GTED Global Tax Expenditures Database

THE GLOBAL TAX EXPENDITURES DATABASE (GTED)

COMPANION PAPER

(Preliminary Version)

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ABSTRACT

Tax expenditures (TEs) are tax benefits that lower government revenue and the tax liability of the beneficiary. Governments worldwide use TEs to pursue different policy goals such as attracting investment, boosting innovation and fighting poverty. At the same time, TEs are costly (the global average over the 1990-2020 period is 3.8 per cent of GDP and 24.2 per cent of tax revenue) and often ineffective in reaching their stated goals. They can sometimes be highly distortive and trigger negative externalities such as exacerbating inequality.

Yet, despite the fact that TEs have similar effects on public budgets as direct spending, the lack of transparency in this area is striking: only 97 out of 218 jurisdictions have reported on TEs at least once since 1990. Moreover; the quality, regularity and scope of such reports are highly heterogeneous and, in many cases, lag significantly behind minimum standards.

The Global Tax Expenditures Database (GTED) is the first database providing timely and consistent information on TEs, based on official information published by national governments worldwide from 1990 onwards. The GTED aims to improve reporting, enhance scrutiny, and, ultimately, to contribute to the design of effective and fair tax expenditures across the world. This Companion Paper introduces the GTED. It describes the rationale and scope as well as the methodology and assumptions underpinning data collection and categorisation.

The Companion Paper also discusses the limitations and issues that GTED users need to bear in mind when using the database. Finally, it presents a users' guide to the GTED website www.GTED.net, providing details on the categories and indicators as well as insights on the potential queries and pre-defined charts that can be generated on the platform.

I INTRODUCTION

Tax expenditures (TEs) - also known as tax breaks, tax benefits or tax incentives - are benefits granted through preferential tax treatment that lower government revenue as well as the tax liability of the beneficiary taxpayer.

The TE notion was introduced by Stanley Surrey, a former Harvard professor and Assistant Secretary of the US Treasury, who highlighted the fact that government support for specific groups or activities is often granted through tax privileges rather than direct spending.
Although impressive, the figures mentioned above probably underestimate the real dimension of tax expenditures, for several reasons. First, despite their magnitude and the fact that they have similar effects on public budgets as direct spending entitlements, the lack of transparency and accountability on tax expenditures is notable. According to the GTED, only 97 out of the existing 218 jurisdictions have reported official revenue forgone estimates at least once since 1990.

In the vast majority of the cases, an "indirect" approach is taken to define TEs as departures from the normal tax structure or – usually country-specific – benchmark. Indeed, as stated by Surrey & McDaniel (1976), taxation consists of two components: i) the general provisions of the tax system, and ii) exemptions from those provisions in favour of a particular industry, activity, or group. It is the latter that they refer to as TEs. [1]

TEs are widely used by governments worldwide to pursue different policy goals such as attracting investment, boosting research and development (R&D) and innovation, incentivising pensions savings, or mitigating inequality; and are implemented as exemptions, deductions, credits, deferrals, and reduced tax rates.

They are also costly and significantly reduce tax revenue collection. In the United States, the federal government is estimated to have forgone more than 1.4 trillion US dollars (USD) in 2019, e.g. almost 7 percent of gross domestic product (GDP) and roughly one third of federal government spending. In Australia, Canada and the United Kingdom (UK), TEs amounted to 8.4 percent, 6.5 percent and 7.5 percent of GDP in 2019, respectively. On average, TE/GDP exceeds 4 percent among European Union (EU) member states and can be as high as 13 percent in the Netherlands, more than 12 percent in Finland and more than 10 percent in Czechia. TEs are also widely used in emerging and developing countries. TEs range from more than 1percent to almost 8 percent of GDP in Latin America, from almost 0.5 percent to more than 6 percent in Asia, and from slightly more than 0.5 percent to 8 percent of GDP in Africa.

Although already significant in themselves, the figures mentioned above often underestimate the real dimension of TEs as, despite their magnitude and the fact that they have similar effects on public budgets as direct spending, the use of tax expenditures in characterised by a striking lack of transparency and accountability. Only 97 out of the existing 218 jurisdictions have reported official revenue forgone estimates at least once since 1990.

The availability of reliable TE data is not only crucial to increase transparency and accountability. It is also a necessary (though not sufficient) condition to conduct sound evaluations regarding the effectiveness and efficiency of TE provisions, and ultimately, to better align tax systems with the different policy objectives pursued by governments.

[1] Although not widely used, some experts have taken a "direct" approach to define TEs, based on a set of characteristics (Myles et al., 2014).

Against this backdrop, the goals of the Global Tax Expenditures Database are threefold: i) to shed light on the current state of TE reporting and enhance transparency on TEs, ii) to create consistent cross-country information on TEs, ensuring a certain level of comparability, and iii) to trigger international research in the field of TEs, including empirical assessments of specific provisions, leading to evidence-based reforms of TE systems.

This paper presents the newly created GTED, a joint initiative led by the Council on Economic Policies (CEP) and the German Development Institute (DIE) that was launched in June 2021 and will be updated on an ongoing basis. The GTED seeks to fill some of the main gaps on TE data by collecting all official and publicly available information on TEs published by national governments worldwide from 1990 onwards.[2]

The reminder of the paper is structured as follows. The second section describes the GTED, its rationale and scope as well as the methodology and assumptions underpinning data collection and categorisation. Section 3 discusses the limitations and issues that GTED users need to bear in mind when using the database. Finally, Section 4 presents a users' guide to the GTED website www.GTED.net, providing details on the categories and indicators as well as insights on some of the potential queries and pre-defined charts that can be generated on the platform.

[2] The current version of the GTED includes data published until end-Q3 2020.

II. THE GLOBAL TAX EXPENDITURES DATABASE

II.1 Tax Expenditure Data

The GTED gathers all official and publicly available data on TEs. Relying on official and public information alone limits the scope of the GTED, but including internal reports or other types of information that are not publicly available would go against one of the main objectives of the GTED, i.e. to shed light on the lack of transparency in the field. Complementing official figures with other sources would not provide an accurate picture of TE reporting. In addition, 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.

Ideally, governments would publish TE reports on an annual basis, linked to their budgets. They would provide information on all TE provisions individually, including their respective legal basis and duration, the tax type upon which each TE is granted, the policy objective it is supposed to serve, the beneficiaries it targets, the type of TE it uses and, not least, the costs it produces in terms of revenue forgone.

In reality, however, the quality, regularity and scope of TE reports vary significantly. Some countries such as Australia and Morocco publish comprehensive documents, providing not only revenue forgone estimates at the level of individual TEs, but also information on tax base, type of tax expenditure, policy objectives and beneficiaries. In countries such as Germany, Canada, France, Ukraine and Italy, the information for some provisions even includes the number of taxpayers benefitting from a specific TE. In many other cases, however, governments report only a limited number of aggregate estimates. Portugal and Costa Rica, for instance, only provide overall estimates aggregated by tax base. At the same time, far from all governments issue TE reports on a regular basis. Some countries have produced just one or very few reports over the last decades. For example, Switzerland has reported only once on TEs (in 2011), Senegal has published only two reports since 2014, and Turkey has released three reports since 2007. [3]

Apart from the overall quality and regularity of TEs, it is difficult to judge how close the data provided reflects the reality, since governments often publish information on a subset of existing provisions only. In the United States, for instance, the official TE report published by the Treasury includes revenue forgone estimates at the provision level, but only for income-related TE provisions.[4]

In general terms, richer countries tend to report more and better on TEs.[5] However, the heterogeneity is significant across all country income groups. Of the 46 member countries of the Group of 20 (G20) and the Organisation for Economic Co-Operation and Development (OECD), 2 do not publish any official tax expenditure

[3] Apart from the 2011 report, 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.these and other existing databases is provided in the GTED Flagship Report (von Haldenwang et al., 2021).

4 The report provides revenue forgone estimates for a few provisions related to taxes on goods and services, but these are only included as footnotes and represent a negligible share of the reported revenue forgone (in general, the revenue forgone from income taxes accounts for 99.5 percent or more) – see here: https://home.treasury.gov/policy-issues/tax-policy/tax-expenditures.

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 tax expenditures at all, and 10 only provide limited information. Both groups of countries appear to be in breach of 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." (Council directive 2011/85/EU, p. L 306/47). Moreover, the quality and scope of TE reports is significant among this group of countries (Redonda & Neubig, 2018).

The situation is even bleaker when it comes to low and middle-income countries, where tax expenditure reporting is frequently still in its infancy. This is due to a variety of reasons, including data constraints, insufficient human and financial resources and weaker institutional frameworks (Kassim & Mansour, 2018). Of the 79 low- and lower-middle income economies, 45 do not report on tax expenditures and 8 countries report aggregate estimates only.

Finally, the GTED only gathers data on TEs implemented by national governments, as the lack of reliable data on TEs implemented by lower tiers of government is even more significant than in the case of national-level data. This said, a number of highly visible and widely discussed cases show that TEs granted by subnational governments can indeed be significant, particularly in federations or highly decentralised countries. Provided that the availability of data improves, future versions of the GTED will incorporate subnational TE data.

The GTED has a global scope, and it 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. Identifying the countries that do not report any TE data is already a valuable piece of information as an illustration of the lack of transparency in the field. When it comes to the time dimension, some countries have been reporting on TEs for many years. Some countries even started reporting before 1990 – i.e. Canada provides data since 1979, Germany since 1967, and the US since 1972. Yet, for the vast majority of countries, TE reporting is a relatively new exercise and hence the availability of time series data can be limited.

II.2 Search Process

Building-up the GTED starts with the search process to gather the data. Whereas some countries are very transparent in terms of the publication of TE data (e.g. by including TE reporting as part of the Budget process), this is far from being the rule. Hence, a crucial first step for the GTED regards the search process.

As indicated in Figure 1, we developed a "step-by-step" process trying to dig deep into all potential sources of official information. As the first step, we use standard internet search engines to look for "tax expenditure" and other related terms (e.g. tax relief, tax break, tax incentive, etc.) both in English and in the official language(s) of each country. Regardless of whether the first step yields any results, we continue by looking into the websites of several official institutions such as the Parliament (Budget Statement), the Minister of Finance, the Tax Administration, and the Statistics Office, among others.[6]

[5] For more information on patterns of TE use based on GTED data, please refer to the GTED Flagship Report 2021 "Shedding Light on Worldwide Tax Expenditures" (von Haldenwang et al., 2021).

This ensures that we cover any reported data even in the rare cases, such as the US, where more than one government agency publishes TE reports.[7] On top of employing the list of search terms on both the English and original-language versions of the websites of these institutions, we also download and search through the three most recent reports of each institution (i.e. Budget Statement from the Ministry of Finance or the Annual Report of the Tax Authority) to search any information on TEs.[8]

A positive result of these first two steps implies that the process moves into the second stage: data collection and classification. However, since a confirmation of no reporting is as important as the classification of existing TE data, when the outcome is negative, a reviewer repeats the entire first two steps of the data search process laid out above to check for any potential omission. Even after a second negative outcome, there are additional steps before classifying the country as "not reporting", where we try to find a "confirmation of no reporting."

First, we look for a statement by a national or a third-party institution that confirms non-reporting. Third-party sources of information mainly include the Open Budget Survey conducted by the International Budget Partnership (IBP) and the IMF Fiscal Transparency Evaluations. The IBP conducts country-specific surveys – the so called "Open Budget Survey (OBS)" – to promote public access to budget information and the adoption of inclusive and accountable budget systems. These surveys assess availability, timeliness and comprehensiveness of budget documents, the opportunities of public participation and the scope of budgetary oversight. Most relevant for the GTED, Question #45 reads as follows: Does the Executive's Budget Proposal or any supporting budget documentation present information on tax expenditures for at least the budget year?, which is an important source of information (IPB, 2016). The IMF Fiscal Transparency Evaluations are another source of information when it comes to the existence of TE data (IMF, 2018). Although these are ad-hoc assessments (one-off evaluations requested by a given country), they explicitly assess the existence of TE reporting, and can even provide some information on the scope of the reports as well as the repository where they are published.[9] We also check for no-data confirmations from other sources such as different regional organisations – the African Tax Administration Forum (ATAF, for Africa), the Inter-American Center of Tax Administrations (CIAT, for Latin America) – and even the PricewaterhouseCoopers (PwC) Worldwide Tax Summaries.

As a last step, we reach out to an official institution (usually the MoF) in order to get an official confirmation

[6] For an example of the GTED Data Search Template, please visit www.GTED.net

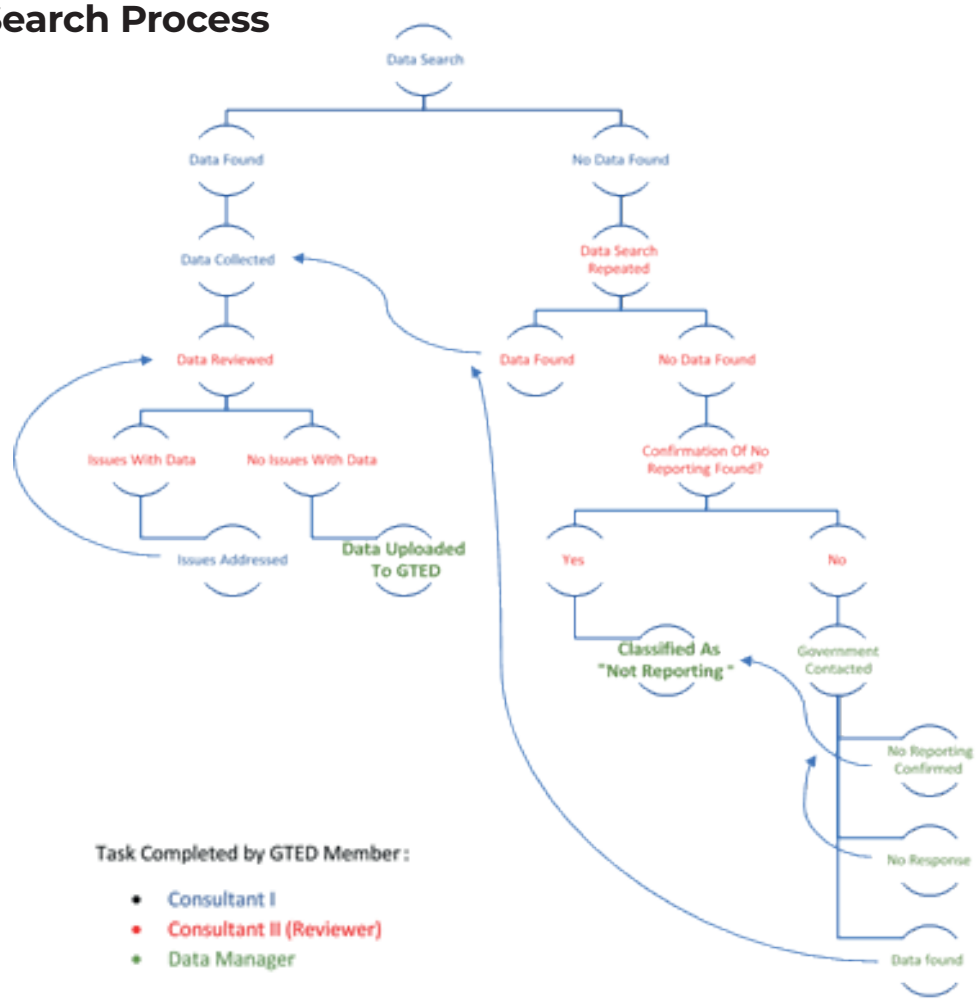
[7] The United States publishes multiple tax expenditure reports : A TE report by the Treasury Department, a TE Report by the Joint Committee on Taxation using data from the Treasury, and a TE report by the Congressional Budget Office. We use the Treasury TE report as the main source of data. This is based on the broad coverage of the report and the length of time for which it has been publicly available. Similar assessments are carried out in other cases where more than one source of data is available.

[8] The English-language versions of official websites often contain much less information than the website versions in the original language of the country. To ensure that we not miss any information, we employ the list of search terms in both versions of the website and in both languages.

[9] The IMF Fiscal Transparency Evaluations are available here: https://www.imf.org/en/Topics/fiscal-policies/fiscal-transparency.

of no reporting from a government representative. Only after having found a confirmation of no reporting, or not having found any information throughout the whole search process and not having received a response by the country government within the time period specified in the request for information, a given country is classified as "not reporting".

GTED Search Process



Whenever data is found (at any stage of the search process), the collection and classification stage is triggered. Again, to minimise the likelihood of human errors in inputting the data, there is always a 2-step process before the data is uploaded into the GTED: a first data analyst collects and classifies the data following the GTED Data Gathering Template, and a second data analyst (or reviewer) performs a random quality check of the inputted data.[10]

II.3 Data Collection And Classification

II.3.1 Quantitative Data

The GTED collects two types of quantitative TE data: revenue forgone estimates and numbers of beneficiaries. TE or revenue forgone estimates quantify the amount of revenue a country forgoes or loses by granting tax deductions, exemptions, etc.

The number of beneficiaries refers to the number of taxpayers who claimed a particular tax benefit, resulting in TE. Unlike estimating revenue forgone, which often requires statistical modelling and simulations, reporting the number of beneficiaries is relatively straightforward, provided the availability of tax return data. Nonetheless, this can also be challenging for some governments, particularly in low- or lower-middle-income countries (LICs and LMICs), since compiling and processing administrative tax return data can be a resource and time-intense exercise. In some cases, getting access to the raw data can be difficult, even for the MoF. The South African government and UNU-WIDER have jointly created the Southern Africa – Towards Inclusive Economic Development (SA-TIED) initiative. The project uses administrative tax data from the South African Revenue Service (SARS) for economic policy analysis placing South Africa at the vanguard of big data research for development, e.g. by developing comprehensive datasets based on firm-level data and allowing to look into the entire formal workforce using individual taxpayer data (Ebrahim & Bridgman, 2021). In Switzerland instead, tax returns (including for federal income taxes) are processed by the cantonal (and/or local) authorities. They may or may not capture the data needed to evaluate certain TEs and, moreover, they are typically not shared with the federal government (FTA, 2019).

II.3.1.1 Revenue Forgone Data

The revenue forgone estimates are a core information of the GTED. Inputting revenue forgone data usually does not present major challenges since the raw data is simply collected and inputted in local currency units (LCU).

In some rare cases, a single revenue forgone estimate is reported for multiple TE provisions, or multiple revenue forgone estimates are reported for one TE provision. In the former case, since it is impossible to know the share of each provision, a new record is created in the GTED Template which saves the estimate separately. In the latter case, the reported TE provision is split into several records and the revenue forgone estimates are saved separately.

Revenue forgone estimates are taken from the most recent report in which those estimates appear. For example, if Country A reports estimates for 2014 in its 2014 TE Report, in its 2015 TE report, and in its 2016 TE

[10] For an example of the GTED Data Classification Template, please visit www.GTED.net.

report; the 2014 figures in the GTED will come from its 2016 report. The only exception to this rule is if a country initially reports disaggregated data (i.e. provisional data) for a year and only provides updated aggregated data for that year (e.g. overall estimates by tax base only) in a subsequent report. In that case, we record the most recent data point based on the disaggregated data. We also only record actual revenue forgone estimates (estimates calculated using tax data from a previous year) and not future projections or forecasts.
At a later stage, for the sake of comparability and to put figures in context, we normalise the revenue forgone figures and present them as a share of GDP and as a share of Tax Revenue Collection. To do this, we use LCU figures from the UNU-WIDER Government Revenue Dataset (UNU-WIDER, 2020). For GDP data, UNU-WIDER mainly uses figures from international organisations such as the IMF or the World Bank, sometimes re-basing them due to country-specific circumstances. Figures are currently provided up to the year 2019. For tax revenue data, we use the "total tax revenue (including social contributions)" figures for central governments from UNU-WIDER. This indicator uses data from international and regional organisations such as IMF, OECD, and UN-ECLAC. The tax revenue figures currently go up to the year 2018.

Data offered by UNU-WIDER uses the most recent local currency for each country, in some cases we have to convert our own revenue forgone figures from an older local currency (e.g. Deutsche Mark for Germany before 1999) to the current local currency (Euros). Such a conversion is done using online sources providing average yearly currency exchange rates for those old local currencies.[11]

Finally, also for the sake of comparability, all revenue forgone LCU figures are converted into USD using exchange rate data from the United Nations Conference on Trade and Development (UNCTAD). This data represents the average yearly exchange rate between the USD and a given LCU.[12]

II.3.1.2 Number of Beneficiaries

When available, we also gather the information of the number of beneficiaries, which is the other piece of information (apart from revenue forgone estimates) that varies on a yearly basis. Hence, the number of beneficiaries for each year is inputted in a similar format to the revenue forgone estimates. Although this is a crucial piece of information, e.g. to shed light on take-up ratios, it is rarely provided. Only 21 countries publish such data for a subset of TE provisions in each case.

II.3.2 Qualitative Data

Besides the *name* (in original language and in English) and the description of the TE provision, we classify the data based on four main categories: the tax base to which TE provisions are applied (for instance, corporate income tax - CIT, or value-added tax - VAT), the mechanism or type of TE through which they are granted (exemption, reduced rate, deduction, credit, deferral, etc.), the policy objective pursued by the TE (employment creation, boosting R&D and innovation, reducing poverty, etc.) as well as the targeted beneficiary group (businesses, households, etc.).
On top of these four main categories, we gather other relevant information including the estimation method, the legal reference triggering the TE provision, and information regarding the time frame (i.e. if a provision

[11] These sources include country-specific websites explaining the conversion of the old currency to euros, such as the website of the Bundesbank and other cross country websites such as www.fxtop.com.

[12] In rare cases, missing exchange rate data from the UNCTAD is complemented using www.fxtop.com.

is permanent or if there is a sunset clause limiting its duration). The four main qualitative categories, the TE name, and the legal reference of the TE provision are mandatory and must be filled out for all records in the GTED. The classification methodology for these fields is described in the following sub-sections.

II.3.2.1 Tax Bases

Tax Base information in the GTED is organised in three levels. The first level distinguishes three broad tax base categories: taxes on income, goods and services, and property. The second level introduces sub-categories. For example, taxes on income are split into CIT, personal income tax (PIT), capital gains tax, etc.; taxes on goods and services are split into VAT, customs duties, excise taxes, etc.; and taxes on property are split into real estate taxes, land value taxes, vehicle taxes, etc. The third level takes some of the second level categories and breaks them down further. For example, VAT is broken down into internal VAT and customs VAT; and excise taxes are broken down into the specific goods to which the excise is applied (e.g. alcohol, tobacco, fuels, etc.).[13] The data analysts always select the lowest possible level of disaggregation and the upper levels are automatically applied. For example, if a report indicates that a certain provision is for internal VAT, the data analyst selects that option under Level 3 and the two upper levels are automatically added on (Level 2=VAT, Level 1=Taxes on Goods and Services).

Such a breakdown allows the GTED to accommodate different reporting styles of countries and produce data that can be analysed in a consistent way. For example, Country A may only report that certain revenue forgone estimates stem from "income taxes" but not specify whether those estimates come from PIT or CIT. Country B, in contrast, may differentiate between PIT and CIT revenue forgone. While we cannot compare the share of revenue forgone attributed to CIT between Country A and Country B, we can still compare the two countries regarding their respective share of revenue forgone attributed to "taxes on income".

Besides looking into the basic tax base categories such as PIT, CIT, VAT, customs, and excises; data analysts do additional research on what exactly the reported name of a tax base means in the context of a specific country. For example, a country may report revenue forgone on a tax base called "Vehicle Tax." The data analyst establishes whether such a provision refers to a tax on people who own vehicles (in which case the tax base is categorised as a property tax), a tax on the import of vehicles (in which case it is categorised as a customs duty, under taxes on goods and services), or a tax on the fuel used to power the vehicle (in which case it is categorised as a fuel tax, under excise taxes).

In cases such as the one described above, the tax base of the provision is classified as "Other" if it is uncertain under which GTED category the tax base falls. This categorisation is also used in the rare cases in which the reported tax base is clear, but does not fall under any of the categories listed in the Data Manual. Likewise, if the report confirms that a provision is applicable to more than one tax base, it is categorised as "Multiple". If the TE report confirms that a provision is applicable to multiple tax bases, but all those tax bases fall under one of the Level 1 GTED tax base categories, the appropriate category is selected under Level 1 and the option "multiple" is selected in the lower categories. For example, an exemption for a certain good that is applicable to both customs duties and VAT is classified as taxes on goods and services, on Level 1, and "Multiple", on level 2. Lastly, "Not stated/unclear" is selected when the TE report offers very limited or no data regarding the applicable tax base for a given provision.

[13] The full tax base category list can be found in Appendix 1.A.

II.3.2.2 Type of TE

Regarding the type of TE, all categories are organised under the same level. The data analyst must choose between categories such as: exemption, deduction, deferral, reduced tax rate, tax credits, etc. For special incentives such as "accelerated depreciation," "accelerated capital-cost allowances", "loss carry-forwards," etc.[14] the data analyst must do additional research to confirm the core type of incentive that is behind the program – i.e. read about the incentive and determine whether it operates as an exemption, a deduction, a tax credit, etc. If the incentive program is complex and includes more than one type of TE – for example, the provision offers an income tax deduction for an investment up to a certain amount and a reduced tax rate thereafter – the type of TE is classified as "Multiple". In cases in which it is not clear what the correct categorisation should be, or the type of TE does not neatly fall under any category listed in the Data Manual (e.g. the provision only offers a partial exemption and not a full exemption), the option "Other" is selected. Lastly, "Not stated/unclear" is selected when the TE report offers very limited or no data regarding the applicable type of TE.

II.3.2.3 Beneficiaries

Similarly to the type of TE category, the beneficiary category also has only one level of mandatory classifications. This includes categories such as businesses, households, non-profits, international organisations, etc.[15] However, the beneficiaries category also has a non-mandatory second level where data analysts can further specify the type of beneficiary, if such information is available in the TE report (which is not often the case). For example, if level 1 is "Businesses", the second level may specify that the targeted businesses are "SMEs," "manufacturers," "exporters," or any other type of business. However, because the way countries report data about beneficiary types is very heterogeneous, this level 2 field does not include a set of pre-defined classifications, but allows the data analysts to write-in the information.

Information on the type of beneficiaries is not always explicitly stated, or can be inferred from the TE name or description. The only cases in which the beneficiary type can be inferred is if the tax base of the provision is PIT (beneficiaries = households) or if the tax base for the provision is CIT (beneficiaries = businesses). In all other cases, if the beneficiary type is not explicitly stated, the classification "Not stated/unclear" is selected. If the reported information specifies multiple types of beneficiaries – for example, the TE report states that a particular VAT exemption is applicable both to businesses and to households – the beneficiary is classified as "Multiple." If the beneficiary type for any provision is stated but does not fall under any of the first level categories defined in the GTED Data Manual, the beneficiaries for those provisions are classified as "Other."

II.3.2.4 Policy Objective

Perhaps the hardest category to classify is the policy objective. The 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 splits data into broad

[14] The full TE type category list can be found in Appendix 1.B.

[15] The full beneficiaries category list can be found in Appendix 1.C.

objectives such as "Attract/Promote Investment", "Develop a priority economic sector", "Increase access to/demand for certain goods or services", etc. The second level, splits those categories further. For example, "Attract/Promote Investment" is split into "Attract Domestic Investment", "Attract FDI", etc.; and the "Develop a priority economic sector" first-level category is split into "Develop the agriculture sector", "Develop the ICT sector", etc. [16]

Similarly to the beneficiaries category, the policy objective can hardly ever be inferred from the name or description of the TE provision, unless explicitly stated. The policy objective of a TE provision is usually only inputted if it comes from a specific objective field in the TE report, i.e. only when the report has a section stating the provision's objective. In rare cases, information about the policy objective may be taken from the name or description of a TE provision, but only if it is presented as such – for instance, if the name or description of the provision contains phrases such as "the objective of this provision is…", "this provision aims to…", "the goal of this provision is…", etc.

Because of the heterogeneity of the data and because policy objectives can be very nuanced (i.e. "attract investment" and "promote investment" can have diverging meanings), the original wording of each policy objective is saved in the notes section. This information can be relevant to GTED users who need to go into more detail when studying the data of the provision. Similar to the previously mentioned GTED categories, the policy objective for a provision is classified as "Multiple" when the provision has more than one objective; as "Other" if the original data does not neatly fall under any of the GTED labels; and as "Not stated/unclear" if the policy objective of a provision is not explicitly stated.

II.3.2.5 Other Qualitative Data Fields

Functional or Budgetary Category
In this optional field, we record any information regarding the budgetary/functional category of a provision, or the sector to which it applies. This field is optional because countries often do not provide this information, and even when they do, the categorisations used differs heavily from one country to another.

Time Frame & Duration
In the "time frame" field, we classify provisions as having a sunset clause, if such information is provided in the TE report, or as permanent if no information on the end date of a provision is given. If a provision does indeed have a sunset clause, we record the end date of the provision or the number of years for which it will be/has been active in the "duration" field.

Implementation & Modification
In this field, we record any information about modifications made to a provision over the years. For example, a reduced VAT rate for a specific activity that jumps from 3 percent to 5 percent in 2013 (compared to the standard VAT rate of 8 percent).
Legal Reference
This field collects information about the law, article, and paragraph upon which a certain TE provision is based. The most recent available legal reference is used to populate this field.

[16] The full policy objectives list can be found in Appendix 1.D.

Linked Provision
If an original provision is transformed into 2 or more new provisions, the ID of the original provision is recorded in this field for each of the new provisions. For example, if a country reports revenue forgone from "VAT exemptions on milk and milk products" (all together) until 2008, and revenue from "VAT exemptions on milk" and from "VAT exemptions on milk products" separately from 2009 onwards, the ID of the original provision is saved in the linked provision field of the two new provisions.

Data Type
This field classifies the data reported by countries into four groups: "Provision-level", if the country reports data at the level of the legal provision triggering the TE; "Overall Estimates" if a country only reports aggregate tax expenditure data, e.g. by tax base; "Very Disaggregated" if the country provides very detailed information, yet without a legal reference, making it impossible to confirm that it is indeed provisional data; and "Somewhat Disaggregated" if the country provides data that is not as detailed as the latter category but contains more information than a broad category such as tax base only (e.g. data providing both the tax base and the type of beneficiary).

Source, Last Updated, Other, & Footnotes
The "Source" field saves the name of the government agency from which the data regarding a TE provision is collected. "Last Updated" indicates the month and the year in which the GTED staff last updated the qualitative and quantitative data for a given provision. "Other" and "Footnotes" collect any overall notes or footnotes that cannot be saved in the category-specific notes sections.

II.3.2.6 Data Collection Practices Applicable to all categories

Some useful information (tax base, beneficiary type, TE type, or other information) is stored in table titles/subtitles and columns. For instance, in Belgium, the tax base (e.g. "Impôt des sociétés" = Corporate Income Tax) is contained in the table title.[17] Other useful information – budgetary category, or simply more information on the TE – is contained in the subtitle (e.g. "Recherche et Developpement" = Research and Development). More useful information is also contained in the subcategories. The GTED data analysts extract useful information from any part of the TE report, however, they never try to guess or infer the classification for a particular category. So, if the information about a certain category for a provision is not explicitly stated somewhere in the report, the category is classified as "Not stated/unclear."

As already mentioned, the GTED records the most recent revenue forgone estimates for each year for a specific provision. The same rule applies to qualitative data. The qualitative classifications are also based on the latest report in which a specific provision appears. Any differences in the classification across years are noted in the appropriate notes sections or in the "Implementation & Modifications" field.

Other rules GTED data analysts follow when collecting data are:

- A note should be added any time a category is classified as "Other" or "Multiple".
- Notes should also be added any time they make the interpretation of the data easier.
- The most disaggregated piece of information should always be collected.

17 The Belgian report to which this section refers can be found here: https://finances.belgium.be/fr/statistiques_et_analyses/chiffres/inventaire_depenses_fiscales_federales

II.4 Quality Assurance Process

II.4.1 Quality Assurance Process for Quantitative Data

The first step in ensuring the quality of the quantitative data is to check whether the yearly totals of revenue forgone in the TE report, when available, match the yearly totals in the GTED Template. The reviewer compares those totals for all years and notes any differences. Since TE totals are not always reported and to ensure that no mistakes were made at the provision level, in the second step of the quality assurance process, the reviewer randomly selects at least 25 per cent of the reported provisions and compares their yearly reported numbers to the numbers included in the GTED. For countries that report few provisions, this is done for a large share of the total number of provisions reported. For example, if a country only reports 30 to 50 provisions, the reviewer checks all of the quantitative data for potential mistakes. However, if a country reports 1000 provisions, the reviewer checks at least 25 per cent of provisions

If the reviewer finds any errors in the yearly totals (during the first review step), the data analyst originally working on the data is asked to review and correct all the provisions for those specific years. If the reviewer finds any errors at the provision level (during the second review step), the data analyst is asked to correct those errors and review the remainder of the data for similar mistakes. Once the data analyst sends the data back to the reviewer, another random 10 per cent of the provisions are reviewed to ensure that no other issues remain in the data. This process is repeated until there are no more errors found.

II.4.2 Quality Assurance Process for Qualitative Data

The quality assurance process for qualitative data is similar, but based on a checklist of common mistakes. This includes checking:

1. Whether all mandatory fields have data. The applicable fields for this step are: TE original name, TE name in English, Country Code, Region, Tax Base, TE Type, Beneficiary - Level 1, Time Frame, Estimation Method, Policy Objective - Level 1, Legal Reference, and Unit/Currency.
2. Whether the non-mandatory fields (those not listed above) are consistently recorded. For example, if 90 out of 100 provisions have a TE description, but 10 do not, the reviewer checks if the description for those 10 provisions can be found in the available reports.
3. Whether there is an associated note for every record for which “Other” was selected in any of the categories.
4. Whether the original wording of available policy objectives was included in the notes section. This is important so that the reviewer can cross-check the categorisation of the data during the next step of the qualitative assurance process.
5. Whether there is an associated entry in the Duration column for every record which has an option other than “Permanent” selected in the Time Frame column.
6. Whether all the notes are recorded in the correct column (for example, notes about the beneficiary type should not be recorded in the tax base notes section).

Similarly, as in the quantitative data section, the reviewer then proceeds to check the quality of the inputted data by randomly selecting at least 25 per

cent of the provisions reported in the data template. In cases in which the categorisation is explicitly stated in the report (e.g. the report explicitly states that the tax base is VAT for a specific provision), the reviewer checks whether the categorisations of the GTED Template match the reported categorisations. In all other cases, the reviewer consults the Data Manual to check whether the categorisations chosen by the original data analyst in the template follow the definitions of the manual. If the reviewer and the data analyst disagree on what a certain categorisation for a provision should be, or if they are both unsure about the correct categorisation, the data manager steps in and makes a final decision.

There are cases in which the name or description of a provision is updated from one year to the other. The data analyst takes note of such rare cases while working on the data and reports them when submitting the data for review. The reviewer also checks if there are any provisions that may have changed their name from one year to the other, but had been recorded as two different provisions by the data analyst. The reviewer checks for any pair of records in the GTED template that meet the following four conditions: i) the two records have similar names and other qualitative information, ii) there are no years for which both entries have revenue forgone estimates, iii) the revenue forgone estimates for one record stop at the same year in which they begin for the other record, and iv) the magnitude of revenue forgone is similar for both records. If all four conditions are met, the reviewer and the data manager review all available information and decide whether to merge the two records and report them separately on a case-by-case basis.

III. Data Comparability

TE reporting is a time and resource intensive exercise that usually evolves over time. In general, TE reports improve over time, e.g. by including more and better information. In some cases, there can be changes in the methodology used by governments to estimate the revenue forgone or even in the definition of specific benchmarks. When these differences are substantial, the comparability of the data over time can be affected. As mentioned before, the spirit of the GTED is to respect as much as possible what governments report. Hence, while we seek to understand and discuss such changes as explicitly and transparently as possible, we do not complement or correct the official data published by governments.

For instance, in 2016 the Netherlands started reporting revenue forgone estimates for tax incentive programs “other than tax expenditures”. The 2016 report explicitly differentiates between what is a TE and what is classified as “other type of tax incentives”. However, no such distinction is made in the subsequent reports, where revenue forgone estimates are reported jointly both for TEs and “other type of tax incentives”. This was due to a change in the underlying rationale, according to which it is not the exact definition of a specific TE that matters, but rather whether such provision has significant meaning because of policy relevance or budgetary impact. Hence, since 2017, these latter two conditions are the criterium defining whether a given TE provisions is reported or not. Accordingly, TE reports from 2017 and onwards exclude those provisions with a fiscal cost below EUR 5 million and provisions that follow from European legislation (and are thus mandatory). This explains why the number of provisions is lower in 2017 compared to 2016, but the revenue forgone remains comparable. On the other hand, the significant spike in the TE/GDP ratio (jumping from roughly 3 percent 2013 to roughly 13 percent in 2014) is mainly explained by the inclusion of (general) tax

credits in the newer reports which presented updated data for 2014 and onwards, but not for 2013 and earlier. In this concrete case, we input the data as reported by the Netherlands' government, without making any specific adjustment.[18]

III. 2 Cross-country Comparability

While the GTED allows for cross-country comparisons, and while we believe that such cross-country comparisons provide valuable insights, two methodological aspects - different benchmarks, and different estimation methods - need to be borne in mind when comparing data across countries. The lack of reliable data of TEs implemented by lower tiers of government is another case in point.

III. 2. 1 Benchmarking

Benchmarking is probably the most important challenge for any initiative seeking to compare TE across countries, including the GTED. As mentioned before, TEs are defined as departures from the – usually country-specific – standard tax structure or benchmark. Hence, differences in national benchmarks lead to certain tax provisions being considered as TEs in one country, and not in another one. This is an inherent issue triggered by the definition of TEs and the differences in benchmark systems across countries. Carbon taxation is a case in point. When a carbon price scheme is implemented, governments often grant TEs (e.g. reduced rates or exemptions) for energy-intensive and trade-exposed sectors to avoid the increased price on carbon putting their economies at a disadvantage compared to those countries where no pricing scheme is place. In other words, TEs in the context carbon taxation can only arise where a carbon tax is part of the benchmark tax system

As a rule, we input the data published by official governmental institutions, sticking to their own definitions of benchmarks, without trying to complement official figures or challenge what different countries consider as their standard tax system or benchmark. For instance, Canada, which is one of the best performers when it comes to TE reporting, provides revenue forgone estimates for TEs and also for provisions classified as a "Tax measure other than tax expenditure".[19] The latter are classified as "structural measures" and in the category "Reason why this measure is not part of benchmark tax system", an explanation is often provided, e.g. "This measure is considered part of the benchmark tax system, and therefore is not a tax expenditure". In this concrete example, we input the revenue forgone estimates only for those provisions classified as TEs, without challenging the country's criteria for such classification.

Another issue triggered by benchmarking regards the fact that TE estimates could 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. Again, as long as this is not explicitly discussed in TE reports (in which cases, a note is added for the convenience of users), the GTED does not provide information regarding such changes.

[18] The 2016 TE report explaining the methodology change and 2018 TE Report (providing updated data for the years 2014-onwards) for the Netherlands can be found https://zoek.officielebekendmakingen.nl/kst-34550-2.html and https://zoek.officielebekendmakingen.nl/kst-35000-2.

III. 2. 2 Different Estimation Methods and Aggregation of Revenue Forgone Estimates

Estimating the cost of TEs offers different possible approaches. The three main methodologies to measure TEs are the following ones:

- Revenue forgone approach: estimates the amount by which taxpayers have their tax liabilities reduced as a result of a TE based on their actual current economic behaviour.
- Revenue gain approach: estimates the additional revenue that would be collected if a TE was removed, and accounting for behavioural changes resulting from this removal.
- Outlay equivalent approach: estimates the government cash outlay required for an alternative direct spending program replacing the TE that would have the same benefit for the taxpayers. As the revenue forgone method, it assumes no behavioural change.

Each of these approaches has its pros and cons and provides different estimates of the size of a TE. Yet, and probably because of its relative simplicity, the vast majority of countries report on TEs based on the revenue forgone approach. Hence, the revenue forgone estimates gathered by the GTED are based on this method.[20]

Since the revenue forgone methodology is static and does not take potential behavioural responses into account, the cost estimates and projections may exceed the revenue gains that would result if a particular provision was eliminated. In other words, the removal of a specific TE provision could trigger behaviour adjustments by some taxpayers in order to minimise their tax liabilities, which are not captured by this estimation method. Likewise, the revenue forgone method does not take into account the potential impact of a particular TE (or its elimination) on the overall level of economic activity, and thus on aggregate tax revenues. As discussed in the Canadian TE report referenced before, "… eliminating a particular tax expenditure may affect the level of consumption or economic activity, which in turn could cause a further change in the amount of tax revenue collected. Eliminating a tax expenditure would also mean that the government would have more funds available to increase spending, reduce taxes or pay down debt—actions that could have additional dynamic effects on the economy and on tax revenues."

Hence, adding up all the individual costs computed separately and without taking behavioural changes into account would not result in a figure that represents the total cost of all TEs. The Australian Treasury highlights that "it is not appropriate to aggregate revenue forgone estimates. As indicated above, revenue forgone estimates do not take account of potential changes in taxpayer behaviour following the (hypothetical) removal of a tax expenditure. However, in reality such changes in behaviour would be likely to occur – in particular, the removal of one tax expenditure would often affect the utilisation of other tax expenditures. Aggregating revenue forgone estimates therefore risks significantly amplifying the limitations inherent in this method of estimating the size of tax expenditures."[21] As acknowledged by Myles et al. (2014), many countries

[19] See, for instance, the entry for "Non-capital loss carry-overs": https://www.canada.ca/en/department-finance/services/publications/federal-tax-expenditures/2020/part-6.html#Non-capital-loss-carry-overs.

sum their TEs, despite recognising the limitations of doing so, e.g. to provide an order of magnitude of their total fiscal costs.[22] The South African TE Statement, for instance, includes a section where the trends in TE for the latest available years are discussed, showing the share of total TE by tax base.[23]

It is worth mentioning that some countries do provide figures based on the other two methods, but only as a complement to the measurement based on revenue forgone. For example, the Australian Treasury provides estimates of a selected group of TEs based on the revenue gain approach, in addition to the standard estimates based on the revenue forgone method.[24] In these cases, and for the sake of completeness, revenue gain estimates are collected, but they are not considered for the calculation of the different indicators and charts produced on the website.

III. 2. 3 Tax Expenditures implemented by lower tiers of government

In some countries subnational governments are required by law to publish those figures, similar to those provisions implemented at the national level. Yet, even in those cases, actual TE reporting is often strikingly poor. In Canada, for example, the estimates presented in the official report relate to federal revenues only, even if the potential impact of the Federal-Provincial interaction is explicitly acknowledged in the report: "The federal and provincial tax and benefit systems interact with each other to varying degrees, and as a result changes to tax expenditures in the federal system may have consequences for provincial revenues. Any such provincial revenue effects are not taken into account in this publication. Information on provincial tax expenditures can be obtained by consulting the tax expenditure reports that are produced by certain provinces".[25] Now, some countries report the budget impact of TEs disaggregated by level of government. For instance, Germany breaks down (in per cent) the fiscal cost for the federation, states and municipalities. Austria splits the cost between the federal government and the rest. In these cases, as long as the TE provision is implemented by the national government, we include the total fiscal cost, no matter the tier of government bearing it.

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[20] For more details, see Redonda (2016).

[21] See the Australian Tax Expenditure Report (p.6) here: https://treasury.gov.au/publication/tax-expenditures-statement-2015.

[22] See, for instance, Astarita et al. (2014) and Tyson (2014).

[23] The South African TE Statement can be found here: http://www.treasury.gov.za/documents/national%20budget/2018/review/Annexure%20B.pdf.

24 See, for instance, the 2017 Australian TE Statement here: https://treasury.gov.au/publication/2017-tax-expenditures-statement.

To sum up, even if comparing overall TE estimates alone can indeed be misleading, the GTED provides a significant amount of metadata allowing users to put figures in context. For instance, classifying TEs by tax base or policy objective provides users with the possibility to address comparability issues, and could be particularly informative in certain contexts.

The estimation of the VAT Policy Gap across EU member states is a case in point. The VAT Policy Gap is the component of the VAT Gap that captures the effects of applying multiple rates and exemptions on the theoretical revenue that could be levied in a given VAT system (Poniatowski et al., 2020). Whereas VAT-related TEs are, up to a certain extent, regulated at the supranational level, each member state has different standard VAT rates (i.e. the benchmark), which vary significantly from 17 percent in Luxembourg to 27 percent in Hungary. Poniatowski et al. (2020) compute the VAT Policy Gap for each EU member state as well as the regional average. For the EU overall, the average Policy Gap was 44.24 percent in 2018, 10.07 percentage points being explained by the application of reduced and super-reduced rates, and 34.17 percentage points by the application of exemptions without the right to deduct.

Finally, presenting all existing TE data in a consistent way opens the door to different TE analyses. The GTED Flagship Report provides examples of how the GTED is used as a crucial source of information to shed light on specific topics, such as for instance patent boxes and domestic revenue mobilisation (von Haldenwang et al., 2021).

IV. Using the Global Tax Expenditures Database Website. A Practical Guide

This section provides an overview of the GTED website (www.GTED.net), its content, and its analytical tools. It is intended to help users navigate through the website and utilise its potential in full.

IV.1 Home Page

When visiting www.GTED.net, users land on the portion of the Home Page depicted in Figure 4.1.

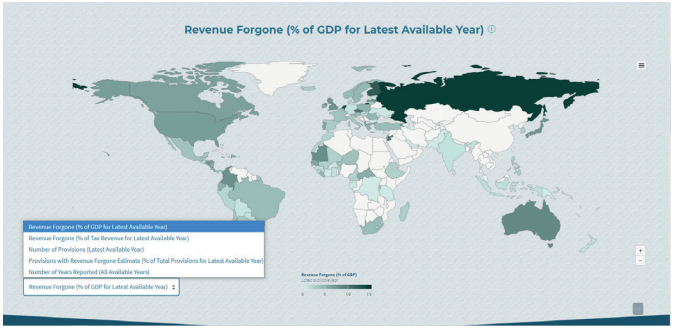
Figure 4.1 GTED Landing Page

There, they will be able to find basic background information about the project as well as some main facts regarding the GTED coverage, such as the number of countries reporting TE data and the number of non-reporting countries, the total number of TE provisions in the database, the cumulative number of years of TE data reported by all countries, as well as the number of years for which the GTED collects data.[26]

[25] See the Canadian Report on Federal Tax Expenditures here: https://www.canada.ca/en/department-finance/services/publications/federal-tax-expenditures/2020.html.

Scrolling down, users will see a World Map, highlighting the revenue forgone as a percentage of GDP for the latest available year for each reporting country (Figure 4.2).

Figure 4.2 GTED Home Page Map



In the lower-left section of the map, users may choose to change the view of the map and show other indicators. Users can choose to view the world map based on revenue forgone as a percentage of tax revenue collected, number of provisions, share of provisions with revenue forgone estimates (all for the latest available year), or the number of years since 1990 for which each country reports TE data.

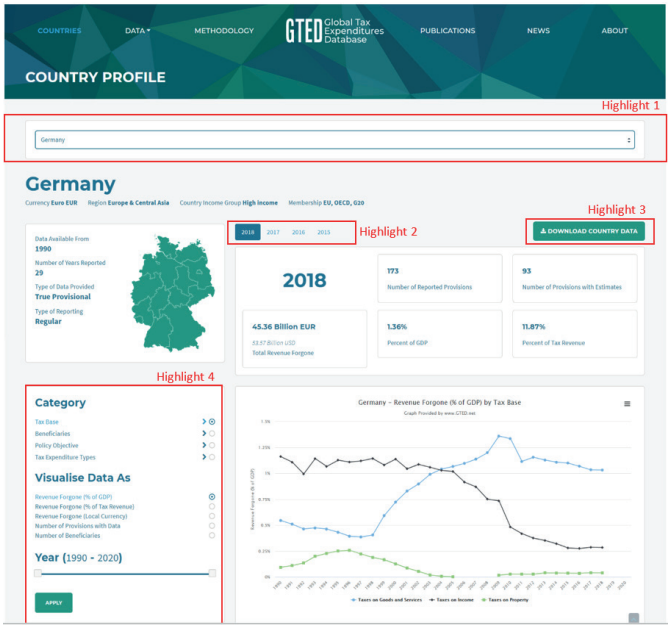
By hovering over any reporting country in the map, the user will be able to see information such as the name of the country, the name of the indicator visualised in the map, the latest available year of data for that country, and the value associated with that country for the chosen indicator.

Scrolling further down the home page, users will be presented with short descriptions of the type of data and type of analytics the website provides, as well as news articles and publications about the GTED.

IV.2 Country Profiles

Using the navigation bar available throughout the website, users will be able to visit the Country Profiles section of the GTED website by clicking on “Countries” (Figure 4.3).

Figure 4.3 GTED Country Profile



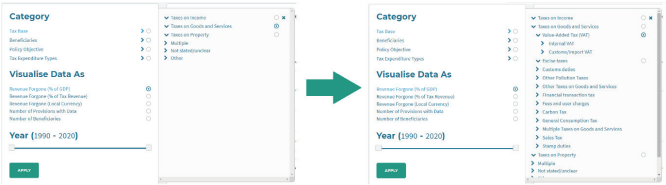
[26] The GTED is an ongoing project, hence the reporting figures depicted in the screenshot in Figure 4.1 or in any of the remaining screenshots in this paper are to be used as a reference only, and may be updated on an ongoing basis.

There, users will be presented with an overview of each country's TE reporting. They can select the country for which they would like to display the data by using the dropdown menu at the top of the page (Figure 4.3, Highlight 1).
In the upper section of the page, users can see background information on the country and on its TE reporting. Right below the country name, users will see background information about the selected country, such as its currency, the region and the country income group to which it belongs (based on World Bank classifications), and membership with the EU, the OECD, or the G20, if applicable.

Below the country name, on the left side, users can see a map of the country and background information regarding its TE reporting such as the first year the country provides data for (starting with 1990), the number of years for which it provides data, the type of data it provides (based on the classifications described in section II.4.2.5), and the regularity of its reporting (based on the classifications described in section II.4.2.7).

Next to the country map, on the right, the Country Profile page presents some of the main TE statistics for the four latest years for which the country reports data, starting with the most recent year of available data. The information covered here is the number of reported provisions, number of provisions with revenue forgone estimates, the total revenue forgone for that country in LCU as well as USD, and information on the total revenue forgone both as shares of GDP and tax revenue. The user can change the year for which these statistics are displayed by clicking on any of the other years, as shown in Highlight 2 of Figure 4.3.
Also in this section of the Country Profile page, users can download the full dataset for the country by clicking on the "Download Country Data" button on the upper right corner (Figure 4.3, Highlight 3).
The second portion of the Country Profiles page (below the map) allows users to visualise and analyse the country's TE data. The users can select the category by which they want to analyse the country's data (tax base, beneficiaries, policy objective, or tax expenditure types); they can choose how they would like to visualise data (either as revenue forgone in percentage of GDP, revenue forgone in percentage of tax revenue, revenue forgone in local currency, the number of provisions with data, or as the number of beneficiaries); and they can select the period of time (between 1990 and the present year) for which they wish to visualise the data (Figure 4.3, Highlight 4). By clicking on the "Apply" button at the bottom left corner of the page, the users' selections will be applied to the adjacent chart.

Figure 4.4 Data Visualisation Drilldown



Users can choose to display data by higher level categories (the four categories mentioned above) or drill down deeper into the data. For example, if users click on the "Tax Base" option and choose to visualise data as revenue forgone in per cen of GDP, the Country Profiles chart will break down the country's TE data by the three main tax base categories – taxes on income, taxes on goods and services, taxes on property – and display the total revenue forgone in per cent of GDP attributed to each of these categories. If some of the countries tax base data is classified as "Multiple", "Other", or "Not stated/unclear" those classifications will appear on the chart as well.

However, users can zoom in further into the data by choosing, for example, to break down the country's TE portion attributed to taxes on goods and services by the type of taxes on goods and services (Figure 4.4, left side). The resulting graph will display a line depicting the yearly total revenue forgone as percentage of GDP for each type of taxes on goods and services present in the country's data (VAT, excise taxes, customs duties, etc.). If such data is available, users can also choose to display data by type of VAT (internal vs. customs VAT) or the type of excise taxes (alcohol taxes, tobacco taxes, fuel taxes, etc.) (Figure 4.4, right side).

Users will know the categories with data to be displayed by following the arrows and the selection icons in the Category section. For example, after clicking on the arrow related to tax bases, the options menu that appears to the right displays 6 entries, only 3 of which have a selection icon (Figure 4.6, left side). The selection icon indicates that the listed category has subcategories by which tax expenditure data can be broken down. For example, "Multiple", "Other", or "Not stated/unclear" do not have any subcategories and therefore no selection icon. Similarly, some subcategories of taxes on goods and services have their own subcategories (VAT and excise) while others do not (customs duties, stamp duties, etc.). Only those tax bases that have subcategories have a selection icon and have a downward pointing arrow which can be clicked to list those subcategories (Figure 4.6, right side).

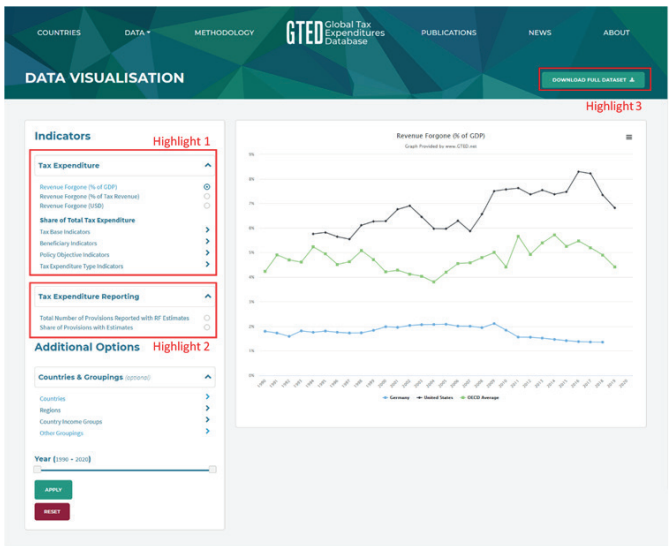
IV.3 Data Visualisation

The two Data pages, Data Visualisation and Data Download, can be accessed from any part of the GTED website by clicking on the "Data" button of the navigation bar and choosing either option (Figure 4.5).

Figure 4.5 GTED Navigation Bar Displaying Data Pages

The Data Visualisation page allows users to run cross-country comparisons on over fifty indicators. The indicators are organised in two groups: 1. Indicators about tax expenditure and 2. Indicators about tax expenditure reporting. The former group contains basic indicators such as the total revenue forgone as a percentage of GDP, as a percentage of tax revenue, or in USD, but also more advanced indicators based on the four GTED categories (tax base, beneficiaries, policy objectives, and tax expenditure types) (Figure 4.6, Highlight 1).

Figure 4.6 GTED Data Visualisation Page

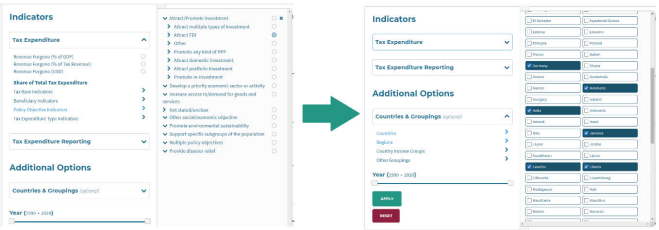


The tax expenditure reporting indicator group contains indicators such as the yearly number of provisions with estimates or the percentage of provisions reported in a year that have revenue forgone estimates (Figure 4.6, Highlight 2).

The "Share of Total Tax Expenditure" subsection allows users to compare countries on indicators built by any subcategory of the four GTED categories. For example, users can choose to compare countries on the share of total tax expenditure attributed to TE provisions with the policy objective "Attract/Promote investment." However, users can drill down further and compare the share of total tax expenditure attributed to the policy "Attract FDI", which is a subcategory of the "Attract/Promote investment" policy objective (Figure 4.9). Similarly to the chart options in the Country Profile page, any options that have their own subcategories are marked with a downward-pointing arrow, which, when clicked, reveals those subcategories.

After selecting an indicator, users can choose the countries or country groupings they wish to compare using that indicator in the "Additional Options" section of the Data Visualisation page. Users can compare countries to each other; compare countries to their respective regional or country income group averages or the averages of other country groupings; or compare the averages of different country groupings for the selected indicator (Figure 4.7).

Figure 4.7 GTED Data Visualisation Page



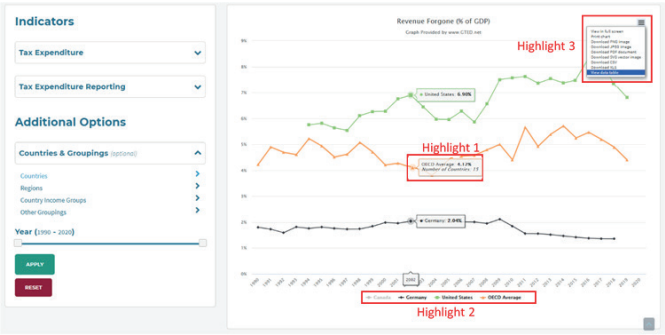
STEP 1: Select an indicator

STEP 2: Select countries and/or groupings

In the "Additional Options" section, users can also choose the period of time for which they wish to compare the data by adjusting the two markers in the "Year" ribbon. After selecting an indicator, the countries/groupings which they wish to compare, and the period of interest, users can click on the "Apply" button at the bottom left corner of the page to generate a chart with their selection. If they wish to reset all the selections, users can click on the "Reset" button which is also located at the bottom left corner of the page.

After selecting an indicator, the countries/groupings and the period of interest, the resulting chart displays a timeline for each country/grouping selected using values from the selected indicator. For example, Figure 4.10 shows a chart comparing the trend of total revenue forgone as a percentage of GDP of Germany and the US to the OECD average. Hovering over any data point in the chart allows the viewer to see the associated value with that data point for that year for all the lines in the chart. For the averages of different country groupings, the number of countries includeed in the average for that year is also displayed (Figure 4.8, Highlight 1).

Figure 4.8 Sample Chart and Chart Functions



Clicking on any of the legend items at the bottom of the chart removes the associated line from the chart and colours the respective item grey (Figure 4.8, Highlight 2). By clicking on the same legend item again, the user can return the associated line to the chart. The same functionality is also available in the Country Profile charts.

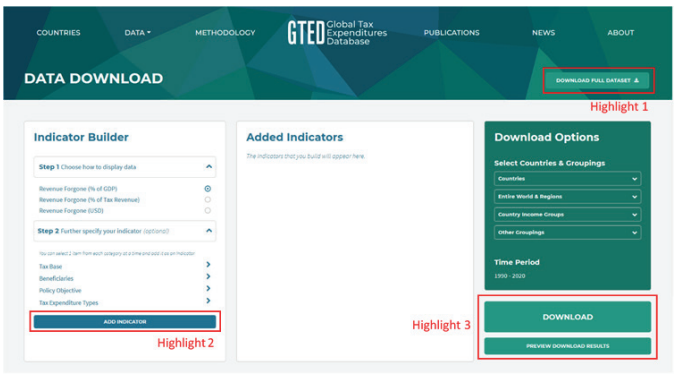
Clicking on the options icon (displayed as three horizontal lines) at the top-right corner of the chart, presents the user with the choice to view the chart in full screen, print the chart, download the chart in six different formats, and display the data visualised in the chart in table format (Figure 4.8, Highlight 3). If the last option is selected, a data table will appear below the chart. The table can be removed by selecting the same option again. Similar chart options are also available in the Country Profile chart and in the Home Page map.

Users can already download the full GTED dataset by clicking on the "Download Full Dataset" button in the upper-right corner of the Data Visualisation page (Figure 4.8, Highlight 3). However, more data download options are available in the Data Download page described in the next section.

IV.4 Data Download

Similarly to Data Visualisation, the Data Download page can also be accessed from any page in the GTED Website by clicking on the option Data and then Download of the GTED Navigation Bar.
Besides offering the option to download the full GTED dataset (Figure 4.9, Highlight 1), the Data Download page is separated into three sections to help the user run specialised queries and download their results.

Figure 4.9 Data Download Page

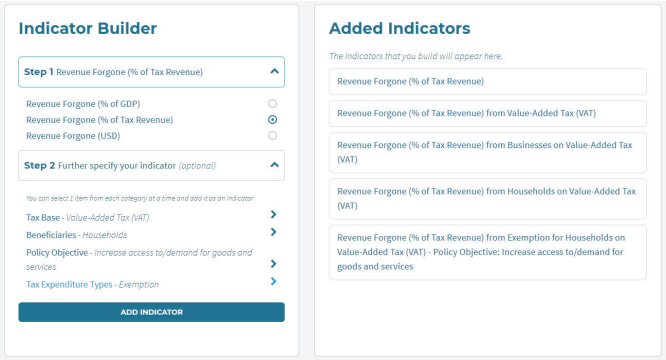


Using the indicator builder on the left of the page, users can create specialised indicators based on the four GTED categories. After selecting the categories of interest and choosing how to display data, users may click on the "Add Indicator" button, which appears in the bottom left of the page and lists the created indicator to the "Added indicators" section of the page once clicked (Figure 4.9, Highlight 2). After building all indicators of interest, users can choose for which countries/groupings they wish to download the results of their queries in the "Download Options" section of the page. There, besides having the option to download the query results, users may also choose the "Preview Download Results" button at the bottom-right of the page to display a table with query results (Figure 4.9, Highlight 3).

As mentioned above, users can use the "Indicator Builder" tool to run custom queries and build specialised indicators. To do that, they must first select how the values for the indicator should be displayed. After making a selection in the "Step 1" section, the name of the selection option will appear in the header of the section and the "Add Indicator" button will also appear,

allowing users to create a basic indicator. For example, users may choose to focus on revenue forgone as a percentage of tax revenue and click on the "Add Indicator" button without making any other selections. This will add an indicator describing the total revenue forgone as a percentage of tax revenue by country or country grouping (first indicator in Figure 4.10).

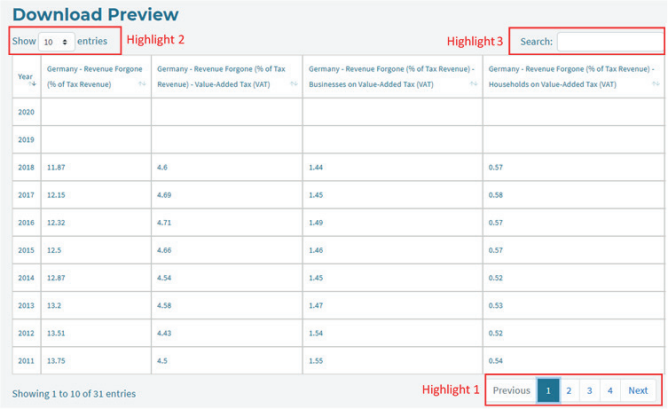
Figure 4.10 Building and Adding Indicators



However, users may be more interested to further breakdown the revenue forgone data. They can choose to do that by making a selection in any of the GTED categories. For example, they can choose to create an indicator that looks at revenue forgone as a percentage of tax revenue attributed to VAT only (second indicator in Figure 4.10). They can dig even deeper into the data and create an indicator that looks at revenue forgone as a percentage of tax revenue attributed to VAT with only businesses as beneficiaries, or do the same and choose households as beneficiaries (indicators 3 and 4, Figure 4.10). These two indicators would compare the VAT revenue forgone that benefits businesses to the VAT revenue forgone that benefits households. However, users can run even more sophisticated queries and check, for example, revenue forgone as a percentage of tax revenue attributed to exemptions of households from VAT which aim to increase access/demand to goods and services (last indicator, Figure 4.10). Hence users can build indicators by using any combination of the four GTED categories. Users may remove any of the indicators on the "Added Indicators" field by clicking on them.

After creating all indicators of interest and choosing the countries/groupings they wish to analyse, users can preview the download results in the "Download Options" section of the page. The resulting download preview table displays the values for all selected indicators for all countries, starting with the most recent year (Figure 4.11, Highlight 1).

Figure 4.11 Download Preview Table



Year	Germany - Revenue Forgone (% of Tax Revenue)	Germany - Revenue Forgone (% of Tax Revenue) - Value-Added Tax (VAT)	Germany - Revenue Forgone (% of Tax Revenue) - Businesses on Value-Added Tax (VAT)	Germany - Revenue Forgone (% of Tax Revenue) - Households on Value-Added Tax (VAT)
2020				
2019				
2018	11.87	4.6	1.44	0.57
2017	12.15	4.69	1.45	0.58
2016	12.32	4.71	1.49	0.57
2015	12.5	4.66	1.46	0.57
2014	12.87	4.54	1.45	0.52
2013	13.2	4.58	1.47	0.53
2012	13.51	4.43	1.54	0.52
2011	13.75	4.5	1.55	0.54

The table's height is fixed to show the ten most recent years, however, at the bottom-right corner of the table, users have the option to view older years by clicking on the result page numbers. Users may also increase the number of rows the table has by clicking on the dropdown menu "Show [number] entries" at the top-left corner of the table (Figure 4.11, Highlight 2). Users can also use the search bar, located at the top-right corner of the table to search through the data, if they are trying to preview a lot of data at once (Figure 4.12, Highlight 3).

Other GTED Website Pages

Methodology

The Methodology page allows users to learn more about the methodology used to gather and classify data for the GTED, and it is based on the information provide in this paper.

Publications & News

The Publications page lists publications using the GTED as a main data source. These include the GTED Companion Paper, the GTED Flagship Report, and any future applicable publications. The News page provides information on any GTED-related news as well as selected information on news related to TEs, in general.

About

The About page allows users to learn more about the project, its partners, and provides contact information that can be used for any queries related to GTED.

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APPENDIX 1 A TAX BASE CATEGORIES

Level 1	Level 2	Level 3
Taxes on Income	Corporate Income Tax (CIT)	
	Personal Income Tax (PIT)	
	Capital Gains Tax	
	Payroll Tax	
	Other Income Taxes	
	Multiple Income Taxes	
Taxes on Goods and Services	Sales Tax	
	Value-Added Tax (VAT)	*Internal VAT* *Customs / Import VAT*
	Excise Taxes	*Alcohol Tax* *Fuel Tax* *Tobacco Tax* *Other Excise Taxes* *Multiple Excise Taxes*
	Customs Duties	
	Stamp Duties	
	Fees and User Charges	
	Financial Transaction Tax	
	Carbon Tax	
	Other Pollution Taxes	
	Other Taxes on Goods and Services	
	Multiple Taxes on Goods and Services	
Taxes on Property	Real Estate Tax	
	Land Value Tax	
	Estate Tax	
	Vehicle Tax	
	Other Property Taxes	
	Multiple Property Taxes	
Other		
Multiple		
Not stated/unclear		

APPENDIX 1.B. TAX EXPENDITURE TYPE CATEGORIES

Tax Expenditure Type
Deduction
Deferral
Exemption
Reduced Rate
Tax Credits, Rebates and Refunds
Zero-rated
Other
Multiple
Not stated/unclear

APPENDIX 1.C. BENEFICIARY CATEGORIES

Beneficiary
Businesses
Churches/Religious Organizations
Households
International/Regional/Multilateral Organizations
Non-profit Organizations/NGOs/Philantrophic Organizations/Foundations
Public Sector
Other
Multiple
Not stated/unclear

APPENDIX 1.D. POLICY OBJECTIVE CATEGORIES

Attract / Promote investment	Develop a priority economic sector or activity	Increase access to / demand for goods and services	Promote environmental sustainability	Support specific subgroups of the population	Provide disaster relief	Other social / economic objective
Attract domestic investment	Develop the agricultural sector	Facilitate / increase access to education	Mitigate greenhouse gas emissions	Develop a specific region of the country	Provide Earthquake relief	Encourage privatization
Attract FDI	Develop the defense sector	Facilitate / increase access to electricity	Promote energy efficiency	Promote gender equality	Provide Flooding relief	Encourage / promote / create employment
Attract multiple types of investment	Develop the energy sector	Facilitate / increase access to health services	Promote renewable energy	Support ethnic / religious or any other minorities	Provide Hurricane relief	Improve labor conditions
Attract portfolio Investment	Develop the extractive sector	Facilitate / increase access to ICT	Protect the biodiversity	Support expatriots returning home	Provide Pandemic relief	Preserve cultural / historical assets
Promote any kind of PPP	Develop the financial services sector	Increase access to / demand for financial services	Support the adaptation to climate change	Support healthcare workers	Provide Tsunami relief	Promote charitable activities
Promote re-investment	Develop the housing / real estate sector	Increase access to / demand for public transport	Multiple	Support indigenous people	Provide Wildfire relief	Promote population growth
Other	Develop the ICT sector	Increase access to / demand for housing	Other	Support low-income households	Multiple	Promote savings
Not stated / unclear	Develop the manufacturing sector	Increase affordability of other goods and services	Not Stated / unclear	Support people with disabilities	Other	Strengthen international cooperation
	Develop the tourism sector	Support water and sanitation projects		Support public sector workers / government officials	Not Stated/ unclear	Support employer-to-employee benefits
	Develop the transportation sector	Multiple		Support the elderly		Support freedom of expression
	Promote exports	Other		Support veterans		Prevent double taxation
	Promote knowledge-intensive activities	Not Stated / unclear		Multiple		Reduce administrative burden / tax compliance costs
	Promote / Protect SMEs					
Other						
Multiple						
Not stated/unclear						

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