common set of criteria and indicators. At any rate, it is the first such database open to public inquiry. Our data show the extent to which governments worldwide engage in TE reporting, from aggregate figures down to individual provisions. The GTED reveals that official reports are based on very heterogeneous standards with respect to the quality and scope of the data they provide. It aspires to be a source of information for academic research as well as public debate, both domestically and internationally.

The following **Chapter 2** introduces the GTED. It informs about the criteria that have been used for data collection and coverage, and the range of data collected, starting at the level of individual TE provisions. Further, the chapter presents how this data is organised by introducing the different categories used by the GTED: The tax base upon which a TE is offered, the policy objective the TE provision is supposed to serve, the addressees or beneficiaries, the types of TE used, the cost of the provision in terms of revenue forgone, the legal basis of the provision and its duration.[3]

**Chapter 3** describes further initiatives to collect TE data and enhance transparency on TE use prior to the GTED. It shows that regional initiatives, such as the Tax Expenditure Database of Latin America and the Caribbean (TEDLAC) prepared by the Inter-American Center of Tax Administrations (CIAT), or sectoral databases such as the OECD Inventory of Support Measures for Fossil Fuels, have been – and still are – key sources of information and guidance.

**Chapter 4** contains a stylised analysis of the GTED data based mainly on descriptive statistics. It summarises the comparative information currently available, including the development of TE reporting over time. The chapter is organised in sections that discuss TEs with reference to country groups, policy objectives, types of beneficiaries, tax bases and types of TE.

Chapter 5 and chapter 6 highlight the analytical usefulness of the GTED by zooming in on two specific aspects. **Chapter 5** presents insights on the relevance of TE for domestic revenue mobilisation (DRM) in low- and lower-middle-income countries. **Chapter 6** discusses the use of patent boxes and other tax incentives for research and development (R&D).

[3] For a more detailed presentation of the database please refer to the GTED Companion Paper.

# 2 WHAT IS THE GTED?

This chapter introduces the GTED. It is based on a more detailed and in-depth presentation of the database, the GTED Companion Paper.[4] The GTED has a global scope and is structured as a panel, providing information on 218 jurisdictions since 1990. Regarding the cross-sectional dimension, 121 out of 218 countries have been classified as non-reporting jurisdictions – a clear indication of the lack of transparency in this field. As concerns the time dimension, some countries have been reporting on TEs for many years, sometimes even preceding the year 1990. For the vast majority of countries, however, TE reporting is a relatively new exercise, which limits the availability of time series data.

The following section discusses the scope of the data that the GTED collects. Section 2.2 shows how the data is categorised in order to facilitate academic research and public debate. Section 2.3 focuses on how data is presented and discusses the indicators used by the GTED. Section 2.4 zooms in on the issue of comparability of data across time as well as between countries or country groups.

## 2.1 Data collected by the GTED

The GTED collects all publicly available data on TEs published by national governments worldwide. For each jurisdiction, it keeps record of the source of information – including the link to the respective website in those instances where information is published online. Quantitative as well as qualitative data is collected. Regarding the former, wherever available, the GTED contains revenue forgone estimates for individual TE provisions, taken from the most recent report. The estimates in the GTED are always based on calculations using actual tax data from previous budget years, rather than revenue forecasts or projections. In addition, data on the number of beneficiaries is collected, though few only 21 governments publish any information of this kind.

On its website www.GTED.net, the GTED presents the data in a highly transparent and user-friendly way. Revenue forgone estimates are reported in absolute numbers, both in local currency units (LCU) and in USD. In addition, estimates are also reported in per cent of GDP and tax revenue. This information uses data provided by the UNU-WIDER Government Revenue Dataset (UNU-WIDER, 2020).

Qualitative data includes the name (in original language and in English) and the description of the TE provision. Apart from that, the data is classified based on four main categories: the tax base to which TE provisions are applied, the policy objective pursued by the TE, the targeted beneficiary group, and the mechanism or type of TE through which they are granted. These categories will be discussed in more detail in the following section.

On top of the four main categories, other relevant information gathered by the GTED includes the estimation method, the legal reference triggering the TE provision, information regarding the time frame (i.e. if a provision is permanent or if there is a sunset clause limiting its duration) and any modifications it has suffered during the observation period.

If governments do not publish such provision-level data in their TE reports, but only some kind of aggregated information, the GTED gathers this aggregate data. Further, if governments report exclusively on specific kinds of TE only (such as tax incentives for investments, or TEs on income taxes) the GTED presents data on these areas alone – even if there is evidence from third sources on the existence of TEs in other areas as well. Likewise, the GTED only includes data that is publicly

[4] In addition to the aspects treated in this chapter, the Companion Paper includes a discussion of methodological issues, challenges and limitations of the GTED, as well as a practical guide on how to use the GTED website (www.GTED.net). See (Redonda et al.).

available and never data computed for internal use only or shared with a restricted circle of addressees.

The terms "TE reporting" or "TE report" are used broadly. They cover a large variety of public documents, ranging from annual, comprehensive reports on TEs that are part of governmental budget documentation to individual documents issued by a public body and providing some aggregate information on some specific TE mechanisms. Also, it should be noted that "regular" reporting does not always mean annual reporting. To give an example, Germany publishes federal subsidy reports including TE data every two years since 1967. A total of 15 such reports have been issued since 1990,[5] containing data on 29 budget years (until 2018). The GTED counts this as 29 years reported, because data is provided on a year-by-year basis and can be consulted and analysed as such.

There are several reasons why the GTED does not use information from third sources, such as academic studies, reports from international organisations, or unpublished governmental documents.

- First, the GTED focuses on the implementation of TEs and their fiscal impact on national budgets. Private firms, civil society organisations or even public bodies (e.g. investment promotion agencies) sometimes provide information on the availability of TEs for companies, specific social groups, etc. This information can be employed, for instance, to double-check the comprehensiveness of TE reporting by governments, but it is not uploaded to the GTED itself, as long as it does not convey any data on actual use.
- Second, assessing the quality and credibility of information provided by third parties can be quite difficult. While the same could be said regarding information provided by governmental sources, in this latter case it is the governments themselves that can be held accountable if the information they publish turns out to be incomplete or wrong.
- Third, and perhaps most importantly, we are convinced that it is a core government responsibility to publish timely, comprehensive and accurate data on TEs – just like publishing data on the state's budget. This responsibility cannot be placed upon private companies, civil society organisations, international bodies or academic entities.

As has been said above, the GTED covers a total of 218 jurisdictions and gathers data from 1990 onwards. Even though a few governments have produced TE reports prior to that date, a vast majority has started reporting more recently and even those few countries that started reporting before 1990 have changed methodologies and scope, which should be borne in mind when making comparisons across time.

For the moment, data is collected from central government reports, excluding subnational levels. In several highly decentralised or federal countries, subnational tiers of government are also likely to grant extensive TEs, for instance to attract investments from abroad. A number of highly visible and widely discussed cases shows that these amounts can be quite substantial. Hence, it would be clearly relevant to gain access to information on subnational TEs as well.

However, the lack of TE data published by lower tiers of government is striking. Indeed, only a very limited number of countries such as Canada and the US publish information on subnational TEs. In some countries subnational governments are required by law to publish those figures, similar to the national level. Yet, the way how TEs are reported can vary widely, even

[5] See German Federal Ministry of Finance (BMF) (2019, p. 5)

among subnational governments of one and the same country. In those cases, obtaining a comprehensive picture is a true challenge. As a consequence, although this might change in the future, subnational level data is beyond the current scope of the GTED.

Finally, the GTED classifies TE reporting with regard to the type of data provided and the regularity of reporting. While the type of data section differentiates between our four main data types (provision-level, very disaggregated, somewhat disaggregated, overall estimates), the section on regularity of reporting indicates whether the country reports regularly or irregularly. A country is classified as reporting regularly if it does not have any gaps of yearly data coverage since it started reporting, and has reported data until two years before the cut-off year to input data (2018 in the case of the first version of the GTED released in June 2021, which is based on data published until 2020). The classification stands regardless whether the country reports annually (like most countries) or bi-annually (e.g. Germany), as long as it provides estimates for all years. In all other cases, the country is classified as reporting „irregularly“. Turkey, for example, first reported data for 2007, but did not provide further data until 2015. Similarly, the first year of data for Denmark is 2006. Yet, there is an 11-year gap - until 2017 - when the next yearly data wave is available. Czechia, to give another example, is currently classified as providing irregular data, because it has not yet published data for 2018.

## 2.2 Data Categorisation

At the level of individual provisions, the data is put in a consistent format to increase the level of longitudinal and cross-country comparability.

Tax base information in the GTED is organised in three levels. The first level distinguishes three broad tax base categories: taxes on income, on goods and services, and on property. The second level introduces sub-categories. For example, taxes on income are split into corporate income tax (CIT), personal income tax (PIT), capital gains tax, etc. Taxes on goods and services are split into value-added tax (VAT), customs duties, excise taxes, etc. Taxes on property are split into real estate taxes, land value taxes, vehicle taxes, etc. Third-level categories apply to some second-level tax types. For example, VAT is broken down into internal VAT and customs VAT. Excise taxes are broken down into the specific goods to which the excise is applied (e.g. alcohol, tobacco, fuels, etc.). Such a breakdown allows the GTED to accommodate different reporting styles of countries and produce data that can be analysed in a consistent way.

The policy objectives countries pursue through the implementation of TEs can range from broad policy goals such as “promote economic growth” or “create employment” to more specific ones such as “develop the agriculture sector” or “increase access to health services.” Such heterogeneity makes the classification particularly challenging. The GTED uses a long list of policy objectives and two levels to classify the data for this category. The first level refers to broad objectives such as “Attract/promote investment”, “Develop a priority economic sector”, “Increase access to/demand for certain goods or services”, etc. The second level introduces more detailed categories.

Information on beneficiaries is organised in five first-level categories. In addition, a second-level list includes all the detailed information governments provide regarding the target groups of individual TEs. Since this information is often very specific – for instance, referring to a specific business sector or target group – no pre-defined classifications have been formulated here. Similar to policy objective, information on beneficiaries can hardly ever be inferred from the name or description of the TE provision, unless explicitly stated.

Regarding the type of TE, only first-level categories (such as exemption, deduction, tax credits, etc.) exist in the GTED. However, it can sometimes be challenging to determine the correct category with regard to special mechanisms – not least because there are cases where several types of TE are applied under one and the same provision. For instance, a provision may offer an income tax deduction for an investment up to a certain amount, and a reduced tax rate beyond. Those types of TE are classified as "Multiple" in the GTED.

Table 2.1 lists all first-level labels in all four categories. With regard to tax base, all second-level categories are listed, but not the third-level entries that exist for some tax types. On policy objective, only those second-level categories are listed that apply to at least 50 different provisions in the GTED. It should also be noted that several relevant policy objectives, such as for instance the promotion of employment or charitable activities, the preservation of historical and cultural assets, the strengthening of international cooperation, and the prevention of double taxation, are listed under "Other". A complete list of categories covering all levels is provided in the GTED Companion Paper (Redonda et al., 2021).

## 2.3 Comparability of Data

There are important limits to data comparability, particularly across countries. TEs are typically conceived as departures from a country-specific standard or benchmark tax system. With each country having its own individual tax system, benchmarks differ considerably. As a rule, the GTED inputs the data published by official governmental institutions, based on their own methodologies and benchmarks. This leads to situations where some governments consider a specific measure a TE while other governments classify a similar measure as part of their benchmark systems. For instance, Germany considers reduced VAT rates on food part of its benchmark system, while other countries include it in their TE reports.

Benchmark systems also differ with regard to the tax base. Not all countries levy real estate taxes, or pollution taxes – or even CIT. This can lead to certain cross-country distortions concerning TE reporting. Carbon taxation is a case in point. When a carbon price scheme is implemented, governments often grant TEs (reduced rates or exemptions) for energy-intensive and trade-exposed sectors to avoid the increased price on carbon putting these sectors at a disadvantage compared to those economies where no pricing scheme is place. In other words, TEs in the context of carbon taxation can only arise where a carbon tax is part of the benchmark tax system.

Another issue triggered by benchmarking regards the fact that TE estimates can vary either because of changes in the magnitude of concessions relative to the benchmark tax treatment, or because of a variation in the benchmark itself, for instance by lowering statutory tax rates. All these limitations have to be borne in mind when comparing TE systems.

Even comparing TEs across time in individual countries may sometimes be challenging, as there can be changes in the methodology used by governments to estimate the revenue forgone or define specific benchmarks. When these differences are substantial, the comparability of the data over time can be affected. For instance, in 2017, the Netherlands started reporting revenue forgone estimates on (general) tax credits. This change in TE reporting explains to a large extent the significant spike in the TE/GDP ratio, which jumped from roughly 3 percent in 2016 to roughly 13 percent in 2017. In this concrete case, we input the data as reported by the Netherlands' government, without making any specific adjustment. In general, TE reports improve over time, e.g. by including more and better information.

These challenges and limitations notwithstanding, the GTED enables us to identify various patterns of TE use, which will be the object of the Chapters 4-6 below.

## Table 2.1: Main GTED Data Categories

| Tax base | | Policy Objective | | Beneficiaries | Type of TE |
|---|---|---|---|---|---|
| First level | Second level | First level | Second level* | First level | First level |
| **Taxes on income** | • CIT<br>• PIT<br>• Capital gains tax<br>• Payroll tax | **Attract / promote investment** | • Attract domestic<br>• Attract multiple types of investment | Businesses | Exemption |
| **Taxes on Goods and services** | • Sales tax<br>• VAT<br>• Customs duties<br>• Stamp duties<br>• Fees and user charges<br>• Exise taxes<br>• Financial transaction tax<br>• Carbon tax | **Develop a priority economic sector or activity** | • Agriculture<br>• Extractive sector<br>• Financial services<br>• Housing<br>• Manufacturing<br>• Transportation<br>• Promote exports<br>• Promote knowledge-intensive activities<br>• Promote / protect SMEs | Churches/ religious organizations | Deduction |
| **Taxes on Property** | • Real estate tax<br>• Land value tax<br>• Estate tax<br>• Vehicle tax | **Increase access to / demand for goods and services** | • Education<br>• Health<br>• Financial services<br>• Housing<br>• Affordability of other goods and services | Households | Deferral |
| | | **Promote environmental sustainability** | • Mitigate greenhouse gas emissions<br>• Promote renewable energy | International/ Regional/ | Reduced rate |
| | | **Provide disaster relief** | | Non-profit/ Philantrophic organizations/ NGOs foundations | Tax credit, rebate or refund |
| | | **Support specific subgroups of the population** | • Develop a specific region<br>• Elderly<br>• People with disabilities<br>• Low-income households | | Zero-rated |
| **Other** | | | | | |
| **Multiple** | | | | | |
| **Not stated / unclear** | | | | | |

Note: * In the category Policy Objective, only second-level categories comprising 50 provisions or more are listed.

Source: www.GTED.net.

# 3 PRIOR INITIATIVES TO GATHER DATA ON TAX EXPENDITURE[6]

At an international level, several initiatives shed light on the use of TEs. Some of them cover individual world regions or country groups, while others have a sectoral focus. In addition, several international NGOs provide information on TEs to promote transparency and public debate on specific issues. Rather than drawing a complete picture, this chapter seeks to highlight a number of initiatives that have proven to be highly visible and relevant.

## 3.1 Regional experience: the CIAT database on Latin America

The Inter-American Center of Tax Administrations (Centro Interamericano de Administraciones Tributarias, CIAT) publishes a regional database called Tax Expenditures Database of Latin America and the Caribbean (TEDLAC). Following the recommendations included in the CIAT Handbook of Best Practices on Tax Expenditure Measurement (CIAT, 2011), the TEDLAC lists a total number of roughly 6000 TE provisions included in the latest report covering 17 Latin American countries. Where available, the TEDCLAC provides information regarding TEs as a percentage of GDP for the 2005–2016 period. Provisions are classified by tax base, type of TE, and sectors (Peláez Longinotti, 2021).

According to TEDLAC, TEs across countries averaged 4.1 per cent of GDP in the latest accounting year. However, there is significant variation. In Bolivia, TEs for the 2011-2013 period corresponded to 1.2 per cent of GDP, while in Colombia the average figure for 2016-2018 stood at 8.1 per cent. As Latin American governments depend heavily on VAT for revenue collection, this is also where the biggest portion of TEs accrues. On average, more than half of total TEs are granted on general consumption taxes. Also, one sector receives a disproportionate amount of preferential tax treatment: health (including alimentation and maternity) and sports. On average, roughly one third of total revenue forgone (as per cent of GDP) is accumulated by this sector alone (Peláez Longinotti, 2021). These numbers indicate the huge potential for future research and highlight the value of such a database.

To collect the relevant data, CIAT does not rely exclusively on official reports, but has also sent out questionnaires to all its member country governments. CIAT has also done valuable work in campaigning for more transparency. In their insightful Handbook of Best Practices on Tax Expenditures, they provide detailed orientation for governments that want to improve their TE reporting (CIAT, 2011). This includes best practice proposals for what defines a TE, measurement purposes, which benchmark tax system to consider, and which sources of information and measurement to use. This commendable work paved the way for increased standardisation of TE reporting, which is crucial for future discussion and reforms.

## 3.2 Sectoral initiatives: the OECD databases on fossil fuel subsidies and R&D incentives

Both the OECD Inventory of Support Measures for Fossil Fuels and the OECD R&D Tax Incentives Database provide cross-country data for particular policy fields, disaggregated by direct government support and TEs. The former covers the fiscal impact of more than 1300 individual policies subsidising fossil fuels while the latter provides data on various tax incentives for Research & Development (R&D). Besides detailed figures on TEs, both databases also offer information on direct public transfers and government funding

[6] This chapter has been co-authored by Nemo Krüger and Christian von Haldenwang.

for the fossil fuel industry and R&D, respectively. The countries covered include OECD member countries as well as some selected partner economies and a number of sub-national jurisdictions in countries such as Canada, the United States or China (OECD, 2020b, 2021). Reporting for R&D support starts in the year 2000, data for fossil fuel subsidies is available from 2010 onwards.

Both OECD databases underscore the significance of TEs. 33 out of 38 OECD member countries[7] used TEs to support business R&D in 2020, up from 20 countries in 2000. In Australia, Colombia, Italy, Japan and Portugal more than 80 per cent of total central government support for business R&D was channelled through TEs. Average revenue forgone was 0.10 per cent of GDP, but was as high as 0.29 per cent in France and 0.25 per cent in the UK. By the same token, TEs are highly important when it comes to fossil fuel subsidies: out of an estimated total of 180 billion USD in fossil fuel support across the 50 countries covered in 2019, 110 billion USD were granted through preferential tax treatments (OECD, 2021).

As there are no sufficiently comparable reports for R&D support, the OECD relies on quantitative and qualitative surveys which are answered by national country representatives. For fossil fuels, the OECD analyses potential policies separately. The latter process is facilitated by a novel framework where G20 countries have agreed on voluntary and reciprocal peer reviews identifying "inefficient fossil fuel support" (OECD, 2021, p. 31). So far, three pairs of countries have successfully conducted such peer reviews: China and the United States, Germany and Mexico, and Indonesia and Italy.

Similar to the project initiated by CIAT, the OECD databases – particularly in the case of fossil fuel subsidies – provide valuable help to governments committed to reform unsustainable and costly TEs. Also, by combining data on TEs with data on direct spending, both databases offer a wealth of in-depth and comparative information on their specific topics.

> *"In tax, the devil is in the details. The GTED is an important effort to shed light on some important yet largely opaque details: tax expenditures. It will become a reference database for the academic world and tax practitioners, complementing other well-known international databases."*
>
> **GRÉGOIRE ROTA-GRAZIOSI, CERDI, UNIVERSITÉ CLERMONT AUVERGNE**

[7] The database does not yet contain information on the most recent OECD member country, Costa Rica.

# 4 THE GLOBAL STATE OF TAX EXPENDITURES: STYLIZED FACTS FROM THE GTED

This chapter presents a summary overview on the global state of TEs and TE reporting, based on the GTED. It shows that a number of relevant insights can be drawn from the GTED, preparing the ground for in-depth explorations addressing more complex research questions in the future.

The chapter is organised as follows: Section 4.1 provides an overall picture on TE reporting across the world, taking a closer look at several country groupings (world regions, country income groups, G20 and OECD member countries). Section 4.2 discusses the use of TEs with regard to different policy objectives. Though far from all TE reports contain information on this aspect, some important insights can be obtained from the data. Section 4.3 explores the GTED data focusing on the beneficiaries of TEs. While private households and businesses are the main addressees of TEs worldwide, other groups (for instance, churches, the public sector or international organisations and donors) may also obtain important benefits. Section 4.4 looks at TEs from the perspective of different tax bases, distinguishing taxes on income, goods and services and property. Section 4.5 identifies specific patterns regarding the types of TEs that governments employ. Finally, Section 4.6 summarises the findings and discusses future avenues of research.

## 4.1 Overview on tax expenditure reporting

TE reporting differs widely across countries, ranging from regular, comprehensive and public reports to the complete absence of any public information.[8] 97 out of 218 jurisdictions (44.5 per cent) contained in the GTED have provided some kind of information on the use of TEs between 1990 and 2020, covering more than 1.100 budget years in their reports. On average, slightly over 11 years have been covered by each of those 97 jurisdictions that have published any reports at all. This means that about one third of all possible reports have been produced by these countries. If we consider all 218 jurisdictions in the dataset, only ca. 16 per cent of all possible reports are available to the public. Given the huge budgetary relevance of TEs, this is clearly insufficient.

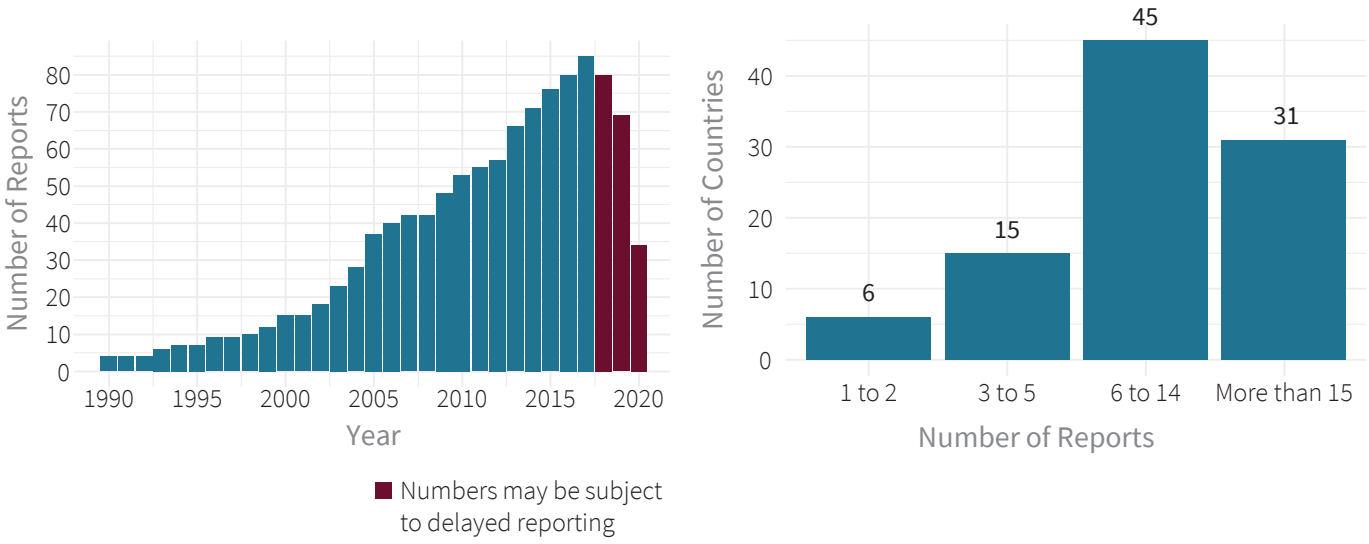
In general terms, however, reporting has increased over the last years, reflecting a growing public interest in this dimension of public finance (see Figure 4.1). Five governments have produced their first TE reports in 2019 or 2020. Other governments, such as for instance Ghana and North Macedonia, have announced that they are currently preparing their first TE reports. Still, regular reporting over a longer period of time remains a minority undertaking. Worldwide, 6 governments have published reports on one or two years between 1990 and 2020.[9] Another 15 governments cover 3 to 5 years, and 48 governments have produced between 6 and 15 such reports. Finally, 28 countries cover at least half of the observation period (16 years or more) in their TE reports.

The numbers cited above do not reflect the quality of reporting. As mentioned in Chapter 2, in some cases reporting does not amount to much more than a few generic references in a budget or related government

[8] For more information on individual countries, please refer to Table A.1. in the Annex.

[9] Most "first reports" cover more than one budget year, so that only Puerto Rico and Mauritania are listed with one report.

## Figure 4.1. Number of Countries Reporting per Year & Number of Reports by Country Groupings




**Source:** www.GTED.net

document. Governments sometimes reveal data only on specific kinds of TE, for instance linked to foreign trade, while withholding any information on TEs in other areas. Such reporting, though not without merit, clearly falls short of what would be necessary to obtain a comprehensive picture of the TEs in use and their evolution over time. All in all, we find regular (annual or biennial) and provision-level reporting in a total of 42 countries, and numbers have been growing over time.[10] However, even within this group there are many countries that do not cover the full range of TEs they apply. To give an example, the US TE report only contains information on income-related TEs.[11] Other tax types, such as taxes on goods and services, are not covered.

Any political decision-making and any public debate on TEs requires information at the level of individual provisions. Not all governments publish such information. We find provision-level data in at least one report in 47 jurisdictions, 36 of which are high- or upper-middle-income countries (HICs and UMICs). In some cases, governments changed from generic, aggregate reporting to detailed, provision-level reporting during the observation period, and in a few cases (DR Congo and Burkina Faso, for instance) they changed back. Even if no provision-level information is given, reports may be itemized, for instance regarding specific tax bases, beneficiaries or budget lines.

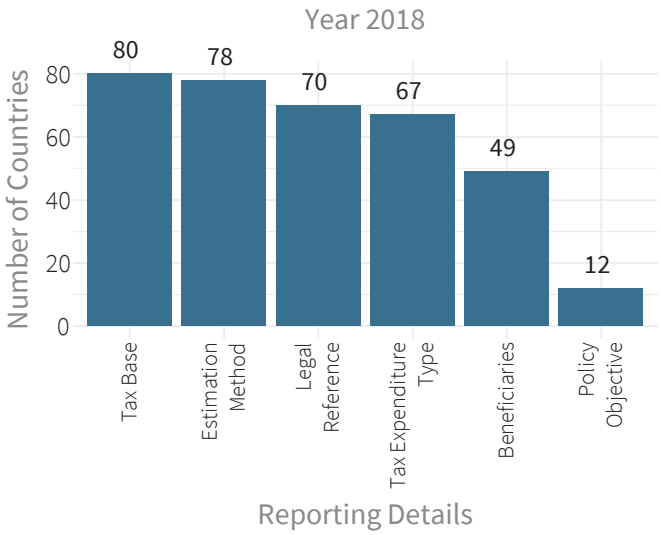
All in all, the GTED gathers data on more than 20,800 individual provisions. With many provisions in place over several years, the database contains more than 102,700 data entries.[12] As described above (Chapter 2), a broad range of quantitative and qualitative information is collected by the GTED. Yet, only a small group covers all these aspects in their latest reports. Figure 4.2 shows the number of countries that provide metadata on six main GTED categories in 2018, counting only those cases where the respective information covers at least 75 per cent of the reported revenue forgone.

[10] Note that this figure includes one country – Rwanda – that has just produced its first report, covering the years 2018 and 2019. We do not know for certain, of course, that the Rwandan government will continue issuing such reports, but prefer to operate under the assumption that it will.

[11] See https://home.treasury.gov/system/files/131/Tax-Expenditures-2021.pdf, accessed 29.04.2021

[12] The term "data entries" refers to the ca. 102,700 provision-level data points gathered in the GTED. To give an example, a provision that is in place for 10 years, with data available throughout this period, generates 10 such entries.

## Figure 4.2. Number of Countries Reporting on Tax Expenditure Details




**Note:** A country was coded as reporting when it provided details for provisions accounting for 75% or more of total revenue forgone.

**Source:** www.GTED.net

One key aspect of reporting is providing estimates on revenue forgone as a consequence of TE use. Such estimates are a necessary precondition for any meaningful debate on TEs. The available data reveals that those countries that publish such estimates forgo, on average, 3.8 per cent of their GDP and 24.2 per cent of their tax revenue. Looking at tendencies over time, we find that unweighted yearly averages vary between 4.9 per cent of GDP in 1991 and 3.3 per cent in 2003. In the five most recent years with fairly broad coverage (2014-2018), however, global revenue forgone figures have been quite stable, ranging between 3.9 and 4.3 per cent of GDP.

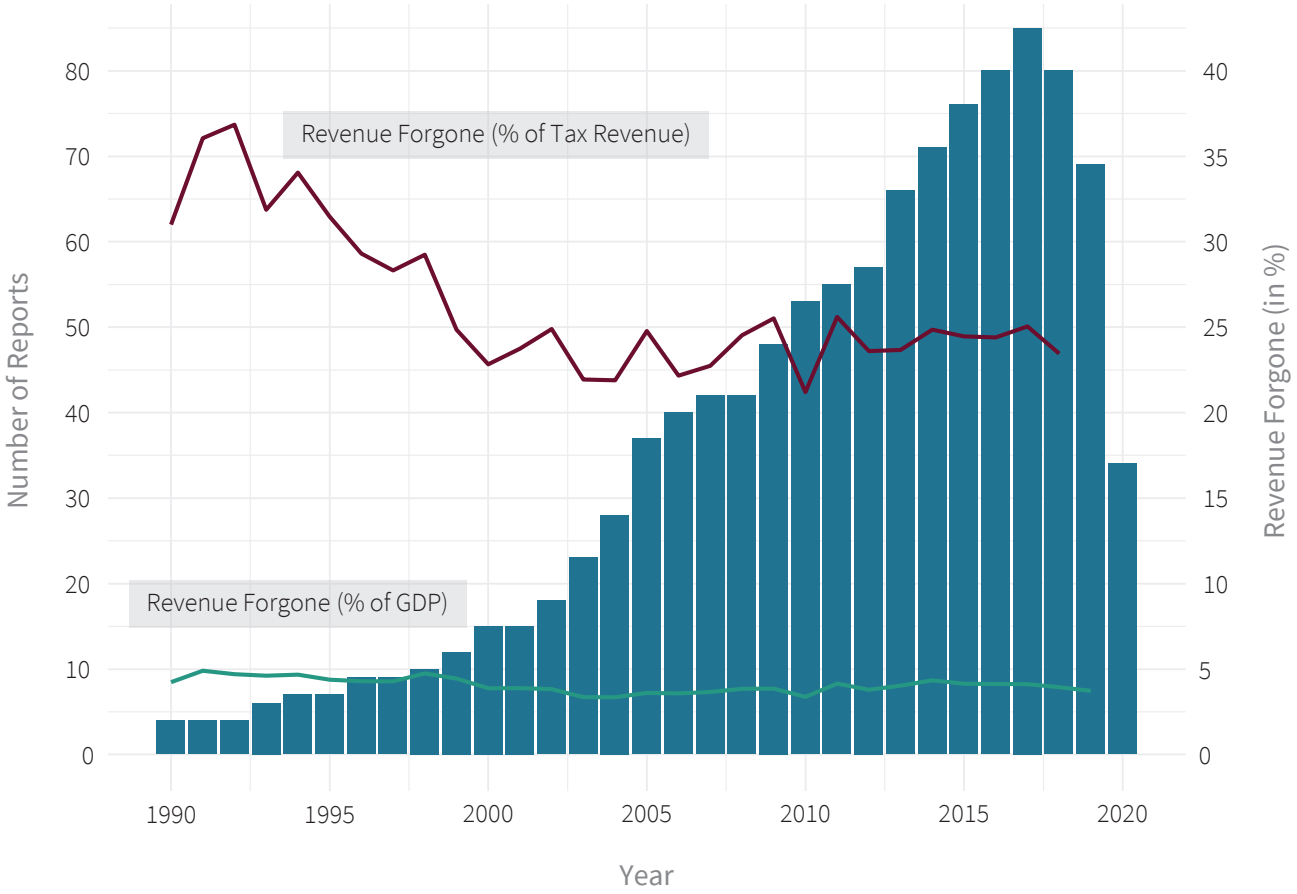
Variation over time is higher if measured against tax revenue: 1992 is the year with the highest proportion: Revenue forgone in that year amounts to 36.9 per cent of tax revenue for those countries reporting TEs, whereas in 2010 that number is 21.2 per cent. This is also closer to the values we observe for the period 2014 to 2018, which vary between 23.5 and 25 per cent.

It also becomes apparent that both TE-to-GDP and TE-to-tax revenue ratios are higher in the first decade of the observation period, when only few – mostly high-income – countries issued reports. Ratios seem to stabilise once the number of reporting countries has reached a threshold of 15, which is in the year 2000.

It should be noted, however, that far from all provisions listed in the GTED contain revenue forgone estimates. In 26.1 per cent of all provision-level data entries, no such estimates are provided. These are cases where governments state that the effect cannot be estimated, or simply do not provide data without further explanation. This is another piece of evidence that leads us to conclude that the real fiscal size of TE regimes is larger than indicated by the figures given in the reports.

> *"No tax reform in developing countries will be complete without restructuring of tax expenditures"*
>
> **SANJEEV GUPTA, CGDEV**

## Figure 4.3. Global Unweighted Average Revenue Forgone and Number of Reports




**Source:** www.GTED.net

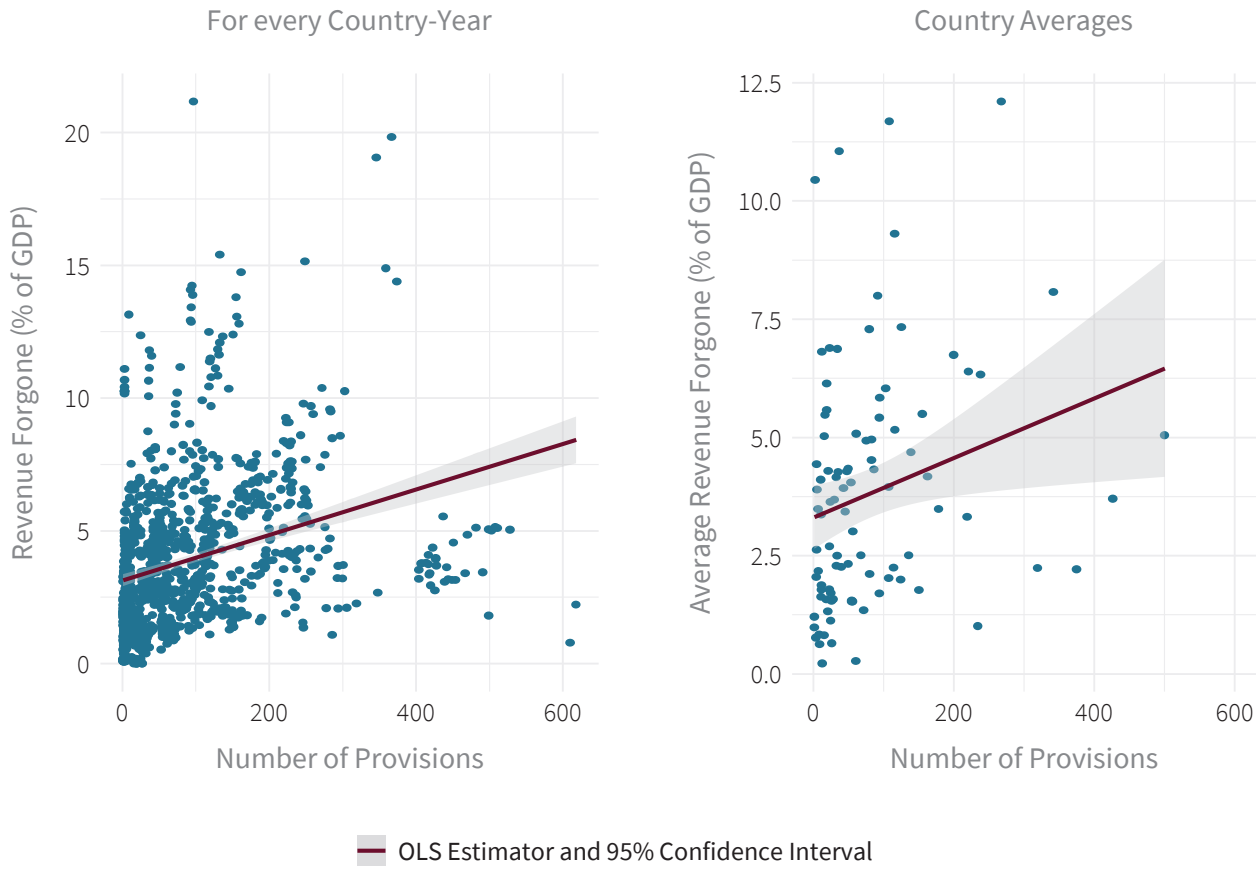
Not always is this due to a lack of interest in transparency. Sometimes governments find it exceedingly difficult to obtain such figures – for instance in cases where legal provisions combine TEs with standard (benchmark) tax regulations.[13] We have already cautioned against comparing countries on their revenue forgone figures alone. Not only do benchmark tax systems differ widely across countries, but also does the extent of TE reporting and the thoroughness of revenue forgone assessments. However, we find higher revenue forgone estimates positively associated with regular and comprehensive (provision-level) reporting. Reports that cover a higher number of TE provisions also tend

[13] To give an example, Canada grants a "Partial deduction of and partial input tax credits for meals and entertainment" with a total cost of ca. 550 million USD in 2017. This provision entails TEs on personal consumption along with a partial deduction of business-related expenses that areis part of the benchmark system. According to the Canadian Department of Finance, it is impossible to determine the relative size of each portion. Hence, this provision is considered a "Tax measure other than TE". See https://www.canada.ca/en/department-finance/services/publications/federal-tax-expenditures/2020/part-2.html#_Toc31637255, accessed 07.06.2021.

to contain higher revenue forgone figures, as would be expected (see Figure 4.4).

At this aggregate level it might be interesting to look at different country groupings. To start, we find certain regional patterns of TE reporting. Apart from Europe & Central Asia, regular TE reporting is fairly common in the Americas, though much less in the Caribbean. More recently, a growing number of African countries has begun to issue TE reports, or announced that they are planning to do so in the near future. For instance, the Economic Community of West African States (ECOWAS) and the West African Economic and Monetary Union (WAEMU) have initiated a project to enhance the transparency of TEs and the quality of TE reporting, supported by the European Union (EU). However,

## Figure 4.4. Correlation between Revenue Forgone and Number of Provisions

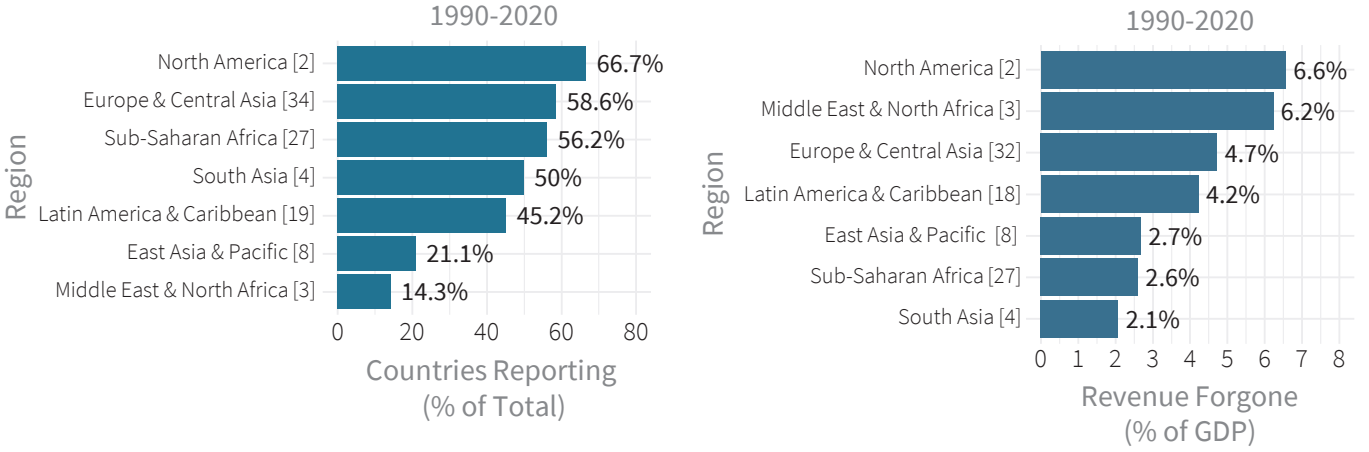



**Source:** www.GTED.net

reporting is still much less regular compared to Europe and the Americas. East Asia & Pacific as well as Middle East & North Africa (MENA) are the two regions with the lowest proportion of countries that publish TE reports (see Figure 4.5).

In terms of revenue forgone, reports from two countries in North America and three countries in the MENA region indicate average spending levels above 6 per cent of GDP. Europe & Central Asia as well as Latin America & the Caribbean are close to the worldwide averages, while Africa and Asia are regions where governments report considerably less revenue forgone, on average.

## Figure 4.5. Regional Average of Countries Reporting & Revenue Forgone

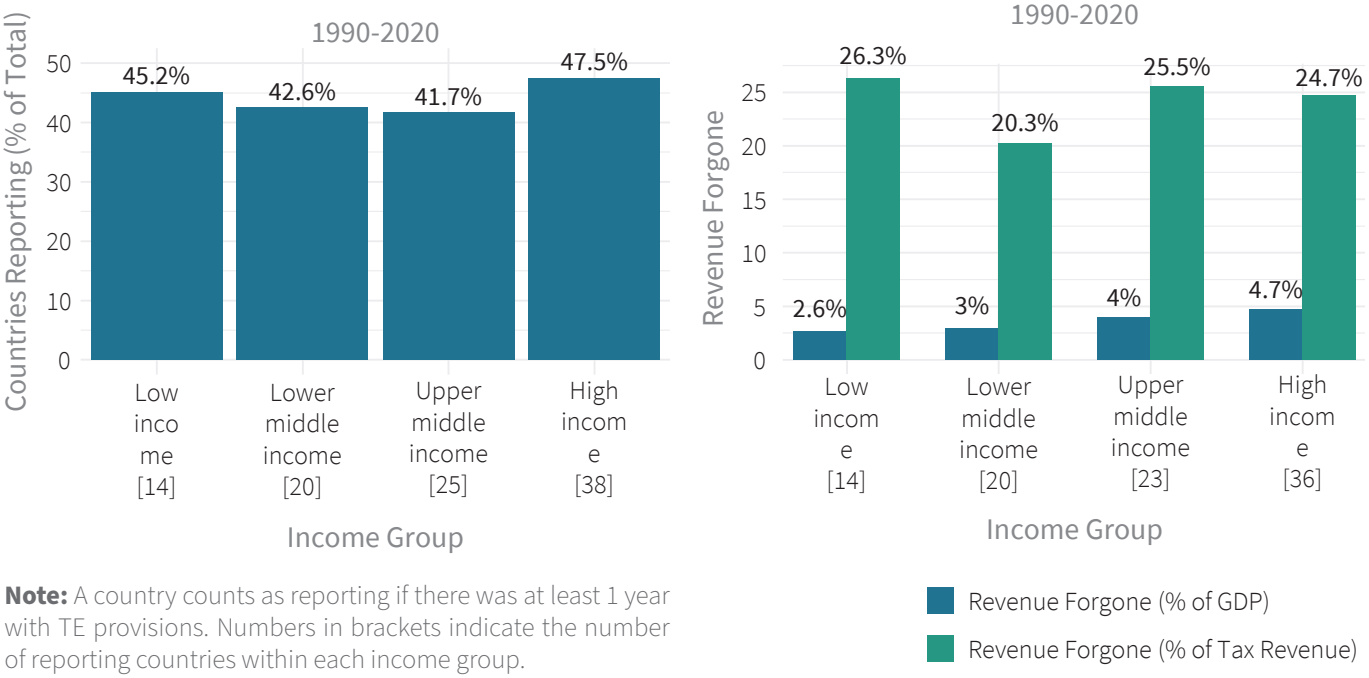



**Note:** A country counts as reporting if there was at least 1 year with TE provisions. Numbers in brackets indicate the number of reporting countries within each region.

**Source:** www.GTED.net

These regional patterns partly reflect differences in average welfare levels, which are often measured as GDP per capita. The World Bank identifies four groups: high-income (HICs), upper middle-income (UMICs), lower middle-income (LMICs) and low-income countries (LICs).[14] We expect richer countries to report more on the TEs they use – not because they are rich but rather because GDP per capita is positively related with a number of other factors that should influence TE reporting. Richer countries tend to have more diversified economies and more sophisticated public welfare systems, as well as bigger governments with more capacity to set up TE schemes. Also, governments are more democratic, on average, meaning that they place a higher value on accountability and open access to public data.

## Figure 4.6. Average of Countries Reporting & Revenue Forgone by Country Income Group




**Note:** A country counts as reporting if there was at least 1 year with TE provisions. Numbers in brackets indicate the number of reporting countries within each income group.

**Note:** Numbers in brackets indicate the number of countries within each income group that report on both tax and GDP data.

**Source:** www.GTED.net

[14] The World Bank actually uses Gross National Income (GNI) rather than the GDP to create country income groups. As an indicator, the GNI is slightly broader than the GDP. It includes income from citizens and businesses earned abroad and subtracts income remitted by foreigners living in the country back to their home countries: To be consistent with the tax revenue data we use, we rely on the World Bank list for fiscal year 2020. Low-income countries are defined as those with a GNI per capita […] of $1,025 or less; lower middle-income countries are those with a GNI per capita between $1,026 and $3,995; upper middle-income countries are those with a GNI per capita between $3,996 and $12,375; high-income countries are those with a GNI per capita of $12,376 or more." See databank.worldbank.org/data/download/site-content/OGHIST.xls, accessed 26.04.2021.

At first sight, we do not find a positive association of country income levels with TE reporting (see Figure 4.6). Across all country income groups, more than 40 per cent of the countries have published data at least once since 1990. However, the picture drawn by Figure 4.6 (left panel) does not reflect the full reality because it considers neither the regularity nor the quality of country reporting. The discussion in the following section will provide more details regarding differences of TE reporting across country income groups.

Still, even at this level of abstraction we find interesting patterns, for instance when comparing revenue forgone averages (Figure 4.6, right panel). HICs and UMICs report higher revenue forgone averages measured against GDP. Yet, LICs forgo more than 26 per cent of their tax revenue, more than any other country income group. This clearly indicates the reduced fiscal space these countries have.

Variation is high across all income groups. We find HICs with democratic governments that are at the same time highly reluctant to publish any meaningful data on the TE they use. Switzerland is a case in point. The last comprehensive federal report on TEs dates back to 2011 and the revenue forgone estimates are based to a significant extent on 2005 figures from one single canton (Bern), extrapolated to the rest of the country (Moes, 2011). The interesting fact is that since 1990 the Swiss government is actually obliged by law to produce TE reports (though not on a yearly basis), but has so far failed to comply with this obligation.[15]

Finally, we take a closer look at the G20 and the OECD. Of the 46 G20 and OECD countries, 2 do not publish any official TE information, and 11 do not report provision-level data, but only aggregate estimates. Likewise, of the 27 EU member states, 3 (Croatia, Cyprus and Malta) do not report on TE at all, and 10 others only provide limited information. In the case of the EU member countries, such behaviour is in conflict with the Council Directive 2011/85/EU on requirements for budgetary frameworks, which explicitly states that "Member States shall publish detailed information on the impact of tax expenditures on revenues." (European Union, 2011, p. L 306/347). One can only assume that widespread underreporting is not completely accidental: TEs are frequently employed to give countries an edge in the worldwide competition for investments and jobs. Hence, their impact may reach well beyond the borders of individual countries. Opposition from lobbying groups and lacking domestic interest in public finance reporting could be influencing factors in these cases.

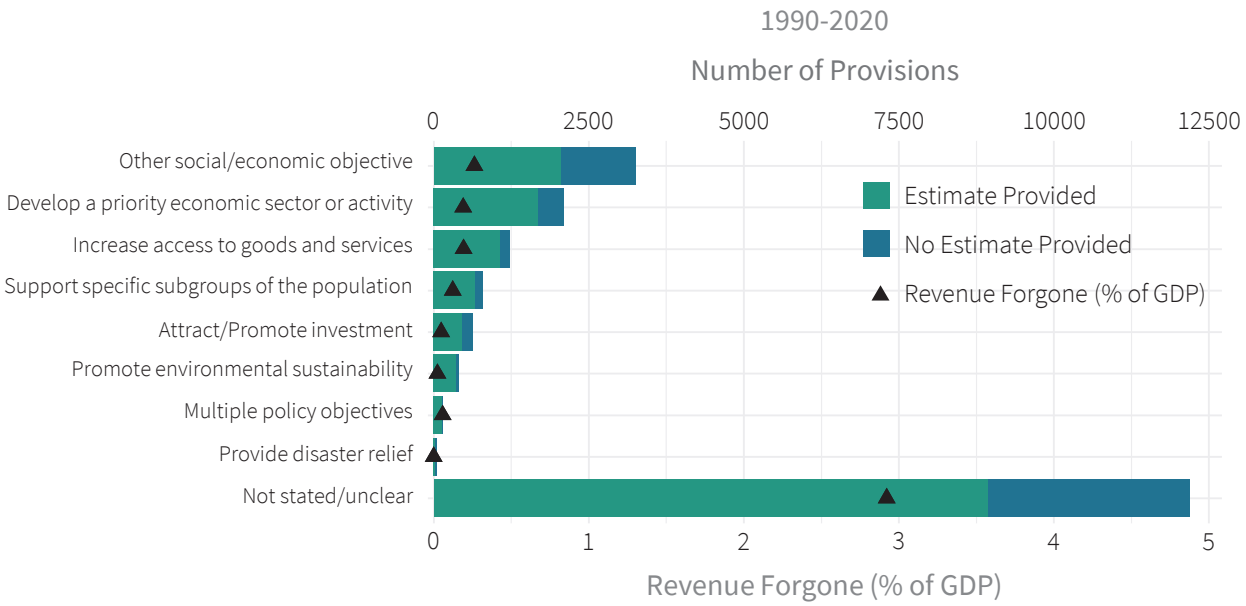
## 4.2 According to policy objective

As has been said above, only 37 countries provide any information on the policy objectives they pursue with individual TE provisions.[16] In fact, such information can be found for just 8605 out of 20,808 provisions contained in the GTED – only 41.4 per cent of total provisions. There is no common standard for the categorisation of policy objectives, meaning that governments employ a large variety of terms and references at different levels of specificity. The GTED

[15] Apart from the report mentioned here, the Swiss State Secretariat for Economic Affairs (SECO) has published information on tax reliefs granted to individual firms in structurally weak regions, with revenue forgone figures ranging between 0.3 per cent and 0.05 per cent of GDP between 2007 and 2017. See https://www.seco.admin.ch/seco/en/home/Standortfoerderung/KMU-Politik/Steuererleichterungen_im_Rahmen_der_Regionalpolitik.html, accessed 11.06.2021.

[16] This includes all 37 countries that provide such information on at least one provision in any year since 1990, whereas Figure 4.2 (above) refers to 12 countries that publish such information covering at least 75 per cent of the reported revenue forgone in 2018.

## Figure 4.7. Number of Provisions and Revenue Forgone by Policy Objective




**Note:** Number of provisions are counted over the total time period. For revenue forgone estimates, we first calculated country averages across years and then the global average across countries.

**Source:** www.GTED.net

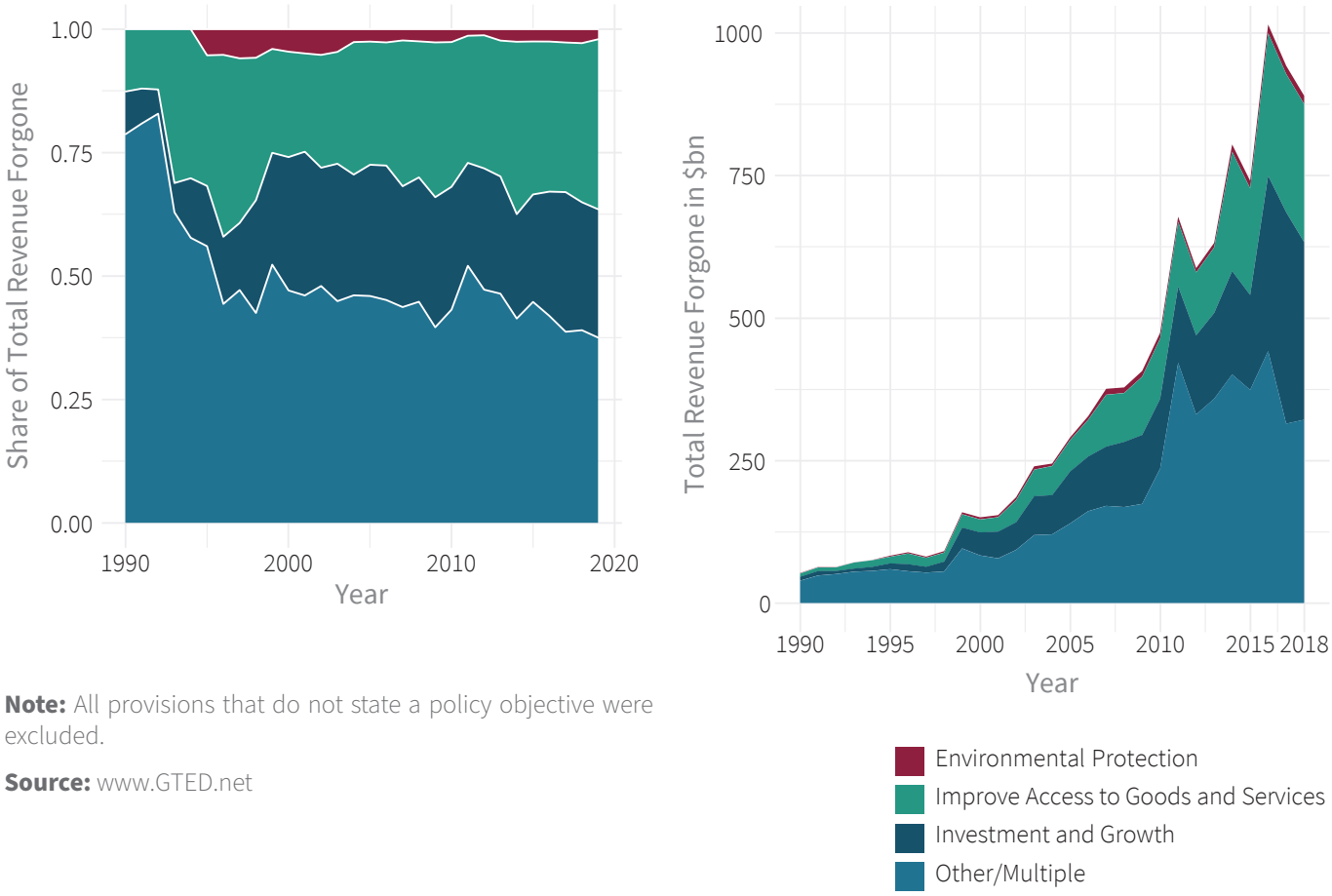
collects this country-specific information, but groups policy objectives in nine categories, such as for instance "attract / promote investment" or "provide disaster relief" (see above, Chapter 2). Figure 4.7 shows that more than three quarters of those TE provisions that contain information on policy objectives fall under three categories: "Other social / economic objective" (37.8 per cent), "Develop a priority economic sector or activity" (24.4 per cent) and "Increase access to / demand for goods and services" (14.2 per cent).

As can be seen, the two rankings of policy objectives according to number of provisions and revenue forgone shown in Figure 4.7 largely coincide. It is important to keep in mind, however, that the picture is rather incomplete. Only 6438 out of 20,808 provisions in the GTED contain information on both, policy objective and revenue forgone, which is 30.9 per cent of total provisions. Those provisions that combine information on policy objectives with revenue forgone account for 0.9 per cent of GDP, on average. This means, that worldwide governments forgo 2.9 per cent of GDP on TEs that come without proper information regarding the policy objective they are supposed to serve. In most cases, and certainly in most countries, we simply do not know the fiscal costs (in terms of revenue forgone) emerging from the pursuit of specific policy objectives through TEs.

In the following paragraphs we focus on three broad objectives that are often considered the core of TE regimes: (i) promote investment, economic development and growth, (ii ) increase access to goods and services or labour markets as a means to fight poverty, and (iii) promote environmental sustainability and fight climate change. As will be shown in more detail below, each of the three objectives lumps together several categories and sub-categories introduced above.

Focusing on those TEs that come with information on policy objectives, the largest share of worldwide revenues forgone cannot be (fully) related to the three objectives introduced above. Over time, however, the share of those TEs that seek to promote growth or social welfare has been growing. Measured in USD, Figure 4.8 (right panel) shows how the amount of reported revenue forgone associated with specific policy objectives has been building up over the years. It also shows that environmental protection plays a minor role so far. The following paragraphs will look at the three objectives in more detail.

## Figure 4.8. Global Unweighted Evolution of Revenue Forgone by Selected Policy Objective




**Note:** All provisions that do not state a policy objective were excluded.

**Source:** www.GTED.net

First, governments all over the world use TEs to attract investment and promote economic development and growth. In fact, the PwC Worldwide Tax Summaries, which cover 152 jurisdictions, do only contain a handful of cases (such as Bahrain or Cayman Islands, for instance) where the section "tax credits and incentives" remains empty.[17] It is fair to assume that a large share of TEs worldwide falls under this category. Yet, tax incentives for corporations, particularly those granted to large multinational enterprises (MNEs), also tend to attract a lot of criticism in public debates, which may help to explain why information on these TEs is often so patchy.

As the GTED reveals, 37 out of 97 governments provide any information on investment- and growth-related TEs,[18] and in almost all cases this information is accompanied by data on revenue forgone. Variation is huge, however. Revenue forgone figures on this particular policy objective range from minus 0,3 per cent of tax revenue (Slovakia in 2016), indicating an actual revenue gain[19], to a staggering 84.3 per cent in Russia in 2018. Excluding Russia as an outlier, we observe that countries reporting on this policy objective spend an average 0.45 per cent of GDP and 2.8 per cent of tax revenue on incentivising investment and growth. Average figures are lower for the five LICs reporting on this policy objective: 0.15 per cent of GDP and 0.9 per cent of tax revenue. These figures mask a high degree of variation within this group, however, with Rwanda reporting values close to the worldwide average (0.5 per cent of GDP and 2.7 per cent of tax revenue) and DR Congo or Madagascar reporting around 0.01 per cent of GDP. Also, many LICs are highly dependent on extractive industries. In this sector, TEs are often granted to individual corporations by means of concessional contracts, and might not figure in TE reports.

Second, apart from stimulating investment and growth, governments use TEs in social and welfare policies.[20] A frequent measure is to reduce VAT or sales tax rates for basic goods and services, in order to facilitate poorer households' access to these goods. In other cases, tax credits such as the Earned Income Tax Credit (EITC) in the US are used to improve access to labour markets and education (von Haldenwang et al., forthcoming). In countries where social expenditure is a politically contested issue governments may sometimes rely on TEs as a less visible approach to social redistribution.

Perhaps as a consequence of this motivation, only 33 governments publish data on the use and relevance of TEs to increase access to goods and services, 23 of which are HICs and UMICs. Again, we observe a large variation of reported revenue forgone, which ranges from 0 per cent of tax revenue (for instance, Peru 2018) to 49.5 per cent in the Netherlands, in 2014. Over the whole observation period, the 33 governments spend 0.7 per cent of GDP and 3.9 per cent of tax revenues on this policy objective. In four countries – the Netherlands, Russia, Sweden and Mexico – more than 10 per cent of tax revenue are forgone.

In HICs and UMICs, TEs used for increasing access are clearly more relevant, consuming 4.2 and 5.3 per cent of tax revenues, on average. In LMICs and LICs, average revenue forgone amounts to 2.1 and 2.9 per cent of tax revenue, respectively. Given that richer countries tend to spend higher shares of their public budgets on social and welfare policies, this is not totally surprising. Figure 4.9 also shows that more than half of the respective

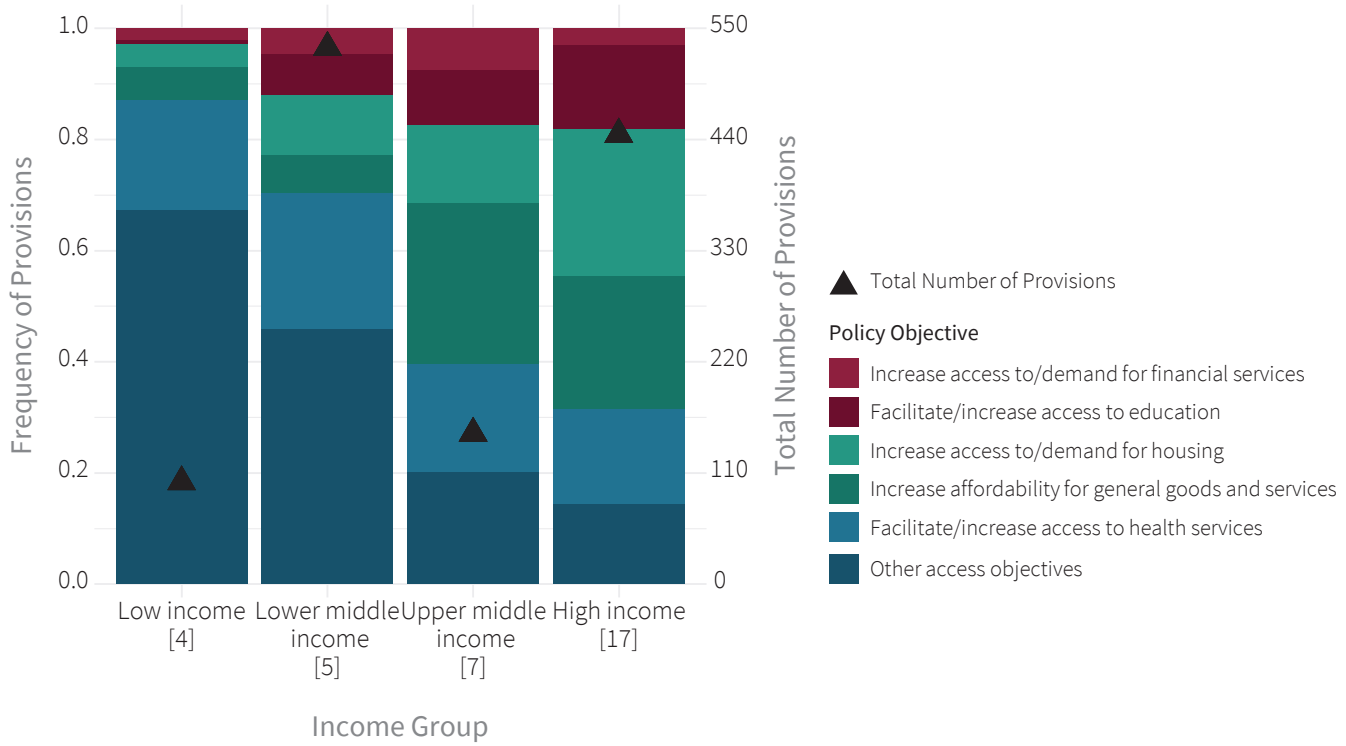
[17] See https://taxsummaries.pwc.com/, accessed 20.04.2021. In most cases, these jurisdictions do not levy income taxes at all, or only at very low rates – another example of how different benchmarks affect TE estimates.

[18] GTED policy objective categories used here are "Attract / promote investment" and "Develop a priority eco-nomic sector or activity", plus several second-level categories from "other social / economic objective".

[19] Revenue gains may occur if the effects of time-bound TEs, such as accelerated depreciation or deferrals, are estimated on a cash-flow basis. This is discussed in more detail in Chapter 6 of the present report.

[20] GTED policy objectives used for this area are "Increase access to/demand for goods and services" and "Support specific subgroups of the population", plus several second-level categories from "other social / economic objective".

## Figure 4.9. Frequency of Policy Objectives Aiming at Increasing Access by Income Group and Policy Objective Level 2, 1990-2020




**Note:** The total number of provisions applies to all provisions aiming at increasing access within each income group. Numbers in brackets indicate the number of reporting countries within each income group.

**Source:** www.GTED.net

provisions concern health services in LMICs and LICs. Their share is lower in HICs and UMICs, while housing plays a more prominent role in these two groups.

Third, in a growing number of countries, TEs are employed to promote environmental sustainability and fight climate change – though it is probably fair to say that the TEs used to subsidise fossil fuel consumption are still far more frequent and costly than those used to promote environmental-friendly behaviour. To give an example, ca. 60 per cent of the measures listed in the OECD "Inventory of Support Measures for Fossil Fuels" (OECD, 2021) are TEs, including for instance reduced excise rates on aviation fuel in Australia, a special tax regime for inputs used in the exploration and production of fossil fuels in Brazil, and an energy tax refund for diesel used in agriculture and forestry in Germany (von Haldenwang et al., forthcoming).

In the context of environmental sustainability, the GTED distinguishes TEs that seek to mitigate greenhouse gas emissions, promote energy efficiency, promote renewable energy, protect biodiversity or support adaptation to climate change. Information on this policy objective is even more scarce than on the other two objectives mentioned above, and it is even more tilted towards the group of rich, industrialised countries. As shown in Figure 4.7 (above), such information can be found in just 413 provisions. They are reported by a total of 25 countries, 14 of which

belong to the high-income group. Only 18 countries report average revenue forgone higher than 0.05 per cent of tax revenue. Latvia (2014) and Sweden (2003) stick out, as they report revenue forgone of more than 4.2 per cent of their respective tax revenue in those years. On average, the 25 countries report revenue forgone amounting to 0.1 per cent of GDP and 0.6 per cent of tax revenue. EU member countries report slightly more (0.2 per cent and 0.8 per cent).

Apart from the policy objectives discussed above, the GTED collects data on TEs granted in the context of disaster relief and to support specific subgroups or regions. We expect figures on disaster relief to grow in the coming years, as more and more governments will report the TEs they grant in response to the COVID-19 pandemic. So far, however, only 44 of the 20,808 provisions contained in the GTED can be related to disaster relief and 788 to the support of specific subgroups of the population.

## 4.3 According to beneficiaries

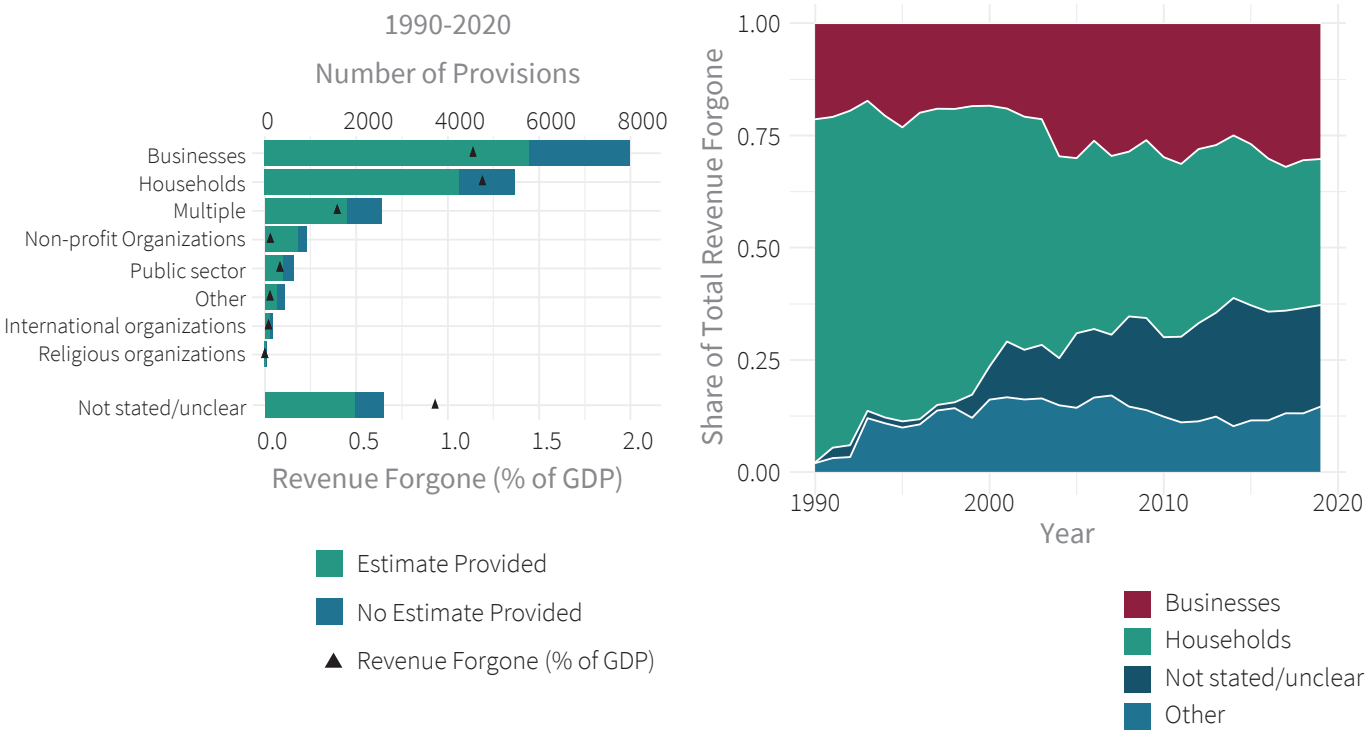
TEs differ widely with regard to their potential or actual beneficiaries. The GTED identifies six broad categories of beneficiaries (see above, Chapter 2), ranging from businesses and households to religious organisations and the public sector. While some TEs are highly specific, sometimes addressing individual companies or projects, others have a broad scope. Take for instance a reduced VAT rate for basic goods like food, medical drugs or books. All consumers of those goods benefit from such a reduced rate, independently of their income, social condition or residency.

In the best of worlds, each TE provision should come with information on the targeted beneficiaries their numbers, and revenue forgone estimates. In fact, 88 out of 97 jurisdictions with data in the GTED publish at least some information on beneficiaries of the TEs they apply. Of the 20,808 provisions currently registered in the GTED, 18,180 (87.3 per cent) specify their targeted beneficiaries. Of these, 13,405 provisions come with information on revenue forgone, which is 64.4 per cent of the total. In HICs, 93.3 per cent of all provisions contain information on beneficiaries. The share is lowest in LMICs, where only 76.3 per cent of provisions have this information.

As could be expected, private sector companies are the main addressees of TE provisions (38.4 per cent), followed by households (26.3 per cent, see Figure 4.10). Interestingly, however, a different picture emerges when looking at revenue forgone. As shown in Figure 4.10 (left panel), 5785 provisions benefitting businesses capture 29.8 per cent of all reported revenue forgone, while 4270 provisions benefitting households are responsible for 31.2 per cent of revenue forgone. It is also interesting to see that 12.7 per cent of all provisions do not state beneficiaries, but account for 24.3 per cent of all revenue forgone.

> *“The creation of this database by CEP and DIE is a perfect example of a Global Public Good, from CIAT our most sincere congratulations.”*
>
> **SANTIAGO DIAZ DE SARRALDE, CIAT**

## Figure 4.10. Number of Provisions and Revenue Forgone & Global Unweighted Evolution of Revenue Forgone by Beneficiaries



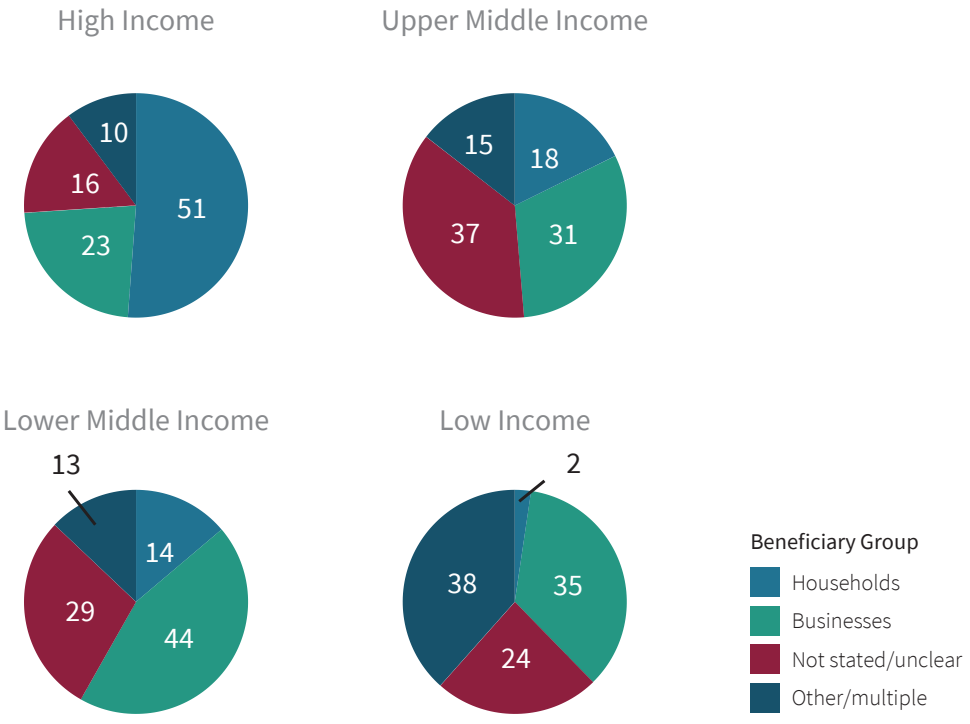

**Note:** Number of provisions are counted over the total time period. For revenue forgone estimates, we first calculated country averages across years and then the global average across countries.

**Source:** www.GTED.net

Over time, these figures have changed considerably. In the 1990s, with fewer (and richer) countries reporting, households captured more than two thirds of all reported revenue forgone. In the most recent years with full coverage (2014-2018), this share has decreased to roughly one third of all revenue forgone. Businesses, which accounted for only ca. 20 per cent in the 1990 saw their share rise to more than 30 per cent in the most recent years. Since the 2000s, a growing share of TEs is granted without clear information on beneficiaries. This does not include TEs with multiple beneficiaries, which figure under "Other" in Figure 4.10 (right panel). Hence, we observe a decreasing quality of TE reporting over time when looking at beneficiaries.

Regarding country income groups, we observe that HICs in particular use TEs to benefit households, which account for more than a half of all revenue forgone in this group. In contrast, all other country income groups focus much less on households. In these groups, the share of TEs for businesses is larger. In LMICs, they capture 44 per cent of all revenue forgone, and 35 per cent in LICs. This observation is additional evidence for the point made above: High-income countries are more likely to use TEs in the context of social welfare policies, whereas poorer countries focus more on promoting growth and attracting investment through TEs. It is also noteworthy that the share of TEs without clear information on beneficiaries is considerably larger in all other country income groups, compared to high-income countries, reaching 37 per cent in UMICs.

## Figure 4.11. Per Cent of Total Revenue Forgone by Beneficiaries and Country Income Group - (1990-2020)

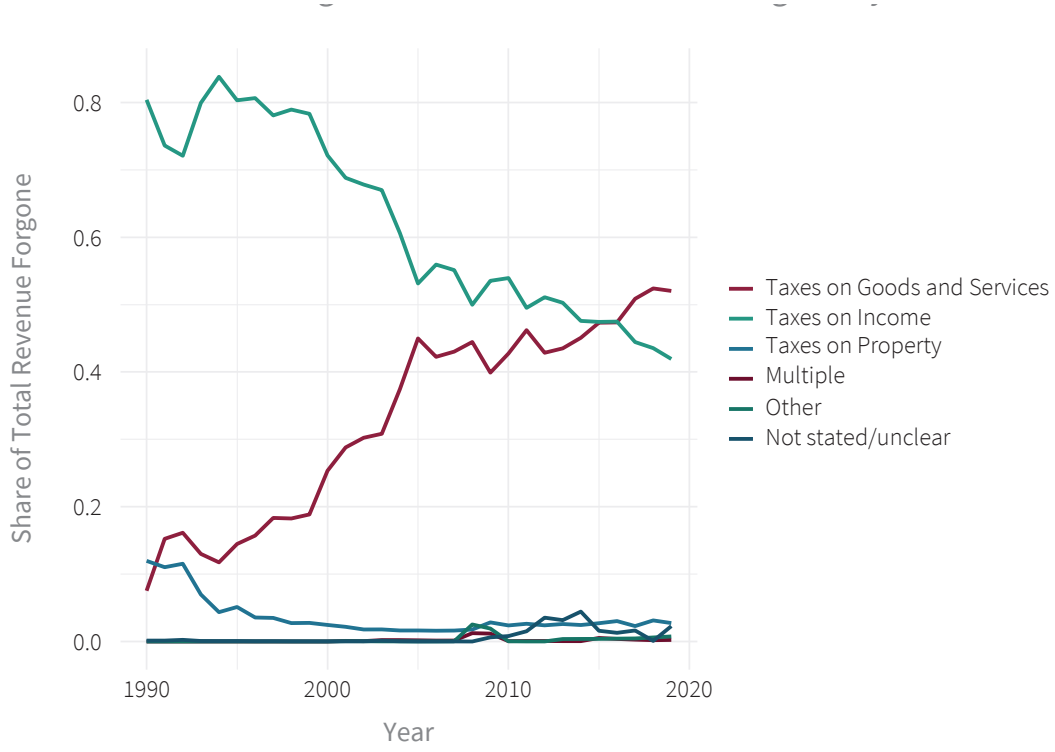



**Source:** www.GTED.net

## 4.4 According to tax base

Information on the tax base upon which a TE is granted is indispensable for any serious attempt to discuss the sense or senselessness of individual measures. In fact, this information is provided in a vast majority of cases. The GTED relates 20,540 out of 20,808 provisions to their tax base (98,7 per cent). It distinguishes more than 20 different kinds of taxes that can be subject to TEs, in three broad categories: taxes on income, goods and services, and property (see above, Chapter 2). In terms of revenue forgone, time trends show an interesting pattern (Figure 4.12). In the 1990s, TEs on in-come taxes were responsible for 80 per cent or more of total revenue forgone, but their share declined consistently over the last two decades to well under 50 per cent of total reve-nue forgone in recent years. Taxes on goods and services, on the other hand, followed exactly the opposite trend, starting at under 20 per cent in the 1990s and passing 50 per cent in recent years. Finally, property taxes played a more prominent role in the first years of our observation period, taking more than 10 per cent of total revenue forgone at the beginning of the 90s, but quickly declined to levels of 2-3 per cent.

### Figure 4.12. Global Unweighted Evolution of Revenue Forgone by Tax Base




**Note:** Only provisions with a revenue forgone estimate are included.

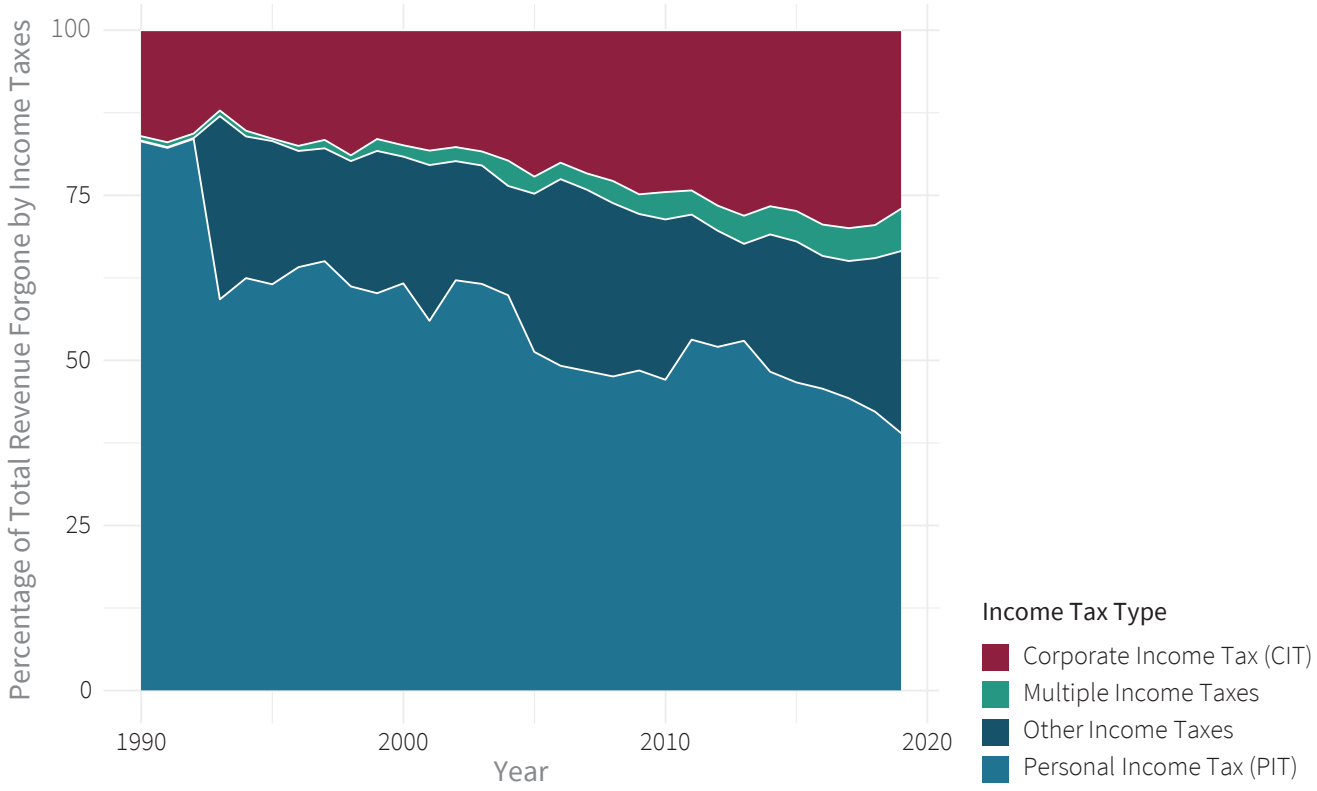
**Source:** www.GTED.net

Once again, growing numbers of reporting countries may partly explain this observation. In the first years, countries granting or reporting mainly income-related TEs dominated the picture. However, changing patterns of TE use also seem to be a relevant factor. First, TEs have been increasingly used for social and welfare policy purposes, as could be seen in Section 4.2 (see above, Figure 4.8). More and more countries reported using TEs on goods and services taxes and we observe a growing rel-evance of TEs motivated by increasing access to goods and services or to housing.

Second, the last 40 years have seen a worldwide decline of statutory CIT rates, while the CIT share of total tax revenue in the four country income groups has remained largely stable over the same period. "With the global declining trend in corporate income tax (CIT) rates, including in LICs, it might indeed be that the benefit for investors of receiving tax incentives has somewhat dimin-ished" (IMF et al., 2015, p. 8). This diminished benefit appears to be reflected in the declining share of income tax-related TEs.

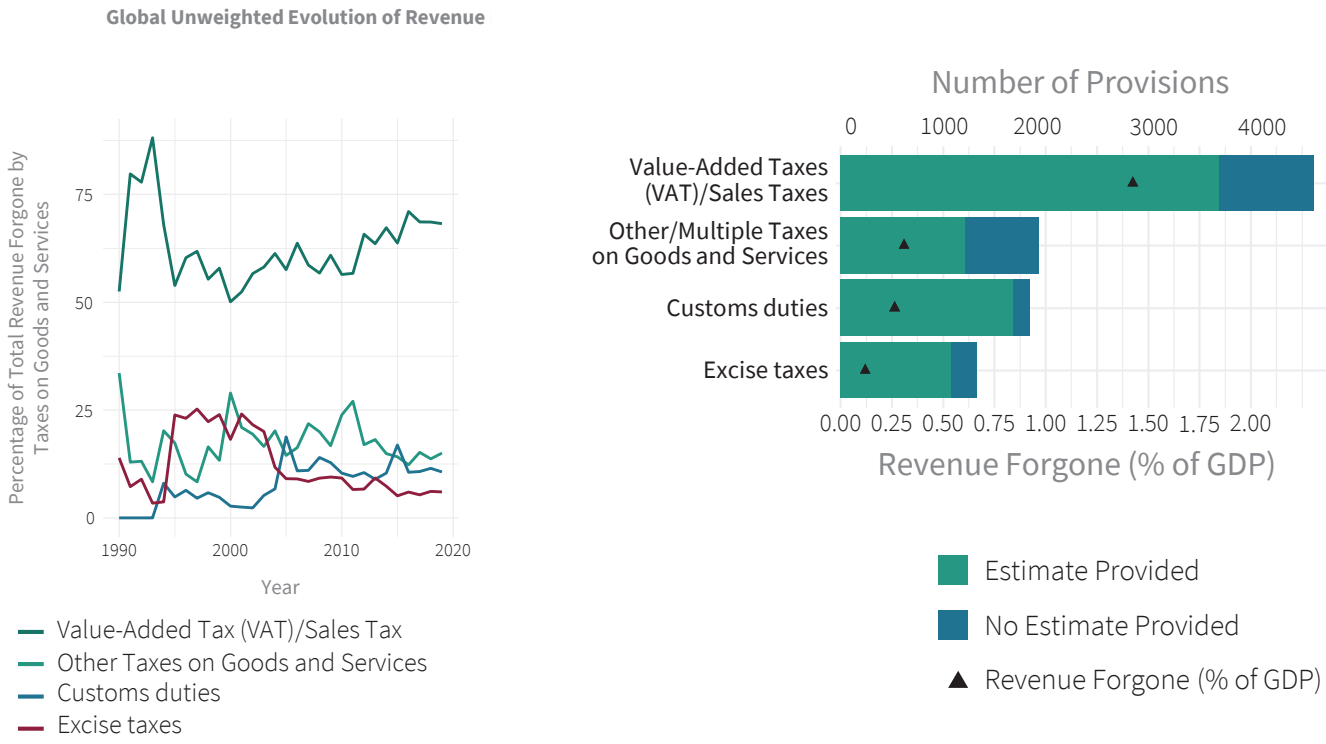
Zooming in on income taxes, the available data indicates that 28.6 per cent of revenue forgone reported in this category over the years 2014-2018 falls on CIT. TEs on personal income tax (PIT) account for 45.4 per cent. Other income taxes have emerged as a rele-vant category in the mid-1990s, mostly due to the category "payroll taxes", which has been includ-ed here. In addition, capital gains taxes play a certain role. Other income taxes have a share of 21.3 per cent of total income-related revenue forgone.

## Figure 4.13. Global Unweighted Evolution of Revenue Forgone by Income Tax Type




**Source:** www.GTED.net

## Figure 4.14. Global Unweighted Evolution of Revenue Forgone & Number of Provisions and Revenue Forgone by Taxes on Goods and Services (1990-2020)




**Note:** Only provision with a revenue forgone Estimate are included.

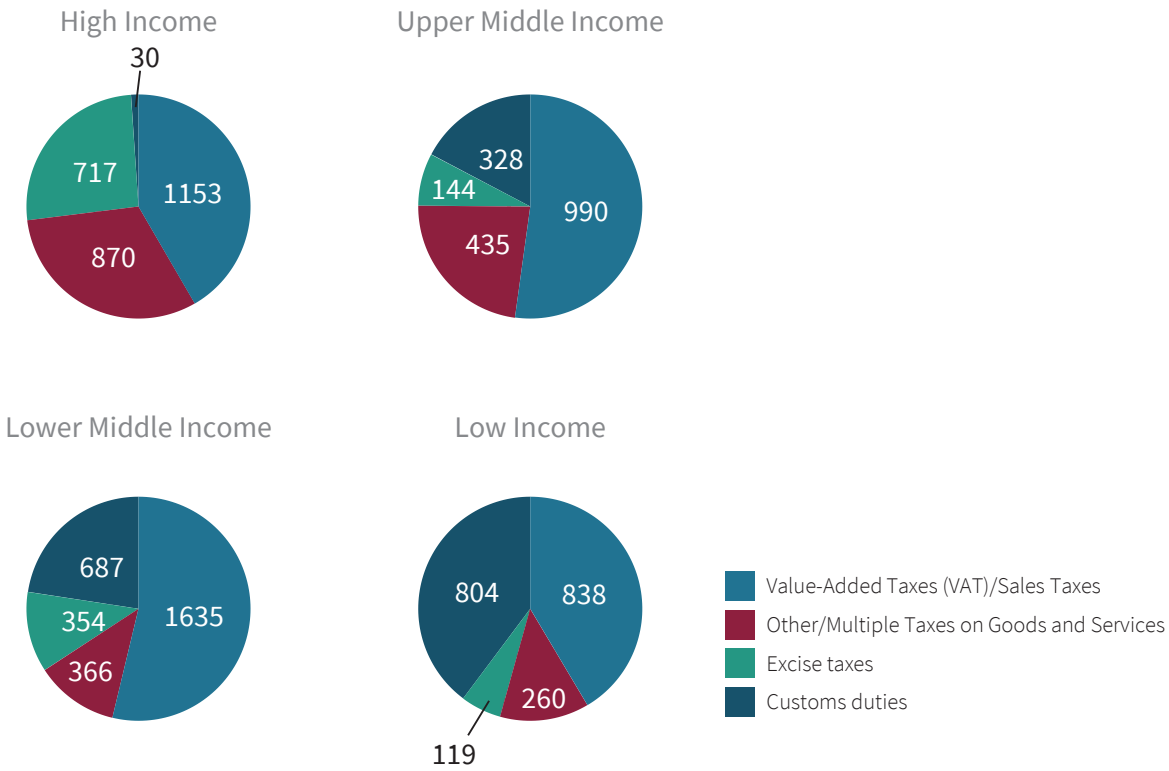
**Source:** www.GTED.net

Consumption taxes refer to a rather broad array of taxes that includes VAT and sales taxes, but also custom duties, excises and carbon taxes, among others. We find that TEs on VAT and sales taxes are by far the most relevant ones in this category, both in terms of number of provisions and revenue forgone. They account for two thirds (67.9 per cent) of total revenue forgone on consumption taxes in the years 2014-2018. Figure 4.14 (left panel) also reveals a growing share of customs duties over the years, due of a growing number of LICs and LMICs among the reporting countries. There share lies at 5.0 per cent of total consumption-related revenue forgone in the years 1994-2004, but rises to 12.0 per cent in the period 2005-2018.

All in all, TEs on consumption taxes are responsible for an average 2.1 per cent of GDP of revenue forgone (Figure 4.14 right panel). However, non-reporting of revenue forgone is a relevant issue in this group sector. 19.9 per cent of TEs on VAT and sales taxes, and even 37.0 per cent of TEs on other and mul-tiple goods and services taxes come without estimates of revenue forgone. In contrast, custom duties, which are much easier to monitor, have revenue forgone estimates in more than 90 per cent of all cases.

Some specific patterns emerge when looking at country income groups. As mentioned above, cus-toms duties register a larger share of revenue forgone after 2005, compared to the years before. This has been related to a changing composition of reporting countries with regard to income groups. Figure 4.15 shows that the number of provisions granted on customs duties rises from 30 in HICs to 328 in UMICs, 687 in LMICs and 804 in LICs. In contrast, TEs on excise taxes play a much big-ger role in HICs compared to the other country income groups. Of the 717 provisions registered here, 240 refer to fuel taxes alone.

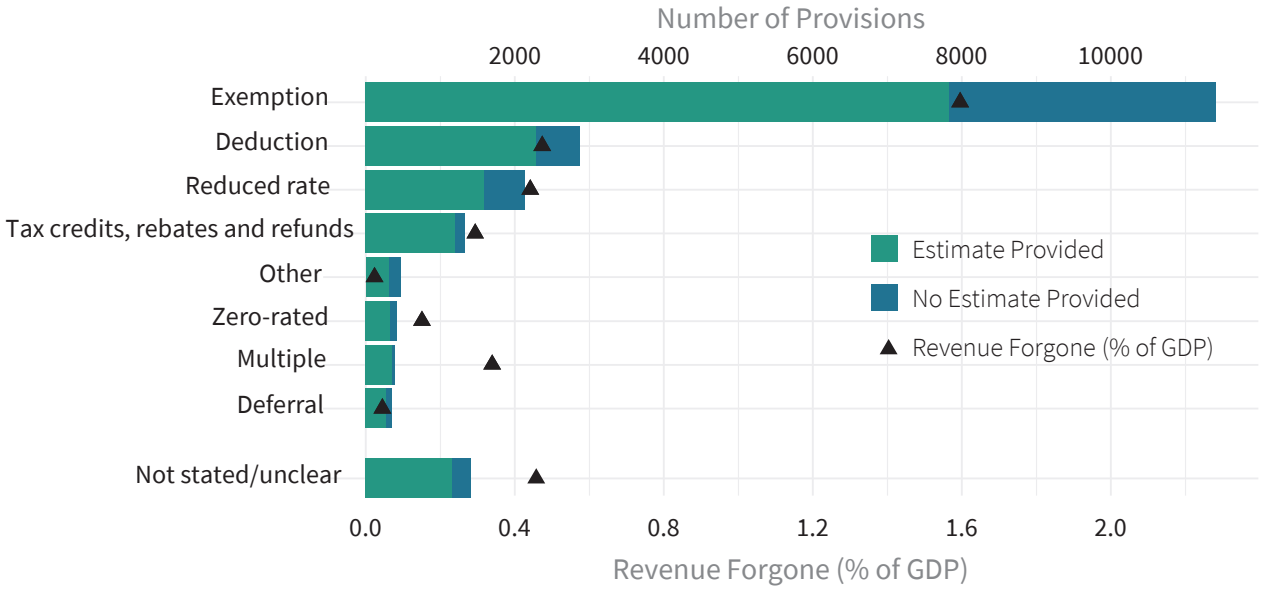
## Figure 4.15. Number of Provisions according to Taxes on Goods and Services by Country Income Groups (1990-2020)




**Source:** www.GTED.net

Finally, taxes on property cover land and real estate taxes, but also vehicle taxes. Only 38 out of 97 countries with data in the GTED publish information on property tax-related TEs. A majority of these countries (24) are OECD members, while only one LIC (Burkina Faso) provides any infor-mation on this category. TEs referring to this category are substantial in a few countries. Measured against tax revenue, Japan sticks out, spending 12.4 per cent of its tax revenue on property-related TEs. This equals 1.3 per cent of the country's GDP. The other two countries that spend more than 1 per cent of GDP on property-related TEs are Greece (1.6 per cent) and Uruguay (1.0 per cent). The average revenue forgone for all 38 countries reporting on this category amounts to 0.2 per cent of GDP, or 1.3 per cent of tax revenue.

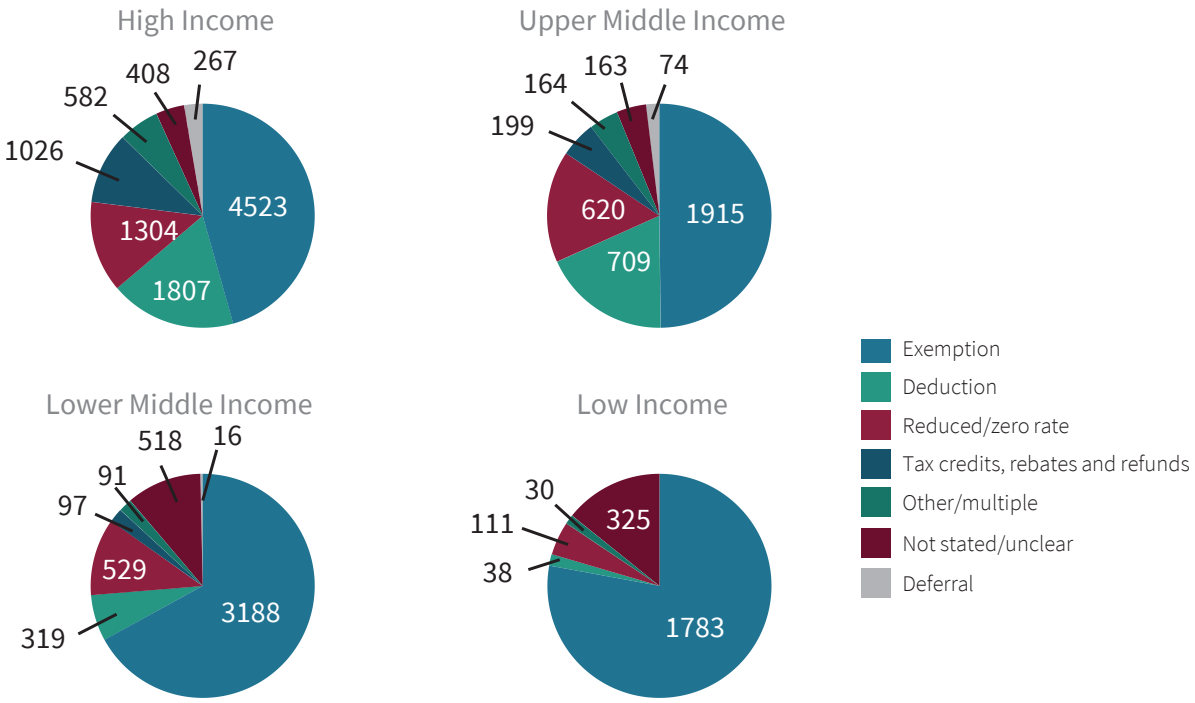
## Figure 4.16. Number of Provisions and Revenue Forgone by Tax Expenditure Type (1990-2020)




**Note:** Number of provisions are counted over the total time period. For revenue forgone estimates, we first calculated country averages across years and then the global average across countries.

**Source:** www.GTED.net

**Figure 4.17. Number of Provisions by Tax Expenditure Type and Country Income Group (1990-2020)**




**Source:** www.GTED.net

## 4.5 According to type of TE

As an additional feature, the GTED contains information on the type of TE used, distinguishing six types (see above, Table 2.1). Of the 20,808 provisions in the GTED, a total of 19407 contains infor-mation on the type of TE used (93.2 per cent). In fact, only 19 countries publish this information on less than 75 per cent of the provisions contained in their reports, and only four countries (Mali, Iceland, Côte d'Ivoire and Equatorial Guinea) do not provide this information on any of the provi-sions they report.

From the information it can be deduced that more than half of all TEs (54.8 per cent) are tax ex-emptions (Figure 4.16). Tax deductions are the second most frequent type of TEs (13.8 per cent). In terms of revenue forgone, a slightly different picture emerges: Exemptions are still by far the most relevant type of TEs, but their share in overall revenue forgone is 41.7 per cent. In contrast, TEs where the type is not given or unclear account for 6.8 per cent of all provisions, but 12.0 per cent of revenue forgone. Similarly, the 1.8 per cent provisions with multiple types of TEs account for 8.9 per cent of revenue forgone.

## 4.6 Summary

This chapter has presented a series of stylized facts

on TEs and TE reporting at a worldwide scale. It has done so by looking at the different categories used in the GTED. In general terms, the evidence provided here supports the view that worldwide TE reporting is still far from satisfying. However, the available data does reveal the relevance of the issue: In recent years, governments have forgone more than 4 per cent of GDP and 25 per cent or more of their ordinary tax revenue, on average. The reported revenue forgone amounts to more than 3.5 trillion USD per year. Given the deficient state of TE reporting, it is very likely that real figures are considerably higher.

It is certainly true that these numbers, though impressive, do not indicate an equally high loss of public revenue. In many cases, TEs may have a positive impact on investments and growth, help people to find employment, or replace direct social and welfare spending that would have taken place anyway. In most cases, much more transparency will be required to arrive at evidence-based judgements about the effective-ness and efficiency of individual measures – let alone informed analyses of national TE systems and their embeddedness in the respective public revenue and expenditure systems.

It is against this backdrop that the GTED prepares the ground for more in-depth analyses. For instance, second-level categories for tax base and policy objectives allow for a more focused explo-ration of specific aspects of TE use. Also, there may be patterns of TEs associated with specific sets of countries, such as for instance natural resource-dependent countries or countries emerging from violent conflict. Research on tax competition between neighbouring countries may produce new insights if their respective TEs are taken into account. Also, the overview presented in this chapter does not explore interrelations between categories to identify more complex patterns of TE use. To give an example, cross-tabulation of beneficiaries and type of TE could reveal that businesses and private households benefit from different types of TE.

Beyond descriptive statistics, inferential statistics may come into play when more complex research questions are addressed, combining GTED statistics with other data sources. For example, it might be relevant to know if TE reporting or the use of TEs differ according to political regime type. We would assume that more democratic governments report more, but do they also use TEs dif-ferently than non-democratic governments? Also, are both TE use and TE reporting associated with levels of corruption? Does the level of digitalisation in the public sector (e-government) affect the use of TEs? In which way are patterns of world market integration or domestic business structures associated with specific patterns of TEs? While the comparative (cross-sectional) use of revenue forgone figures is restricted due to the reasons mentioned above, time series of individual countries may lend themselves to quantitative research because they allow to control for many confounding factors.

The following two chapters deepen the analysis presented in the preceding sections in two ways. Chapter 5 deals with the relationship of specific aspects of TE reporting (for instance, the quality of reports) and the requirements of domestic revenue mobilisation (DRM) in developing countries. Chapter 6 zooms in on the use of the so-called “patent box” tax incentives for research and devel-opment (R&D), a widely debated issue in the context of the international fight against tax avoidance.

# 5 TAX EXPENDITURES & DOMESTIC REVENUE MOBILISATION IN DEVELOPING COUNTRIES[21]

The IMF estimates that LICs need, on average, an additional 15 per cent of GDP to finance the Sustainable Development Goals (SDGs) in five key areas including health, education and electricity by 2030. Of this amount, 5 per cent points of GDP should come from domestic taxes (Gaspar et al., 2019).[22] Domestic tax revenues are more stable and predictable than resources generated through other sources such as borrowing and foreign aid. Moreover, domestic tax revenues can strengthen the social contract between citizens and governments, and promote government ownership of spending financed through these revenues.

Many LICs have tax-to-GDP ratios below 13 per cent, which has been identified as the minimum level required to achieve a significant acceleration in growth and development (Gaspar et al., 2016). The COVID-19 pandemic will impact tax bases and tax collection for several years, thereby making it tougher for LICs to raise revenues in the coming years. At the same time, these countries will also need to implement measures to restore fiscal balances in the aftermath of the COVID-19 pandemic, reflected in rising debt-to-GDP ratios. Fiscal consolidation measures would have to take into account distributional effects of tax and spending measures to ensure their social acceptance by the population. The recent events in Colombia illustrate this point vividly.[23]

At this juncture, TE reform provides an efficient and equitable avenue for generating additional revenues while enhancing budget transparency. As shown in previous chapters, governments forgo significant amounts of revenue through the provision of TE. At the same time, the effectiveness of TEs in achieving their stated goals (e.g. boosting economic growth, attracting investment or tackling poverty) is often in doubt.

This chapter zooms in on the need for TE reforms in LICs and LMICs. The following section provides an overview of revenue trends in these countries. Section 5.2 explores options to increase revenues through TE reforms. Section 5.3 presents insights on this topic as drawn from the analysis carried out by GTED. Section 5.4 summarises the findings.

## 5.1 Tax Revenue and Domestic Revenue Mobilisation

Since 1990, the tax-to-GDP ratio has increased by about 4 percentage points on average in both LICs and LMICs (Figure 5.1). Yet, even sustaining this increase over the next decade would not be sufficient to meet the spending needs of these countries. Indeed, even before the irruption of the COVID-19 pandemic, large parts of the world were not on track to achieve the Sustainable Development Goals by 2030 and the Paris Agreement (UNESCO, 2021). The COVID-19 pandemic has had an unprecedented economic impact, with

[21] The authors of this chapter are (in alphabetical order) Flurim Aliu, Sanjeev Gupta, Christian von Haldenwang, Nara Monkam, Pia Rattenhuber and Agustin Redonda.

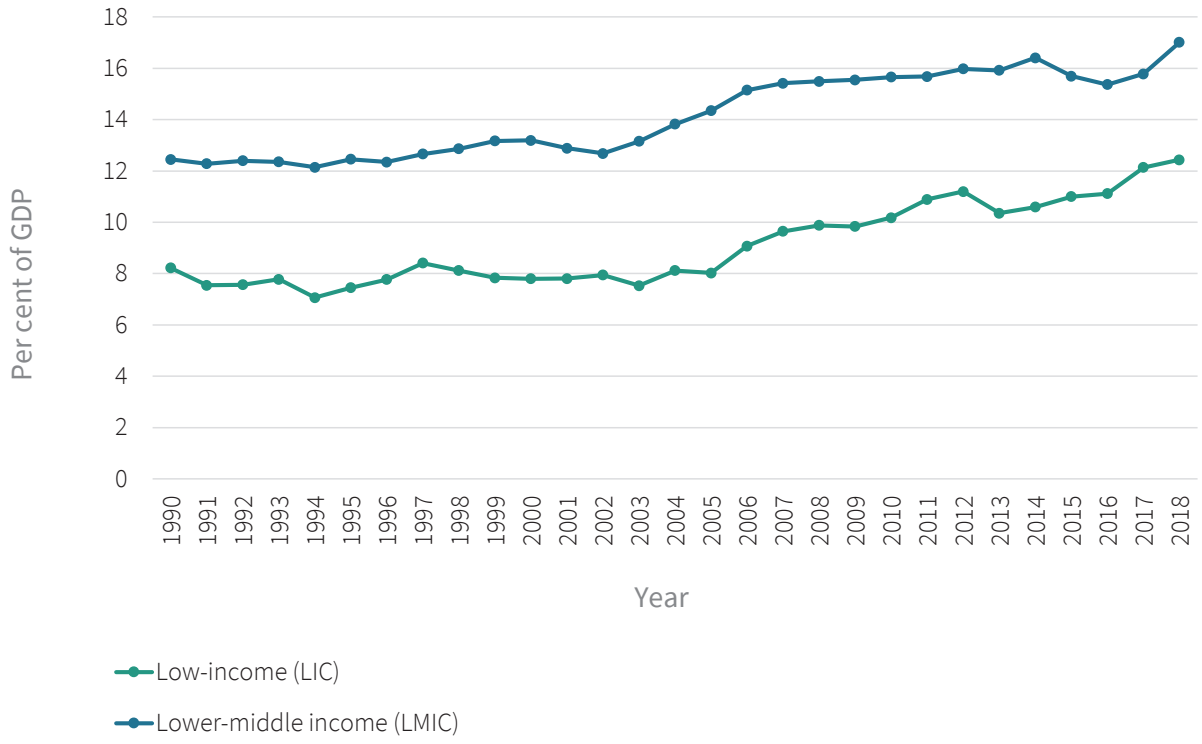
[22] Recent IMF estimates suggest that the COVID-19 pandemic has increased spending needs to achieve the SDGs by an average of 2.5 percent of GDP (Benedek et al., 2021).

[23] See https://www.economist.com/the-americas/2021/05/06/protests-in-colombia-derail-an-important-tax-reform, accessed 07.05.2021.

developing countries being particularly affected. The need for resources has significantly increased among these economies, as governments face the challenge to provide income support and liquidity to individuals and businesses, while collecting the required revenue to finance spending programmes. While governments worldwide experience rising debt levels and widening budget deficits, the revenue position of developing countries seems to worsen more than that of advanced economies (Gupta & Jalles, 2021). This outcome has important implications for countries with relatively low tax-to-GDP ratios, particularly in those cases where revenue levels are lower than the above-mentioned minimum required to trigger a significant acceleration in growth and development (Gaspar et al., 2016).

Before the COVID-19 pandemic, many LICs and MICs were in the process of building up their social protection systems along the lines of the SDGs (OECD, 2019). In many countries, social protection (pilot) schemes have been rolled out, often co-funded by donors. For a sustainable medium to long-term perspective, including national ownership over a country's social protection strategy, it is crucial to mobilise domestic revenues to cover social protection with own resources. While DRM is not an end to itself, it can become a powerful catalyst for reform. Any meaningful DRM strategy should include the reform of tax systems. A recent study by Gupta and Jalles (2021) found that past pandemics have pushed countries to implement tax reforms, including in the area of corporate income taxes. Tax expenditure reform, although somehow neglected, provides further opportunities to increase DRM.[24]

## Figure 5.1. Tax Revenue (per cent of GDP), 1990-2018 (LICs and LMICs)




**Source:** UNU-WIDER (2020)

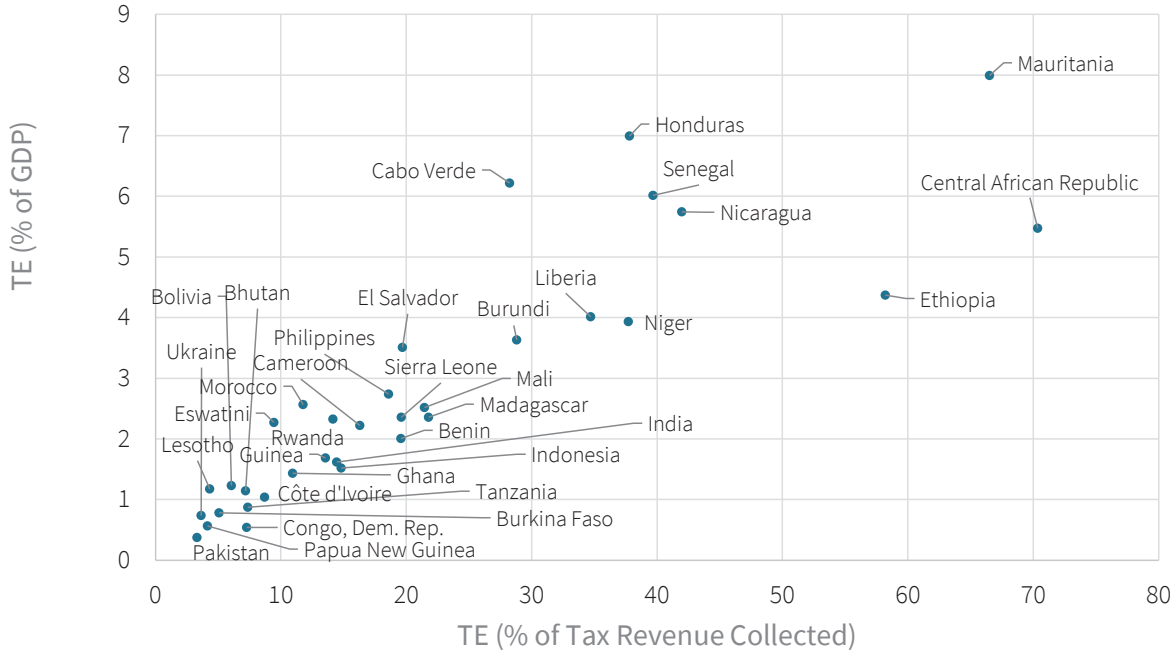
[24] See Moore et al. (2018) for an overview of the complex, interrelated factors governing taxation in Africa.

## 5.2 The potential to increase tax revenue collection through TE reform

Reforming TE systems holds significant potential as a revenue source for the currently 79 LICs and LMICs. The average fiscal cost of TEs (i.e., revenue forgone) for these countries is estimated at around 2.8 per cent of GDP (see above, Figure 4.6), but the TE/GDP ratio varies significantly across countries, ranging from 0.5 per cent or less in DR Congo, Pakistan and Papua New Guinea to more than 6 per cent in Cabo Verde and Senegal, 7 per cent in Honduras, 8 per cent in Mauritania and even 11 per cent in Jordan. In a similar vein, the average TE/Tax revenue ratio lies around 22.8 per cent and ranges from roughly 4 per cent in Pakistan, Ukraine and Papua New Guinea to 66 per cent in Mauritania and Ethiopia, and more than 70 per cent in Central African Republic and Jordan.

Tax revenues are one of the key sources of government spending on education, infrastructure and innovation. Hence, as expected, there is a positive correlation between the TE/GDP and TE/Tax revenue ratios (Figure 5.2). Yet, some countries such as Ethiopia, Liberia and Niger have relatively large TE/Tax revenue ratios with TE/GDP ratios slightly above the sample average. This indicates that these countries collect less tax revenue than the average.

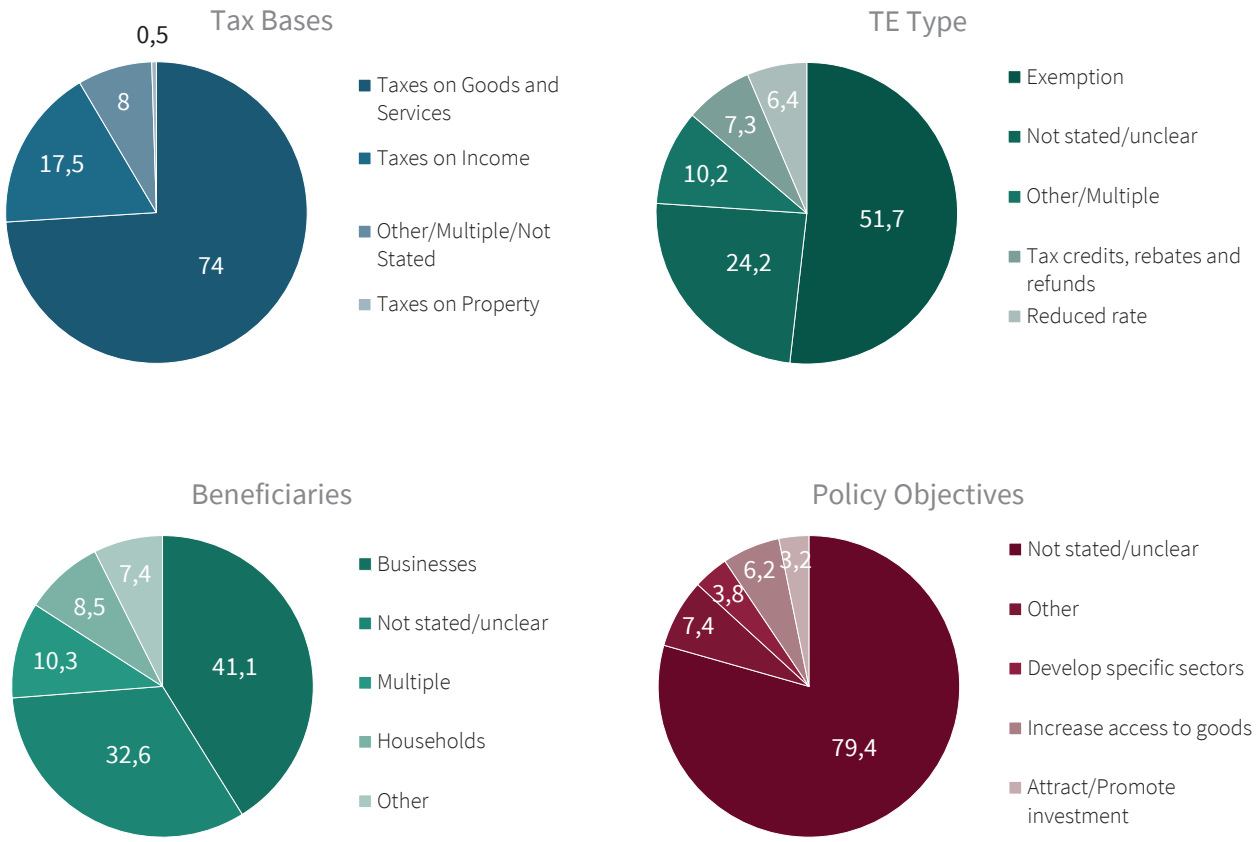
### Figure 5.2. Tax Expenditure (per cent of GDP and per cent of Tax Revenue), Latest Available Year




**Source:** www.GTED.net

Despite their fiscal cost, TEs are used widely and can be a valid policy instrument to pursue different objectives such as attracting investment, boosting innovation or greening the economy. As could already be seen in Chapter 4 of this report, LICs and LMICs rely on TEs as well. Unfortunately, as shown in Figure 5.3 (Panel A), the information regarding policy objectives is clearly deficient in this group of countries. On average, only 15 per cent of revenue forgone comes from provisions with a clear definition or description of the policy objectives they are supposed to serve. When it comes to beneficiaries, more than 40 per cent of total revenue forgone is explained by TE provisions for business, and households capture less than 10 per cent, on average (Panel B). Finally, most governments opt for tax exemptions as the main vehicle for TE (Panel C) and, as shown in Panel D, TEs in LICs and LMICs are present across the entire tax system, with 3/4 of the revenue forgone stemming from taxes on goods and services, on average. This is unfortunate because taxes on goods and services hold most revenue potential in LICs and LMICs.

## Figure 5.3. Share of Tax Expenditure for LICs and LMICs, 1990-2018 Averages




**Source:** www.GTED.net

Besides the stated policy objectives, a crucial issue regards the effectiveness of TEs. If well designed, TE provisions can be effective in reaching their policy objectives. Yet, as often the case, the devil is in the detail, and some TE provisions can be strikingly ineffective or trigger negative externalities or side effects. The use of tax incentives to attract investment is a case in point. LICs and LMICs often grant tax holidays and tax exemptions that have little impact on investment or growth, but significantly reduce the availability of public funds for public services and infrastructure (IMF et al., 2015). James (2013) shows that redundancy ratios (the share of projects that would have taken place even if no incentives were implemented) are often strikingly high, e.g. above 90 per cent in Guinea, Rwanda, Tanzania and Uganda. Kronfol and Steenbergen (2020) found that in 109 countries (72 developing countries and 37 high-income) a 10-percentage point increase in CIT incentives led to a decrease in CIT revenues of 0.35 per cent of GDP during 2009-2015.

Still, TEs are not bad per se. Under certain conditions, they can be more cost-effective than direct spending and may hence be the best option to implement a specific public policy. As discussed by Toder (2000), TEs are usually – though not always – preferred to direct spending when eligibility conditions are directly linked to tax return data, when it is more important to maximise the number of beneficiaries than to minimise excess claims or when the policy objective is to incentivise a clear and broadly defined activity by reducing its net price. Yet, even when TEs are preferred, they are likely to suffer from a lack of transparency. Other measures might provide an equal amount of targeted relief in a timely way, without adding complexity to the tax system, and thus contributing to reducing administrative delivery costs (Driessen, 2019).

A case in point are tax exemptions granted for bilateral aid. We would expect TEs for international organisations and donors to play a relevant role in LICs and LMICs. These countries depend more on international capital inflows and aid. At the same time, tax exemptions for official development assistance (ODA) are widespread. A study by Caldeira et al. (2019) estimates that exemptions for project aid could be as high as 3 per cent of GDP in low-income African countries. However, only 17 LICs and LMICs report revenue forgone data on TEs that benefit international organisations or bilateral development cooperation.[25] On average, these countries forgo 0.17 per cent of GDP granting this kind of TEs. Only three countries – Central African Republic, Sierra Leone and Senegal – report substantial revenue forgone (ca. 0.5 per cent of GDP or more) stemming from TEs for international organisations and donors, but only in the Central African Republic (1.1 per cent) numbers surpass 1 per cent of GDP, and they only refer to UN organisations. While no country comes close to the estimates presented by Caldeira et al. (2019), we consider this an issue explained by underreporting rather than evidence against the analytical approach developed by the authors.

Finally, providing support to households through the tax system might be particularly problematic in contexts of high informality and inequality as in many developing economies. In South Africa, for instance, 83 per cent of the tax benefits seeking to boost pension savings (one of the largest TEs in the country) are captured by the top 20 per cent earners in the income distribution, with individuals in the bottom 4 income deciles not benefitting at all, since the tax-free threshold lies above the income of the bottom 40 per cent individuals (Redonda & Axelson, 2021). In addition, 34 per cent of South Africa's workers are employed in the informal sector and cannot be reached by any policy implemented through TEs on income taxes.

To sum up, reforming tax systems by scaling back ineffective TEs has the potential of increasing tax

[25] It should be noted that this category covers other issues beyond development cooperation as well, such as for instance tax exemptions granted to international organisations or diplomatic missions under the Vienna Conven-tion on Diplomatic Relations.

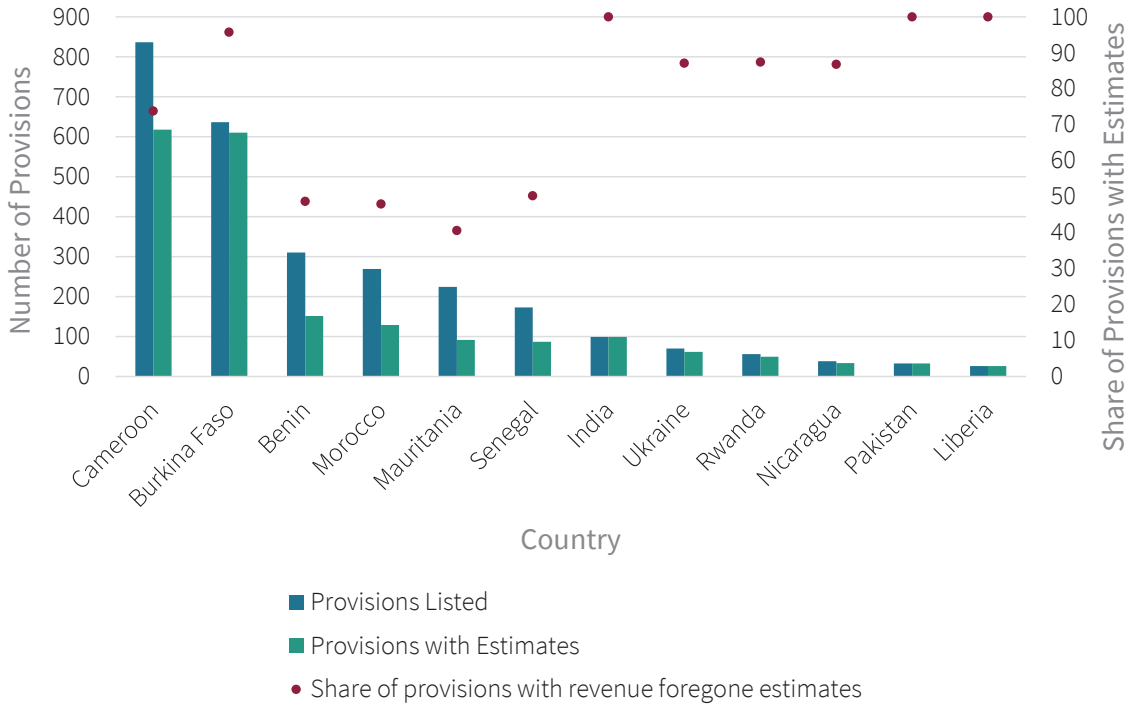
revenues, and at the same time enhancing the efficiency and equity of the system. A necessary (though not sufficient) condition for sound TE reform is the availability of reliable and comprehensive TE data, which is currently lacking because of poor TE reporting worldwide, particularly in LICs and LMICs.

## 5.3 A Striking Lack of Transparency

Whereas 26 out of the 79 LICs and LMICs publish some type of disaggregated TE data (somewhat disaggregated, very disaggregated or provision-level), 8 countries only provide aggregated estimates (e.g. by tax base or policy goal) or overall figures, and 45 do not report on TEs at all.

Even among countries that do report on TEs, the quality and scope of those reports is mixed. As a result, the figures provided in this chapter should be interpreted as lower bound estimates, since revenue forgone is often significantly understated and does not reflect the real magnitude of the issue. The gap between the number of listed provisions in TE reports and those for which estimates of revenue loss are provided can be large. For instance, in Benin, Mauritania and Senegal less than 60 per cent of the listed provisions are published with an estimate of their fiscal cost (Figure 5.4).

### Figure 5.4. Share of provisions with revenue forgone estimates




**Note:** Countries with provision-level or very disaggregated data

**Source:** www.GTED.net

Obviously, a larger ratio of estimated to listed provisions does not necessarily mean that the report is comprehensive and accurate, as it is difficult to gauge the share of provisions included in the report (estimated or not) with respect to the number of TEs effectively implemented by the government. But it is certainly a step in the right direction if all provisions contained in TE reports come with estimates of the revenue forgone they entail.

## 5.4 Summary

DRM is an increasingly critical element to finance the SDGs, and the mobilisation of domestic tax revenues is particularly relevant. Yet, options for increasing tax rates and broadening tax bases are often limited for developing economies that have restricted fiscal space, including many that are already heavily indebted. Reforming TEs constitutes a viable option to increase tax-to-GDP ratios by improving transparency and accountability and, at the same time, enhancing the effectiveness and fairness of tax systems. Indeed, moving in this direction, would provide much-needed resources for productive spending to promote growth and lower poverty.

To successfully implement evidence-based TE reforms, two steps are crucial. Reporting of TE data and the estimation of their costs is one, while the assessment of the effectiveness of TE provisions is the other. Without such transparency, TEs are even more prone to abuse. Pressure groups and economic elites often lobby heavily to influence TE governance and design in order to capture specific benefits (IMF et al., 2015).

Against this context, the role of international actors can be particularly relevant. They should encourage partner countries to estimate and regularly report on TEs while rationalising the use and design of TE provisions. International organisations (IOs), regional tax organisations and donors should increase technical and financial assistance for developing countries seeking to engage in TE reform. A country‘s technical assistance program should include strengthening local capacity in preparing TE estimates and analyses. To give credibility to such estimates, international actors should propose a robust framework for estimating TEs and preventing governments from underreporting them.

At the same time, G20 member states should also be mindful of their own TE reform agenda. TEs provided by the industrialised countries can have serious repercussions on investment flows and tax revenues in developing countries. The use of patent boxes, discussed below in Chapter 6 of this report may serve as an example. Acting on their own TE regimes would not only contribute to easing budget constraints among G20 economies, where debt-to-GDP ratios have risen as much as 16 percent of GDP on average in 2020 as a result of pandemic responses. It would also be seen as leading by example in a broader international context. Finally, and just as importantly, donor countries should stop requiring specific tax exemptions on projects funded by them in partner countries (Steel et al., 2018).

The impact of the pandemic makes the need of additional resources more urgent. This suggests that policymakers, particularly in developing economies, need to reconsider their revenue-raising strategies in favour of an approach that embraces a comprehensive reform package, including reform of TEs that have encountered political resistance and opposition in the past. The post COVID-19 period presents an opportunity to LICs and LMICs to implement sound TE reforms to raise more revenues and, at the same time, improve the efficiency and equity of their tax systems.

# 6 PATENT BOX INCENTIVES IN THE GTED[26]

Cross country comparisons of TEs are difficult given the variety of different countries' tax rules and the countries' varying publication of available data. One of the best means of testing a new database, such as the Global Tax Expenditure Database (GTED), is using it to examine several specific analyses.

This chapter uses the GTED to provide additional empirical analysis of the so-called "patent box" tax incentives for research and development (R&D) that provide lower tax rates on the income of certain activities associated with R&D, patents, innovation, and inventions. Unlike most R&D tax incentives which reduce the cost of R&D expenditures through tax credits or accelerated tax depreciation, patent boxes reduce the marginal tax rate on profits of successful innovations.

The first patent box or intellectual property (IP) scheme was introduced by France in 1971. More recently, other countries (mainly but not only EU member states) have introduced patent box-type tax benefits. Overall, 20 OECD and G20 countries currently have preferential IP tax regimes.

Patent boxes are potentially a significant incentive for R&D investment as well as an incentive for the choice of location of patents and possibly the underlying R&D. Multinational corporations can easily shift patents and intangible income to lower tax rate countries, so patent boxes are a potential source of harmful tax competition. Several empirical analyses found that patent boxes attracted additional patent registrations, but not necessarily any significant incremental R&D investments (Haufler & Schindler, 2020). In 2015, the G20 / OECD Base Erosion and Profit Shifting (BEPS) project required patent boxes to have real economic substance ("nexus") in the country to reduce profit-shifting (OECD, 2015).

The OECD is planning a future analysis of the effects of patent boxes on the marginal incentive for R&D investment. Although marginal effective tax rate (METR) analysis of hypothetical investments is an important analytical tool, METRs do not provide information about the scope, breadth, and take-up rate of the tax incentives. The revenue forgone from TEs, however, provides a quantitative measure of the aggregate magnitude of the incentive.

This chapter describes patent boxes, their relationship to other R&D incentives, the case of Ireland's Knowledge Development Box and its beneficiaries, and the use of the GTED as a tool to analyse patent boxes and other R&D tax incentives.

## 6.1 Overview of R&D Tax Expenditures

Governments provide significant support for private sector R&D through both direct grants as well as tax incentives. The most common tax incentives have been R&D tax credits, which reduce the cost of R&D expenditures. The tax credits are available to all companies making eligible R&D investments, although non-refundable tax credits only assist companies making a profit and having tax liability against which the tax credit can be used.

Some countries provide accelerated depreciation of R&D investments in lieu of or in addition to tax credits. The most common acceleration allows companies to immediately deduct 100 per cent of the R&D investment, rather than amortizing the investment

[26] This chapter was written by Tom Neubig. The author would like to thank Agustin Redonda, Christian von Haldenwang, Dina El Halaby, and Flurim Aliu for their invaluable assistance in analysing the GTED database and for their helpful comments on the article.

over its expected useful life. The United States as part of the 2017 Tax Cuts and Jobs Act will require R&D investments in the U.S. to be amortized over five years, rather than "expensed", starting in 2022, as part of a trade-off between a lower corporate tax rate and base broadening. Expensing of R&D investments has been a TE in the U.S., although expensing is not treated as a TE by most other countries.

Accelerated depreciation is the equivalent of an interest-free loan from the government resulting from the higher deductions in early years and lower deductions in later years. For companies that are growing, the acceleration results in a permanent deferral of taxable income. For companies that are not growing, the payback in later years can result in higher tax liabilities. Thus, the economic benefit of accelerated deductions is the time value of money, which, at current low interest rates, is often quite modest.[27]

Some countries provide deductions for more than 100 per cent of the R&D investment. Lithuania allows three times the actual R&D expenditures as a deduction. The excess deductions over the cost of the investment can be the equivalent of a tax credit. For example, a 1,000 investment in R&D would generate a 3,000 deduction in Lithuania. The extra 2,000 deduction times Lithuania's corporate marginal tax rate of 15 per cent would result in a tax saving of 300. That tax saving is the equivalent of a 30 per cent tax credit on the actual investment. Some countries may prefer excess deductions over tax credits to limit the incentive to taxable companies, to supplement existing R&D credits, and/or to make less transparent the government assistance.

## 6.2 Zooming in on Patent Box Tax Expenditures

Several countries had favourable tax treatment of the income from intangible property assets as early as the 1990s, with France and Ireland going back to the 1970s. However, more recently, additional countries began enacting "patent box" lower tax rates without any requirement for the intangible assets to be created in the country. This provided an incentive for multinational corporations to shift their income from intellectual property to low tax rate countries. To stop profit-shifting, the OECD/G20 BEPS project instituted a minimum requirement that no new entrants in any existing IP tax regimes would be permitted after 30 June 2016 unless the regime is consistent with a "nexus" approach, requiring substantial economic activity within the country.[25] The project requires benefits to existing participants in earlier regimes without nexus requirements to end no later than 30 June 2021.

The OECD's Forum on Harmful Tax Practices (FHTP) reviews countries' potential harmful tax practices. As of November 2020, 105 harmful tax practices, including several patent boxes, have been abolished, with another 14 in the process of being eliminated or amended. Thirteen countries have repealed (Colombia and Luxembourg) or amended their IP regimes to comply with the nexus requirement in the last few years while, at the same time, new patent box regimes have been implemented in compliance with the FHTP standard (OECD, 2020a).

Table 6.1 shows 20 OECD and G20 countries that have preferential IP tax regimes. IP regimes provide significantly lower marginal corporate income tax rates on eligible income compared to the tax rate that would apply otherwise. The lower rate is a special tax preference, and thus a TE.

[27] For timing issues, such as accelerated depreciation, the annual forgone revenue estimate can greatly overesti-mate or underestimate the true benefit of the timing provision. See Chapter 2 for a more detailed discussion of this aspect. For instance, the US Treasury has occasionally presented the net present value of US TEs, which compared to estimates based on cash-flow effects, gives a more realistic picture of the true economic costs of TEs. See https://home.treasury.gov/system/files/131/Tax-Expenditures-2021.pdf, accessed 29.04.2021.

[25] Nexus requirement described from OECD (2015).

## Table 6.1: Preferential Tax Regimes for Patents in OECD and G20 Countries, 2019

| Country | Regime Name | IP Qualifying Assets | Tax Rate Under Regime | Regular Tax rate |
|---|---|---|---|---|
| Belgium | Patent income deduction | Patents, Software | 4,44% | 29,58% |
| China | Reduced rate for high & new tech enterprises | Patents | 15,00% | 25,00% |
| France | Reduced rate for LT capital gains and profits from the licensing of IP rights | Patents, Category 3 | 10,00% | 34,43% |
| Greece | Tax patent incentives | Patents | 10,00% | 28,00% |
| Hungary | IP regime for royalties and capital gains | Patents, Software | 0.0% capital gains; 4.5% royalty income | 9,00% |
| India | Tax on income from patent | Patents | 10.30% to 11.85% | 30.91% to 35.54% |
| Ireland | Knowledge development box | Patents, Category 3 | 6,25% | 12,50% |
| Israel | Amended preferred enterprise regime | Patents, Software, Category 3 | 5.00%/ 8.00%/ 7.50%/ 16.00% | 23,00% |
| Israel | Preferred technological enterprise regime | Patents, Software, Category 3 | 6.00%/ 7.50%/ 12.00% | 23,00% |
| Italy | Taxation of income from intangible assets | Patents, Software | 12.00% + 1.95% IRAP | 24.00% + 3.90%IRAP |
| Korea | Special taxation for transfer, acquisition, etc. of technology | Patents, Category 3 | 5.0%/ 12.5% Transfer; 7.5%/ 18.75% Licence | 10.00% to 25.00% |
| Lithuania | IP regime | Patents, Software | 5,00% | 15,00% |
| Luxembourg | IP regime | Patents, Software | 4,99% | 24,94% |
| Netherlands | Innovation box | Patents, Software, Category 3 | 7,00% | 20.00% - 25.00% |
| Poland | IP Box | Patents, Software | 5,00% | 19,00% |
| Portugal | Partial exemption for income from patents and other industrial property rights | Patents | 10,50% | 21,00% |
| Slovak Republic | Patent-box | Patents, Software | 10,50% | 21,00% |
| Spain | Partial exemption for income from certain intangible assets | Patents, Software | 10,00% | 25,00% |
| Turkey | Technology development zones regime | Patents, Software, Category 3 | 0,00% | 22,00% |
| Turkey | 5/B regime | Patents | 11,00% | 22,00% |
| United Kingdom | Patent box | Patents | 10,00% | 19,00% |
| USA | Foreign derived intangible income (FDII) | Assets not restricted | 13,13% | 21,00% |

**Source:** OECD (2018)

As shown in Table 6.2, patent box TEs can take the form of reduced rates, deductions, or exemptions. In 2019, the total revenue forgone through the eleven patent box regimes included in the GTED amounted to over USD 14 billion, with annual forgone revenue exceeding USD 1 billion in Belgium, Netherlands, Turkey, the United Kingdom, and the United States.

The GTED includes over one-half of the patent boxes identified in OECD and G20 countries. Since the GTED only provides official TE data that is publicly available, the poor quality and reduced scope of many countries' TE reports is reflected in the lack of data made available through the database. As highlighted above, some countries do not report on TEs at all (e.g., China and Saudi Arabia), while other countries do not provide detailed individual tax provision level data, but report aggregated estimates (e.g., Portugal and South Africa). Finally, some other countries do provide quantitative estimates at the provision level, but only for a subset TEs. If the information related to the patent box is not included in the TE report, it cannot be included in the GTED.

## Table 6.2: Patent-box Type Tax Expenditures in the GTED, 2019

| Country | RF* | Type of TE | TE Name |
|---|---|---|---|
| Belgium** | 1.121 | Deduction | Deduction for patent income |
| France** | 420 | Reduced rate | LT capital gains from patent divestiturues and concessions |
| Ireland** | 10 | Reduced rate | Knowledge Development Box |
| Italy | 201 | Deduction | Patent Box |
| Lithuania | 2 | Reduced rate | 5% rate for taxable profits from the use, sale or other transfer of ownership of a copyrighted computer program or an invention that meets the patentability criteria |
| Netherlands | 1.795 | Reduced rate | Innovation box |
| Slovakia | 44 | Exemption | Tax relief for IP recipients |
| Spain | 136 | Deduction | Adjustments in the tax base, Income from certain intangible assets |
| Turkey | 1.336 | Reduced rate | Reduced corporate tax support |
| United Kingdom | 1.452 | Reduced rate | Patent box |
| USA | 7.530 | Deduction | Deduction for foreign-derived intangible income dervied from trade or business within the United States |
| Subtotal | 14.047 | | |

**Note:** * = Revenue Forgone (million USD); ** = Data from 2018;

**Source:** www.GTED.net

## 6.3 Patent boxes and other R&D Tax Incentives

The GTED also provides information about other R&D tax incentives, showing the relative importance of patent boxes compared with R&D tax credits and special R&D depreciation rules.

Table 6.3 shows the forgone revenue from patent boxes along with the forgone revenue from R&D tax credits and special R&D depreciation rules for the eleven countries with reported patent box TEs in the GTED. Forgone revenues from patent box TEs (USD 14 billion) are roughly half that from R&D tax credits (USD 29 billion). Patent box TEs are greater than those from special R&D deductions (USD 11.5 billion).

### Table 6.3: Patent Boxes as Per Cent of Total R&D Tax Expenditures, 2019

| Country | Patent Box (PB) | R&D Credit | Special R&D Deductions | Total | PB as per cent of total |
|---|---|---|---|---|---|
| Belgium* | 1.121 | 316 | | 1.437 | 78% |
| France* | 420 | 7.276 | | 7.696 | 5% |
| Ireland* | 11 | 419 | | 430 | 3% |
| Italy | 201 | 1.426 | | 1.627 | 12% |
| Lithuania | 2 | | 3 | 5 | 40% |
| Netherlands | 1.795 | 1.385 | 7 | 3.187 | 56% |
| Slovakia | 45 | | 13 | 58 | 78% |
| Spain | 136 | | 398 | 534 | 25% |
| Turkey | 1.336 | | 441 | 1.777 | 75% |
| United Kingdom | 1.452 | 3.697 | 4.621 | 9.770 | 15% |
| United States** | 7.530 | 14.370 | 6.020 | 27.920 | 27% |
| Subtotal | 14.049 | 28.889 | 11.503 | 54.441 | 26% |

**Note:** * = Data from 2018; ** = US corporate only;

**Source:** www.GTED.net

Overall, patent box forgone revenues account for roughly one-quarter of R&D corporate tax incentives. The patent boxes account for less than 5 per cent of their total R&D tax incentives in France and Ireland, but account for more than 50 per cent in the case of Belgium, Netherlands, Slovakia, and Turkey.

R&D TEs can take many forms and apply to different tax bases (e.g., corporate income, personal income, payroll, property, consumption, excise taxes, customs, etc.). The GTED captures all the R&D related TEs reported by their countries, although some countries (e.g., the United States) only report TEs from income taxes.

## Table 6.4: Selected Examples of Tax Expenditures for R&D and Innovation

| Country | Tax type | Tax benefit | Description of tax expenditure |
|---|---|---|---|
| Denmark | Personal Income Tax | Reduced rate | Reduced tax rate for foreign researchers and key employees (researcher tax scheme) |
| France | Personal Income Tax | Tax credits, rebates and refunds | Tax reduction for the underwriting of mutual fund units in innovation (FCPI) |
| Korea | Corporate Income Tax | Tax credits, rebates and refunds | 10% tax credits for technological innovation-oriented mergers |
| Belgium | Payroll tax | Exemption | Withholding tax on earned income, research workers employed by private companies having a PhD in applied science, exact science, etc. |
| Turkey | Value-Added Tax | Exemption | Exception concerning R&D, innovation, and software activities |
| Korea | Customs duties | Exemption | Exemption from customs duties on goods imported by enterprises that occupy Jeju Science Park |
| Italy | Excise taxes | Exemption | Exemption from excise duty for alcohol and alcoholic beverages used as samples for analysis, for necessary production tests or for scientific purposes |
| Russia | Land Value Tax | Exemption | Exemption from payment of land tax of organizations recognized as funds of an innovative scientific and technological center |
| Indonesia | Multiple Taxes on Goods and Services | Exemption | VAT and Luxury Goods Sales Tax not collected on imports of goods for purposes of scientific research and development |

**Source:** www.GTED.net

## 6.4 The Case of Ireland and Number of TE Beneficiaries

As discussed in Chapter 2 of this report, the GTED has additional information about TEs in addition to the revenue foregone. One example is the number of beneficiaries of the Irish R&D TEs. In 2019, there were 1,601 beneficiaries of the R&D tax credit. The average amount of credit per beneficiary was 391,000 euros. The Irish Knowledge Development Box surprisingly was claimed by only 14 corporations, but the average tax benefit was close to one million euros.

One might have expected a significant take-up of the 6.25 per cent Irish Knowledge Development Box given the attractive tax rate and the R&D undertaken in Ireland, so it is useful to know the magnitude and the take-up of the Irish TE. Favourable capital depreciation rules for intangibles reduce the net benefit of the Knowledge Development Box, reducing the net profit potential for the lower rate. A marginal tax rate analysis of the Irish R&D incentives for a hypothetical firm would show a favourable competitive picture, but its limited use suggests additional analysis is needed.

### Table 6.5: Ireland's R&D and Knowledge Box TE Revenue Loss and Beneficiaries, 2017-19

| Tax expenditure | Revenue Forgone (mil. EUR) | Number of Beneficiaries |
|---|---|---|
| Research and Development Tax Credit | | |
| 2017 | 448 | 1,505 |
| 2018 | 355 | 1,303 |
| 2019 | 626 | 1,601 |
| Knowledge Development Box | | |
| 2017 | 12 | 16 |
| 2018 | 9 | < 10 |
| 2019 | 12 | 14 |

**Source:** McCarthy (2021)

## 6.5 GTED as a Tool to Analyse Patent Boxes and R&D Tax Expenditures

Transparency of TEs is a starting point for additional analysis. For a government to estimate the TE revenue loss, it must have information on the scope and take-up of the incentives. Truly comprehensive TE reports provide both backward- and forward-looking projections of the aggregate revenue loss from a tax incentive. TE forgone revenue estimates are different, and more comprehensive than METR, statutory tax rates and qualitative descriptions of eligible activity.

The initial GTED is an important step forward for transparency and analysis of TEs. As expected, the GTED has limitations associated with most cross-country databases, given differences in available data and underlying benchmarks from different countries.

The use of the GTED to analyze patent box tax incentives was chosen since the OECD's annual analysis of R&D tax incentives[29] doesn't yet include patent boxes, although now enacted in 20 OECD and G20 countries.

In searching the GTED, the official label of the TE and its objectives may not include the expected keywords. Often having the GTED's metadata (i.e., detailed description, beneficiaries, policy goal, etc.) is as important as providing revenue forgone estimates to increase transparency. It is helpful to have an alternative listing, such as the OECD harmful tax practices annual listing of IP tax regimes, to check the details of the GTED.

Some of the patent boxes are provided at the subnational level, and thus are not included in the national TE databases, such as the 14.5 per cent Licence Box in the Swiss Canton of Nidwalden.

These limitations notwithstanding, the GTED can help analysts and policymakers appreciate the benefits of the available cross-country data, and work toward future improvements, both in terms of transparency and tax design.

[29] For general and country-specific notes on the OECD estimates of government tax relief for R&D expenditures, see (OECD, 2020b). The OECD estimates exclude income-based tax incentives– preferential treatment of in-comes from licensing or disposal of assets attributable to R&D (e.g. patents) or other innovation activities – and incentives to taxpayers other than companies.

# REFERENCES


Benedek, D., Gemayel, E. R., Senhadji, A. S., & Tieman, A. F. (2021). A Post-Pandemic Assessment of the Sustainable Development Goals. Staff Discussion Notes No. 2021/003. Washington DC: IMF. https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2021/04/27/A-Post-Pandemic-Assessment-of-the-Sustainable-Development-Goals-460076

Benzarti, Y., & Carloni, D. (2019). Who Really Benefits from Consumption Tax Cuts? Evidence from a Large VAT Reform in France. American Economic Journal: Economic Policy, 11(1), 38-63. https://doi.org/10.1257/pol.20170504

Caldeira, É., Geourjon, A.-M., & Rota-Graziosi, G. (2019). Taxing aid: the end of a paradox? International Tax and Public Finance, 27(1), 240-255. https://doi.org/10.1007/s10797-019-09573-6

CIAT, (Inter-American Center of Tax Administrations). (2011). Handbook of best practices on tax expenditure measurements. CIAT. https://biblioteca.ciat.org/opac/book/4857

Driessen, G. A. (2019). Spending and Tax Expenditures: Distinctions and Major Programs. CRS Report. Washington, DC: Congressional Research Service. https://fas.org/sgp/crs/misc/R44530.pdf

European Union. (2011). Council Directive 2011/85/EU of 8 November 2011 on requirements for budgetary frameworks of the Member States. Brussels: EU. http://data.europa.eu/eli/dir/2011/85/oj

Gaspar, V., Amaglobeli, D., Garcia-Escribano, M., Prady, D., & Soto, M. (2019). Fiscal policy and development: Human, social, and physical investments for the SDGs. Staff Discussion Note 2019/03. Washington, DC: International Monetary Fund. https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2019/01/18/Fiscal-Policy-and-Development-Human-Social-and-Physical-Investments-for-the-SDGs-46444

Gaspar, V., Jaramillo, L., & Wingender, P. (2016). Tax Capacity and Growth: Is there a Tipping Point? IMF WP/16/234. Washington, DC: IMF.

German Federal Ministry of Finance (BMF). (2019). 27. Subventionsbericht. Bericht der Bundesregierung über die Entwicklung der Finanzhilfen des Bundes und der Steuervergünstigungen für die Jahre 2017 bis 2020. Berlin: BMF. https://www.bundesfinanzministerium.de/Content/DE/Downloads/Broschueren_Bestellservice/2020-03-01-Subventionsbericht.pdf

Gupta, S., & Jalles, J. T. (2021). Can Covid-19 induce governments to implement tax reforms in developing countries? Covid Economics(71), 83-111. https://cepr.org/file/10474/download?token=_OmByMde

Haufler, A., & Schindler, D. (2020). Attracting Profit Shifting or Fostering Innovation? On Patent Boxes and R&D Subsidies. CESifo Working Paper 8640. Munich: CESifo. https://www.cesifo.org/DocDL/cesifo1_wp8640.pdf

IMF, OECD, UN, & World Bank. (2015). Options for Low Income Countries‘ Effective and Efficient Use of Tax Incentives for Investment. A report to the G-20 Development Working Group. Washington, DC: IMF, OECD & World Bank https://www.imf.org/external/np/g20/pdf/101515.pdf

James, S. (2013). Tax and Non-Tax Incentives and Investments: Evidence and Policy Implications. Washington, DC: World Bank. http://ssrn.com/abstract=2401905

Kronfol, H., & Steenbergen, V. (2020). Evaluating the Costs and Benefits of Corporate Tax Incentives. Methodological Approaches and Policy Considerations. Washington, DC: World Bank. http://documents1.worldbank.org/curated/en/180341583476704729/pdf/Evaluating-the-Costs-and-Benefits-of-Corporate-Tax-Incentives-Methodological-Approaches-and-Policy-Considerations.pdf

McCarthy, L. (2021). Corporation Tax – 2020 Payments and 2019 Returns. Report by „Revenue on Corporation Tax". Dublin: Irish Tax and Customs. https://www.revenue.ie/en/corporate/documents/research/ct-analysis-2021.pdf

Moes, A. (2011). Welche Steuervergünstigungen gibt es beim Bund? Eine Studie der Eidg. Steuerverwaltung. Bern: Eidgenössische Steuerverwaltung. http://www.alexandria.admin.ch/2011-02-02+ESTV+Studie+Steuerverguenstigungen.pdf

Moore, M., Prichard, W., & Fjeldstad, O.-H. (2018). Taxing Africa. Coercion, Reform and Development. Zed Books.

OECD (2015). Countering Harmful Tax Practices More Effectively, Taking into Account Transparency and Substance, Action 5 - 2015 Final Report. OECD/G20 Base Erosion and Profit Shifting Project.

OECD (2018). Harmful tax practices - 2018 Progress peport on preferential regimes: Inclusive framework on BEPS: Action 5. OECD Publishing. https://doi.org/10.1787/9789264311480-en

OECD (2019). Lessons from the EU-SPS Programme. Optimising the role of development partners for social protection. https://www.oecd.org/dev/inclusivesocietiesanddevelopment/Lessons_learned_social_development_partners_for_social_protection.pdf

OECD (2020a). Harmful tax practices – peer review results: Inclusive framework on BEPS: Action 5. Update as of November 2020. OECD. https://www.oecd.org/tax/beps/harmful-tax-practices-peer-review-results-on-preferential-regimes.pdf

OECD (2020b). OECD R&D tax incentives database, 2020 edition. https://www.oecd.org/sti/rd-tax-stats-database.pdf

OECD, (2020c). Tax Policy Reforms 2020. OECD. https://doi.org/10.1787/7af51916-en

OECD (2021). OECD Companion to the Inventory of Support Measures for Fossil Fuels 2021. https://www.oecd-ilibrary.org/environment/oecd-companion-to-the-inventory-of-support-measures-for-fossil-fuels-2021_e670c620-en

Peláez Longinotti, F. (2021). Dimensiones de los gastos tributarios. Una exploración de segundo nivel en la Base de Datos de Gastos Tributarios del CIAT. Documento de Trabajo 1-2021. Panama: CIAT. https://www.ciat.org/Biblioteca/DocumentosdeTrabajo/2021/DT_01_2021_pelaez.pdf

Redonda, A., & Axelson, C. (2021). Assessing pension-related tax expenditures in South Africa. WIDER Working Paper 2021/54. Helsinki: UNU-WIDER. https://www.wider.unu.edu/publication/assessing-pension-related-tax-expenditures-south-africa

**Redonda, A., von Haldenwang, C., & Aliu, F. (2021). The Global Tax Expenditures Database (GTED) Companion Paper. https://www.GTED.net**

**Steel, I., Dom, R., Long, C., Monkam, N., & Carter, P. (2018). The taxation of foreign aid. Don't ask, don't tell, don't know. ODI Briefing Note. London, Pretoria: ODI, African Tax Administration Forum (ATAF).**

**Toder, E. J. (2000). Tax Cuts or Spending—Does it Make a Difference? National Tax Journal, 53(3), 361-371. http://www.jstor.org/stable/41789464**

**UNESCO (2021). Follow-up and review of the financing for development outcomes and the means of implementation of the 2030 Agenda for Sustainable Development. Draft intergovernmentally agreed conclusions and recommendations. New York, NY: UNESCO. https://www.un.org/development/desa/financing/sites/www.un.org.development.desa.financing/files/2021-04/E-FFDF-2021-L1_0.pdf**

**UNU-WIDER. (2020). UNU-WIDER Government Revenue Dataset. https://www.wider.unu.edu/project/government-revenue-dataset**

**von Haldenwang, C., Kemmerling, A., Redonda, A., & Truchlewski, Z. (forthcoming). The politics of tax expenditure. In L. Hakelberg & L. Seelkopf (Eds.), Handbook on the politics of taxation. Edward Elgar.**

# ANNEX

## Table A.1: Summary Information on Revenue Forgone and Tax Expenditure Reporting by Jurisdiction

Table A.1: Summary Information on Revenue Forgone and Tax Expenditure Reporting by Jurisdiction

| | Income Group | Revenue Forgone Indicators | | | | | | | | | | | TE Reporting Indicators | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Revenue Forgone (mill. USD) | Latest Avail-able Year | TE / GDP (in %) | | | | | TE / Tax Revenue (in %) | | | | Data Available From | Number of Reported Years | Type of Data | Regularity of Reporting |
| | | | | 2015 | 2016 | 2017 | 2018 | 2019 | 2015 | 2016 | 2017 | 2018 | 2019 | | | |
| **East Asia & Pacific** | | | | | | | | | | | | | | | | |
| Australia | HIC | 115.263,9 | 2019 | 8,4 | 9,1 | 9,1 | 9,2 | 8,4 | 38,5 | 42,0 | 42,4 | 41,2 | n.a. | 1993 | 27 | Prov. | Regular |
| Indonesia | LMIC | 18.185,9 | 2019 | n.a. | 1,6 | 1,4 | 1,5 | 1,6 | n.a. | 15,0 | 14,6 | 14,8 | n.a. | 2016 | 4 | Prov. | Regular |
| Japan | HIC | 375.579,5 | 2018 | 7,6 | 7,4 | 7,4 | 7,6 | n.a. | 67,0 | 66,9 | 62,9 | 65,0 | n.a. | 1990 | 30 | Prov. | Regular |
| New Zealand | HIC | 2.829,9 | 2019 | 1,6 | 1,3 | 1,3 | 1,2 | 1,4 | 5,2 | 4,4 | 4,1 | 3,9 | n.a. | 2009 | 11 | Prov. | Regular |
| Papua New Guinea | LMIC | 132,2 | 2018 | 6,2 | 1,2 | 1,4 | 0,6 | n.a. | 40,9 | 9,3 | 11,4 | 4,2 | n.a. | 2005 | 14 | SD | Regular |
| Philippines | LMIC | 9.638,4 | 2019 | 0,8 | 1,2 | 2,8 | 2,7 | 2,7 | 5,8 | 9,0 | 19,6 | 18,6 | n.a. | 2013 | 7 | SD | Regular |
| South Korea | HIC | 44.303,6 | 2020 | 2,1 | 2,1 | 2,1 | 2,3 | 2,7 | 15,8 | 14,9 | 14,5 | 14,6 | n.a. | 2015 | 5 | Prov. | Regular |
| Tonga | UMIC | 13,8 | 2014 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 2005 | 9 | SD | Irregular |
| **Europe & Central Asia** | | | | | | | | | | | | | | | | |
| Albania | UMIC | 803,6 | 2020 | 0,5 | 0,7 | 1,2 | 5,6 | 5,4 | 2,2 | 3,1 | 5,0 | 23,1 | n.a. | 2015 | 6 | OE | Regular |
| Armenia | UMIC | 920,3 | 2019 | 6,7 | 7,5 | 6,5 | 6,6 | 6,7 | 32,0 | 35,4 | 31,5 | 31,5 | n.a. | 2015 | 5 | SD | Regular |
| Austria | HIC | 19.358,0 | 2019 | 4,3 | 4,2 | 4,1 | 4,1 | 4,4 | 14,8 | 15,1 | 14,9 | 14,6 | n.a. | 2002 | 18 | Prov. | Regular |
| Belgium | HIC | 19.336,6 | 2019 | 6,2 | 6,2 | 6,1 | 6,3 | 3,7 | 25,5 | 28,0 | 26,8 | 27,0 | n.a. | 2003 | 17 | Prov. | Regular |
| Bulgaria | UMIC | 405,0 | 2019 | 0,6 | 0,7 | 0,6 | 0,6 | 0,6 | 2,9 | 3,2 | 3,1 | 2,9 | n.a. | 2007 | 14 | VD | Regular |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Czechia | HIC | 21.943,2 | 2017 | 10,4 | 10,2 | 10,2 | n.a. | n.a. | 56,5 | 53,9 | 52,6 | n.a. | n.a. | 2011 | 7 | OE | Irregular |
| Denmark | HIC | 7.993,6 | 2020 | n.a. | n.a. | 2,3 | 2,3 | 2,3 | n.a. | n.a. | 7,0 | 7,2 | n.a. | 2006 | 5 | Prov. | Irregular |
| Estonia | HIC | 267,7 | 2020 | 1,6 | 1,6 | 1,6 | 0,7 | 0,9 | 4,9 | 4,8 | 5,0 | 2,3 | n.a. | 2009 | 12 | Prov. | Regular |
| Finland | HIC | 33.188,8 | 2020 | 11,4 | 11,5 | 11,8 | 12,2 | 12,0 | 55,5 | 55,5 | 56,7 | 58,6 | n.a. | 1996 | 19 | Prov. | Irregular |
| France | HIC | 99.569,5 | 2019 | 3,8 | 3,7 | 4,0 | 3,9 | 3,7 | 25,1 | 24,6 | 25,2 | 25,4 | n.a. | 1999 | 21 | Prov. | Regular |
| Germany | HIC | 34.664,6 | 2018 | 0,9 | 0,9 | 0,9 | 0,9 | n.a. | 8,0 | 7,9 | 7,9 | 7,7 | n.a. | 1990 | 29 | Prov. | Regular |
| Greece | HIC | 10.736,1 | 2019 | n.a. | 4,5 | 4,3 | 4,9 | 5,1 | n.a. | 16,8 | 16,3 | 18,5 | n.a. | 2016 | 4 | Prov. | Regular |
| Hungary | HIC | 3.659,9 | 2020 | 2,3 | 2,7 | 2,3 | 2,2 | 2,2 | 6,2 | 7,2 | 6,3 | 6,2 | n.a. | 2013 | 8 | SD | Regular |
| Iceland | HIC | 580,9 | 2020 | 0,8 | 0,7 | 3,3 | 3,3 | 3,2 | 3,0 | 1,6 | 12,1 | 12,4 | n.a. | 2000 | 21 | OE | Regular |
| Ireland | HIC | 22.356,6 | 2019 | 10,3 | 13,1 | 14,7 | 12,8 | 5,8 | 54,0 | 67,8 | 79,3 | 69,4 | n.a. | 2004 | 16 | Prov. | Regular |
| Italy | HIC | 70.626,3 | 2020 | 9,7 | 10,4 | 3,1 | 3,1 | 3,4 | 42,8 | 45,3 | 14,0 | 13,9 | n.a. | 2011 | 10 | Prov. | Regular |
| Kazakhstan | UMIC | n.c. | 2019 | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | 2017 | 3 | SD | Regular |
| Latvia | HIC | 2.664,0 | 2018 | 10,8 | 11,1 | 9,7 | 7,7 | n.a. | 68,2 | 66,1 | 58,1 | 47,1 | n.a. | 2013 | 6 | VD | Regular |
| Lithuania | HIC | 1.692,3 | 2019 | 2,5 | 2,7 | 3,0 | 2,9 | 3,1 | 15,1 | 16,2 | 17,8 | 17,2 | n.a. | 2013 | 7 | VD | Regular |
| Luxembourg | HIC | 1.156,4 | 2020 | 1,5 | 1,6 | 1,6 | 1,5 | 1,6 | 6,0 | 6,2 | 6,1 | 5,9 | n.a. | 2015 | 6 | VD | Regular |
| Netherlands | HIC | 125.424,3 | 2020 | 14,1 | 15,4 | 13,9 | 13,4 | 12,9 | 66,5 | 69,6 | 59,6 | 57,7 | n.a. | 1998 | 23 | Prov. | Regular |
| Norway | HIC | 15.443,0 | 2020 | 4,7 | 4,6 | 4,6 | 4,4 | 4,3 | 14,3 | 14,1 | 14,0 | 13,4 | n.a. | 2010 | 11 | VD | Regular |
| Poland | HIC | 24.067,4 | 2015 | 5,0 | n.a. | n.a. | n.a. | n.a. | 32,3 | n.a. | n.a. | n.a. | n.a. | 2009 | 7 | Prov. | Irregular |
| Portugal | HIC | 13.519,3 | 2018 | 5,1 | 6,8 | 5,8 | 5,6 | n.a. | 20,3 | 27,3 | 23,4 | 22,0 | n.a. | 2011 | 8 | SD | Regular |
| Romania | UMIC | 12.794,9 | 2020 | 3,9 | 4,4 | 4,3 | 4,3 | 4,8 | 14,2 | 17,3 | 17,4 | 16,6 | n.a. | 2013 | 8 | OE | Regular |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Russian Federation | UMIC | 244.571,8 | 2019 | 2,3 | 19,1 | 19,8 | 14,9 | 14,4 | 13,4 | 111,4 | 115,2 | 80,2 | n.a. | 2014 | 6 | Prov. | Regular |
| Slovakia | HIC | 1.258,5 | 2020 | 1,5 | 1,4 | 1,2 | 1,1 | 1,1 | 8,3 | 8,1 | 6,4 | 6,2 | n.a. | 2013 | 5 | VD | Regular |
| Slovenia | HIC | 103,8 | 2019 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 1,2 | 1,1 | 1,2 | 1,2 | n.a. | 2010 | 11 | OE | Regular |
| Spain | HIC | 41.686,1 | 2019 | 3,8 | 3,1 | 2,7 | 2,9 | 3,0 | 26,0 | 22,1 | 19,6 | 20,2 | n.a. | 1996 | 24 | Prov. | Regular |
| Sweden | HIC | 74.625,2 | 2020 | 4,7 | 4,3 | 4,5 | 4,3 | 4,6 | 21,4 | 18,6 | 19,5 | 18,8 | n.a. | 2014 | 6 | Prov. | Regular |
| Switzerland | HIC | n.c. | 2012 | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | 2011 | 1 | Prov. | Irregular |
| Turkey | UMIC | 30.145,3 | 2020 | 3,4 | 3,9 | 4,1 | 4,1 | 4,2 | 22,0 | 25,0 | 26,8 | 27,7 | n.a. | 2007 | 7 | Prov. | Irregular |
| Ukraine | LMIC | 1.260,8 | 2020 | 2,8 | 1,3 | 0,9 | 0,7 | 1,0 | 13,6 | 6,8 | 4,4 | 3,7 | n.a. | 2004 | 16 | Prov. | Irregular |
| United Kingdom | HIC | 218.825,1 | 2020 | 7,2 | 7,9 | 7,4 | 7,7 | 7,5 | 29,9 | 32,0 | 29,7 | 30,7 | n.a. | 2013 | 8 | Prov. | Regular |
| **Latin America & Caribbean** | | | | | | | | | | | | | | | | | |
| Argentina | UMIC | 11.060,0 | 2020 | 3,3 | 3,4 | 3,2 | 2,8 | 2,7 | 19,1 | 19,9 | 20,2 | n.a. | n.a. | 2001 | 20 | Prov. | Regular |
| Bolivia | LMIC | 418,2 | 2016 | 1,4 | 1,2 | n.a. | n.a. | n.a. | 6,2 | 6,1 | n.a. | n.a. | n.a. | 2005 | 12 | SD | Irregular |
| Brazil | UMIC | 65.271,5 | 2020 | 4,7 | 4,3 | 4,3 | 4,1 | 4,2 | 34,0 | 31,0 | 31,0 | 28,6 | n.a. | 1990 | 31 | Prov. | Regular |
| Chile | HIC | 9.596,0 | 2018 | 4,4 | 3,4 | 3,0 | 3,2 | n.a. | 23,5 | 18,2 | 16,1 | 16,3 | n.a. | 2002 | 17 | OE | Regular |
| Colombia | UMIC | 25.699,6 | 2018 | 7,3 | 7,4 | 7,7 | 7,7 | n.a. | 49,4 | 53,3 | 54,4 | 54,6 | n.a. | 2004 | 15 | Prov. | Regular |
| Costa Rica | UMIC | 2.923,4 | 2019 | 4,7 | 5,2 | 5,3 | 5,5 | 4,7 | 21,2 | 22,8 | 23,6 | 24,5 | n.a. | 2010 | 10 | OE | Regular |
| Dominican Republic | UMIC | 3.657,6 | 2020 | 12,4 | 6,3 | 5,9 | 4,8 | 5,0 | 94,9 | 48,4 | 44,7 | 36,5 | n.a. | 2008 | 13 | OE | Regular |
| Ecuador | UMIC | 5.730,9 | 2019 | 4,7 | 4,6 | 4,7 | 5,3 | 5,3 | 30,1 | 31,2 | 33,3 | 35,7 | n.a. | 2005 | 15 | Prov. | Irregular |
| El Salvador | LMIC | 873,9 | 2017 | 3,8 | 3,7 | 3,5 | n.a. | n.a. | 22,7 | 21,4 | 19,7 | n.a. | n.a. | 2010 | 11 | SD | Irregular |
| Guatemala | UMIC | 1.939,9 | 2019 | 2,6 | 2,3 | 2,4 | 2,4 | 2,4 | 25,0 | 21,5 | n.a. | n.a. | n.a. | 2005 | 15 | Prov. | Regular |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Honduras | LMIC | 1.696,6 | 2019 | n.a. | n.a. | 6,8 | 7,0 | 6,9 | n.a. | n.a. | 37,2 | 37,8 | n.a. | 2017 | 3 | SD | Regular |
| Jamaica | UMIC | 507,9 | 2019 | 4,4 | 3,3 | 3,8 | 4,6 | 3,2 | 18,2 | 13,1 | 14,6 | 17,3 | n.a. | 2007 | 13 | Prov. | Regular |
| Mexico | UMIC | 41.587,3 | 2020 | 2,9 | 3,3 | 3,7 | 3,7 | 3,8 | 22,4 | 24,6 | 28,5 | 28,0 | n.a. | 2002 | 19 | Prov. | Regular |
| Nicaragua | LMIC | 503,0 | 2010 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 2003 | 8 | VD | Irregular |
| Panama | HIC | 2.261,4 | 2017 | 4,1 | 3,5 | 3,6 | n.a. | n.a. | 43,6 | 35,8 | 39,5 | n.a. | n.a. | 2012 | 6 | OE | Irregular |
| Paraguay | UMIC | 568,4 | 2014 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 2013 | 2 | Prov. | Irregular |
| Peru | UMIC | 4.813,8 | 2020 | 2,3 | 2,1 | 2,2 | 2,2 | 2,2 | 13,4 | 13,5 | 14,7 | 13,7 | n.a. | 2005 | 16 | VD | Regular |
| Puerto Rico | HIC | 26.407,4 | 2017 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 2017 | 1 | Prov. | Irregular |
| Uruguay | HIC | 3.554,6 | 2019 | 6,6 | 6,4 | 6,4 | 6,2 | 6,3 | 22,8 | 18,8 | 21,0 | 20,2 | n.a. | 2005 | 15 | Prov. | Regular |
| **Middle East & North Africa** | | | | | | | | | | | | | | | | | |
| Israel | HIC | 18.715,0 | 2019 | 4,3 | 4,2 | 4,9 | 4,8 | 4,8 | 14,6 | 14,3 | 16,0 | 16,7 | n.a. | 1999 | 21 | Prov. | Regular |
| Jordan | UMIC | 4.221,4 | 2018 | 11,1 | 11,8 | 10,6 | 10,1 | n.a. | 72,3 | 76,3 | 70,2 | 65,9 | n.a. | 2014 | 5 | SD | Regular |
| Morocco | LMIC | 3.021,7 | 2020 | 3,2 | 3,2 | 2,7 | 2,6 | 2,5 | 15,2 | 14,9 | 12,3 | 11,8 | n.a. | 2003 | 18 | Prov. | Regular |
| **North America** | | | | | | | | | | | | | | | | | |
| Canada | HIC | 113.242,0 | 2020 | 6,0 | 6,2 | 6,6 | 6,1 | 6,5 | 44,3 | 45,9 | 48,9 | 44,6 | n.a. | 1990 | 31 | Prov. | Regular |
| United States | HIC | 1.459.952,0 | 2019 | 7,5 | 8,3 | 8,2 | 7,3 | 6,8 | 66,7 | 75,6 | 68,9 | 76,3 | n.a. | 1994 | 26 | Prov. | Regular |
| **South Asia** | | | | | | | | | | | | | | | | | |
| Bhutan | LMIC | 22,4 | 2019 | 3,3 | 3,2 | 2,7 | 1,1 | 0,8 | 24,0 | 23,4 | 21,0 | 7,2 | n.a. | 2003 | 17 | VD | Irregular |
| India | LMIC | 43.534,2 | 2020 | 3,6 | 3,6 | 1,6 | 1,3 | 1,4 | 34,3 | 32,3 | 14,5 | n.a. | n.a. | 2005 | 16 | Prov. | Regular |
| Pakistan | LMIC | 8.256,7 | 2020 | 0,4 | 0,4 | 0,5 | 0,6 | 0,6 | 3,3 | n.a. | n.a. | n.a. | n.a. | 2003 | 18 | Prov. | Regular |
| Sri Lanka | UMIC | 1.262,2 | 2019 | n.a. | n.a. | 1,8 | 1,4 | 1,5 | n.a. | n.a. | 14,5 | 12,0 | n.a. | 2017 | 3 | VD | Regular |

| Sub-Saharan Africa | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benin | LIC | 398,0 | 2019 | 1,4 | 2,4 | 2,1 | 2,0 | 2,8 | 13,3 | 26,7 | 21,9 | 19,6 | n.a. | 2008 | 11 | VD | Irregular |
| Burkina Faso | LIC | 129,9 | 2019 | 1,1 | 1,3 | 1,1 | 0,8 | 0,8 | 8,2 | 8,6 | 7,0 | 5,1 | n.a. | 2015 | 5 | OE | Regular |
| Burundi | LIC | 31,8 | 2020 | 2,5 | 1,6 | 2,7 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 2009 | 10 | SD | Irregular |
| Cabo Verde | LMIC | 125,3 | 2019 | 2,4 | 4,6 | 4,6 | 6,2 | 6,2 | 12,8 | 24,6 | 22,8 | 28,2 | n.a. | 2004 | 16 | SD | Regular |
| Cameroon | LMIC | 997,9 | 2019 | n.a. | n.a. | 2,2 | 1,8 | 2,6 | n.a. | n.a. | 16,3 | n.a. | n.a. | 2017 | 3 | OE | Regular |
| Central African Republic | LIC | 53,3 | 2020 | n.a. | n.a. | n.a. | n.a. | 5,5 | n.a. | n.a. | n.a. | n.a. | 70,4 | 2019 | 2 | SD | Regular |
| Côte d'Ivoire | LMIC | 564,6 | 2019 | 1,5 | 1,1 | 1,1 | 1,0 | 0,9 | 13,8 | 9,8 | 9,4 | 8,7 | n.a. | 2009 | 11 | OE | Regular |
| DR Congo | LIC | 254,8 | 2018 | 0,7 | 0,6 | 2,0 | 0,5 | n.a. | 7,2 | 7,9 | 32,1 | 7,3 | n.a. | 2017 | 1 | OE | Regular |
| Equatorial Guinea | UMIC | 33,8 | 2019 | 1,5 | 1,1 | 0,6 | 0,3 | 0,3 | 12,9 | 17,7 | 10,7 | 5,9 | n.a. | 2015 | 5 | OE | Regular |
| Eswatini | LMIC | 23,2 | 2019 | 1,8 | 2,7 | 1,8 | 2,3 | 0,5 | 6,8 | 11,7 | 7,0 | 9,5 | n.a. | 2013 | 7 | OE | Regular |
| Ethiopia | LIC | 2.540,8 | 2019 | n.a. | n.a. | 5,7 | 4,4 | 2,8 | n.a. | n.a. | 74,5 | 58,2 | n.a. | 2017 | 3 | SD | Regular |
| Gabon | UMIC | 149,4 | 2018 | n.a. | 1,3 | 1,2 | 0,9 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 2016 | 3 | SD | Regular |
| Ghana | LMIC | 943,6 | 2020 | 1,4 | 0,8 | 1,3 | 1,4 | 1,4 | 12,1 | 6,1 | 10,1 | 10,9 | n.a. | 2005 | 16 | OE | Regular |
| Guinea | LIC | 205,1 | 2018 | n.a. | 2,2 | 2,9 | 1,7 | n.a. | n.a. | 15,6 | 21,8 | 13,6 | n.a. | 2016 | 3 | SD | Regular |
| Lesotho | LMIC | 29,6 | 2016 | 1,4 | 1,2 | n.a. | n.a. | n.a. | 4,4 | 4,3 | n.a. | n.a. | n.a. | 2005 | 8 | OE | Irregular |
| Liberia | LIC | 103,1 | 2020 | 4,2 | 2,8 | 2,9 | 4,0 | 4,3 | 35,8 | 22,8 | 24,9 | 34,7 | n.a. | 2015 | 6 | VD | Regular |
| Madagascar | LIC | 90,0 | 2020 | 1,5 | 1,4 | 1,9 | 2,4 | 2,8 | 17,2 | 14,6 | 19,1 | 21,8 | n.a. | 2015 | 6 | OE | Regular |
| Mali | LIC | 464,7 | 2019 | 2,6 | 1,4 | 2,7 | 2,5 | 2,6 | 18,8 | 9,7 | 17,6 | 21,5 | n.a. | 2014 | 6 | SD | Regular |
| Mauritania | LMIC | 4.507,8 | 2013 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 2013 | 1 | VD | Irregular |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mauritius | UMIC | 259,2 | 2020 | n.a. | 1,5 | 1,4 | 1,6 | 2,0 | n.a. | 8,4 | 7,5 | 8,4 | n.a. | 2006 | 14 | SD | Irregular |
| Niger | LIC | 366,3 | 2012 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 2011 | 2 | OE | Irregular |
| Rwanda | LIC | 280,3 | 2019 | n.a. | n.a. | n.a. | 2,3 | 2,7 | n.a. | n.a. | n.a. | 14,2 | n.a. | 2018 | 2 | VD | Regular |
| Senegal | LMIC | 1.190,9 | 2014 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 2014 | 7 | Prov. | Irregular |
| Seychelles | HIC | 0,2 | 2020 | 2,5 | 2,0 | 1,4 | 1,5 | 2,1 | 8,3 | 6,4 | 4,4 | 4,6 | n.a. | 1993 | 28 | OE | Regular |
| Sierra Leone | LIC | 69,6 | 2020 | 2,6 | 2,0 | 2,9 | 2,4 | 2,4 | 25,6 | 18,2 | 25,8 | 20,8 | 19,6 | 2008 | 7 | SD | Regular |
| South Africa | UMIC | 15.866,7 | 2018 | 4,3 | 4,4 | 4,5 | 4,3 | n.a. | 15,4 | 15,7 | 16,5 | 15,4 | n.a. | 2006 | 13 | SD | Regular |
| Tanzania | LIC | 465,9 | 2017 | 1,7 | 1,0 | 0,9 | n.a. | n.a. | 16,4 | 8,9 | 7,4 | n.a. | n.a. | 2000 | 18 | OE | Irregular |

Notes: n.a = data not available; n.c. = ratios not calculated due to incomplete data (Switzerland) or potentially misleading information (Kazakhstan).
Type of data: Prov. = provision-level; VD = very disaggregated; SD = somewhat disaggregated; OE = overall estimates.

# ANNEX

## Table A.2 List of Non-reporting Jurisdictions

| Country Name | Country Income Group | Country Name | Country Income Group | Country Name | Country Income Group | Country Name | Country Income Group | Country Name | Country Income Group |
|---|---|---|---|---|---|---|---|---|---|
| **East Asia & Pacific** | | Thailand | HIC | Serbia | LMIC | US Virgin Islands | HIC | Maldives | LIC |
| American Samoa | HIC | Timor-Leste | LMIC | Tajikistan | LMIC | Venezuela | LMIC | Nepal | LIC |
| Brunei Darussalam | LIC | Tuvalu | UMIC | Turkmenistan | HIC | **Middle East & North Africa** | | **Sub-Saharan Africa** | |
| Cambodia | LMIC | Vanuatu | UMIC | Uzbekistan | HIC | Algeria | LIC | Angola | UMIC |
| China | HIC | Vietnam | LMIC | **Latin America & Caribbean** | | Bahrain | UMIC | Botswana | LIC |
| Fiji | HIC | **Europe & Central Asia** | | Antigua & Barbuda | LMIC | Djibouti | HIC | Chad | UMIC |
| French Polynesia | UMIC | Andorra | LIC | Aruba | UMIC | Egypt | HIC | Comoros | LMIC |
| Guam | HIC | Azerbaijan | UMIC | Bahamas | UMIC | Iran | LIC | Congo | HIC |
| Hong Kong SAR, China | UMIC | Belarus | HIC | Barbados | UMIC | Iraq | LMIC | Eritrea | LMIC |
| Kiribati | LMIC | Bosnia & Herzegovina | LMIC | Belize | HIC | Kuwait | HIC | Gambia | UMIC |
| Lao PDR | HIC | Channel Islands | UMIC | British Virgin Islands | HIC | Lebanon | HIC | Guinea-Bissau | HIC |
| Macao SAR, China | HIC | Croatia | HIC | Cayman Islands | HIC | Libya | HIC | Kenya | LIC |
| Malaysia | UMIC | Cyprus | LIC | Cuba | HIC | Malta | LMIC | Malawi | LMIC |
| Marshall Islands | UMIC | Faroe Islands | LIC | Curaçao | LMIC | Oman | HIC | Mozambique | UMIC |
| Micronesia | UMIC | Georgia | UMIC | Dominica | UMIC | Qatar | LMIC | Namibia | UMIC |
| Mongolia | HIC | Gibraltar | HIC | Grenada | UMIC | Saudi Arabia | HIC | Nigeria | HIC |
| Myanmar | HIC | Greenland | HIC | Guyana | UMIC | Syria | LIC | São Tomé and Principe | HIC |
| Nauru | HIC | Isle of Man | UMIC | Haiti | HIC | Tunisia | UMIC | Somalia | LMIC |
| New Caledonia | UMIC | Kosovo | HIC | Sint Maarten | LMIC | United Arab Emirates | LIC | South Sudan | LMIC |
| North Korea | HIC | Kyrgyzstan | HIC | St. Kitts and Nevis | UMIC | West Bank and Gaza | LMIC | Sudan | UMIC |
| N. Mariana Islands | UMIC | Liechtenstein | LIC | St. Lucia | LMIC | Yemen | UMIC | Togo | UMIC |
| Palau | LMIC | Moldova | HIC | St. Martin | HIC | **North America** | | Uganda | LIC |
| Samoa | LMIC | Monaco | UMIC | St. Vincent & Grenad. | LIC | Bermuda | HIC | Zambia | LMIC |
| Singapore | UMIC | Montenegro | UMIC | Suriname | LIC | **South Asia** | | Zimbabwe | LMIC |
| Solomon Islands | HIC | North Macedonia | LMIC | Trinidad & Tobago | UMIC | Afghanistan | LIC | | |
| Taiwan, China | HIC | San Marino | LMIC | Turks and Caicos | UMIC | Bangladesh | HIC | | |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