

## Chapter 14

### The measurement of tax gaps

Heather Whicker

Her Majesty's Revenue and Customs, United Kingdom

*A key objective of all tax administrations, whether explicit or implicit, is to improve tax compliance and minimise the tax compliance gap. An increasing number of OECD countries are estimating tax gaps and publishing their findings, particularly for value added tax (VAT). Estimation of tax gaps over time, as well as one off, or partial tax gap analysis, can provide valuable insight to inform policy and compliance strategies and help revenue authorities to understand the scale of non-compliance and emerging risks.*

*While the tax gap has intuitive attraction for both the public and political representatives, it is a difficult concept to define precisely. Estimation is also difficult as much of the tax gap is either deliberately concealed from view and/or data may be difficult to find. The measurement and publishing of tax gaps should therefore be navigated and communicated carefully. Limitations of tax gap estimates mean they are not a good basis for explicit performance targets.*

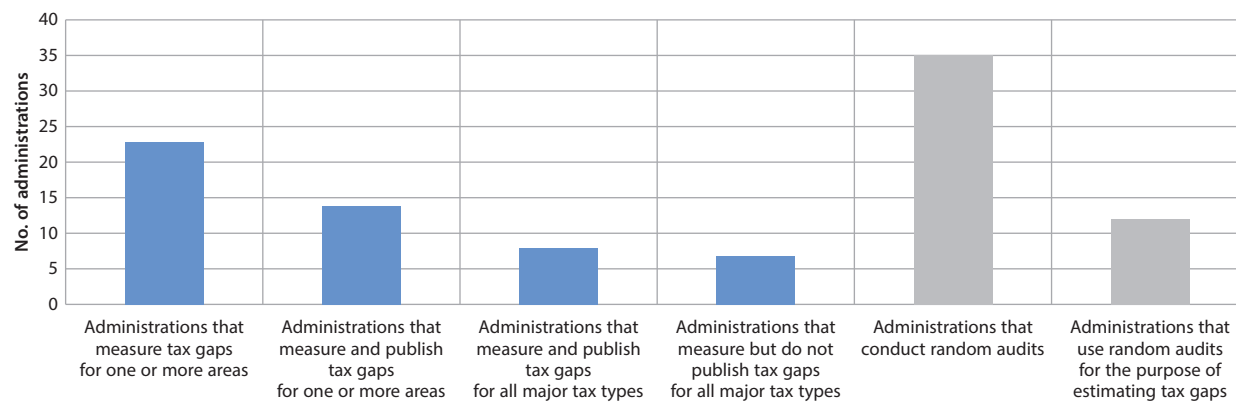
*This chapter sets out some issues to consider in tax gap measurement.*

## What is the tax gap and why measure it?

The tax gap is the difference between tax due and tax collected. This however raises a number of questions of definition. For example what is the tax due, is it tax assessed or the total tax that should be assessed if there was full information? How the impact of policy should be captured (for example as regards potential avoidance)? Should tax collected include tax that is not collectible, for example because the taxpayer is insolvent, or cannot be collected within a particular period?

While different countries take different approaches to defining the tax gap, the main consideration is that any chosen approach contains information that is useful for understanding the relative size and nature of non-compliance over time, including in the components of the tax gap. This can help administrations identify trends and risks to the tax base across different taxes and/or customer groups and inform approaches to tackling non-compliance, whether through policy changes or compliance interventions. In addition, when the tax gap components are brought together into an aggregate figure, it provides a strong starting point for wider strategy development, informing prioritisation and longer-term resourcing. Some of the data sources used for compiling tax gaps, such as data from random audits, can be also bring benefits in improving risk identification as well as sources of non-compliance or under-reporting in particular areas.

Figure 14.1. Tax gap measurement and random audits



StatLink  <http://dx.doi.org/10.1787/888933546944>

Source: Tables A.139 Tax gap and A.140 Random audits.

## Measurement and design options

Tax gap design will be influenced by the availability of data and user requirements. The two main approaches used for tax gap measurement are:

- **Top-down:** The tax base is used to calculate a theoretical value of tax that should be collected, and the actual amount of tax collected is subtracted from this to estimate the tax gap.
- **Bottom-up:** Detailed risk information, administrative data sources, or other bottom-up modelling techniques are used to build a picture of the tax gap for discrete areas.

Where there are robust external surveys, it may be relatively easy to construct top-down tax gaps. Bottom-up tax gaps rely on combining good operational knowledge with management information systems and can be more difficult. For example, it may be that

avoidance and/or large business tax risk is not sufficiently understood and distinct that it can be included in the estimates. If random audits of taxpayers are a viable option, they can be used to build a good understanding of tax losses for large populations. If these statistics are to be used to influence strategy, it may be possible to design the audits in a way which can inform and evaluate policy changes.

Where feasible, a better picture can be drawn by using both top-down and bottom-up estimates – the former capturing all non-compliance and the latter providing greater insight into the behaviours contributing to aspects of the tax gap. Additional factors to consider might include:

- **Resourcing:** The resource requirement to generate the estimates and to assure methods and findings internally is likely to be significant. The most significant implication is caseworker time to conduct enquiries into randomly-selected taxpayers, particularly where this accounts for a significant proportion of compliance resource. There is an opportunity cost of using trained tax professionals for tax enquiries which are not targeted due to risk information. There can also be a significant analytical requirement (in the United Kingdom this is around 12 full time analysts).
- **Availability of data:** Data availability will differ between tax types and approaches. Some methods such as random audits will require investment over a number of years.
- **Governance arrangements:** Consideration needs to be given to analytical integrity, quality assurance and sense checks of findings. These approaches also need to provide mechanisms to allow internal debate and agreement on subjective assumptions.
- **Management attention:** The management and any release of tax gap estimations, which can generate significant public and political debate, is likely to require senior management focus and support.
- **Whether to publish:** This is good practice but has consequences, in particular the risk of misunderstanding and consequent misuse, and should be seen in the wider context of transparency and public accountability.
- **Frequency of updates:** Whilst year on year changes are limited in meaning, there are benefits of maintaining a series over time and as up to date as possible. Retaining a permanent team of tax gap analysts supports consistency of approach and knowledge retention. If resources are constrained, periodic full updates could be interspersed with interim updates using quicker methods, for example risk analysis or tax efficiency metrics.

#### Box 14.1. Measuring tax gaps

In the *United Kingdom*, Her Majesty’s Revenue and Customs (HMRC) define the tax gap as “The difference between the amounts of tax that should, in theory, be collected by HMRC, against what is actually collected.”

The United Kingdom publishes an annual estimate of aggregated tax gaps each year, using a top-down and bottom-up approach, and has a time series from 2005-06. Around 30 component estimates are compiled from a wide range of sources and methods, by government analysts working under a code of practice for official statistics to assure independence and quality. The UK Code of Practice for Official Statistics was published as required by the Statistics and Registration Service Act 2007. It sets out common standards that should be followed by all UK

### Box 14.1. Measuring tax gaps (continued)

organisations that produce official statistics (<https://www.statisticsauthority.gov.uk/monitoring-and-assessment/code-of-practice/>). In contrast the United States, Inland Revenue Service (IRS) uses a periodic task force approach for its federal taxes. This enables them to compute more precise, albeit infrequent, estimates with more detailed breakdowns, which can be used to calibrate their risk models.

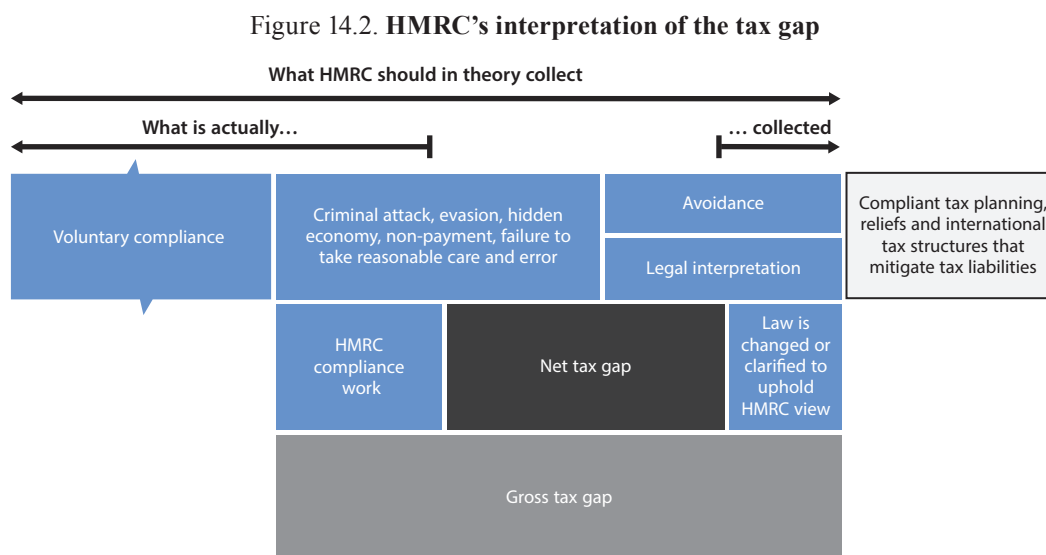
**Top-down:** The tax base in the United Kingdom is used to calculate a theoretical value of tax that should be collected, and the actual amount of tax collected is subtracted from this theoretical value to estimate the tax gap: VAT gaps are estimated this way by comparing economic data on consumption with tax receipts; Excise tax and duty gaps are estimated by using volume estimates of consumption to calculate a theoretical tax base, then comparing this with excise receipts.

**Bottom-up:** HMRC uses internal data and operational knowledge to identify areas of potential tax loss. The best information available is used for each area and aggregated to create an overall tax gap: where there are large populations, audits are conducted of a random sample of taxpayers and their results are grossed-up to form an estimate of the tax gap; where HMRC tracks risks intensively, such as for avoidance and large businesses, management and operational information on identified risks and compliance yield is used; and where information is limited, HMRC uses illustrative models – for example in estimating the size and nature of the hidden economy.

For all methods tax gap analysts develop strong communication links with internal HMRC policy customers. This helps analysts to understand the tax systems and processes involved in data capture, and the operational compliance context. It also informs explanations and understanding of emerging tax gap results.

A simplified diagram representing HMRC’s interpretation of the tax gap is shown in Figure 14.2.

Source: United Kingdom, HM Revenue and Customs (2017).



Note: The components of the figure do not represent the actual scale.

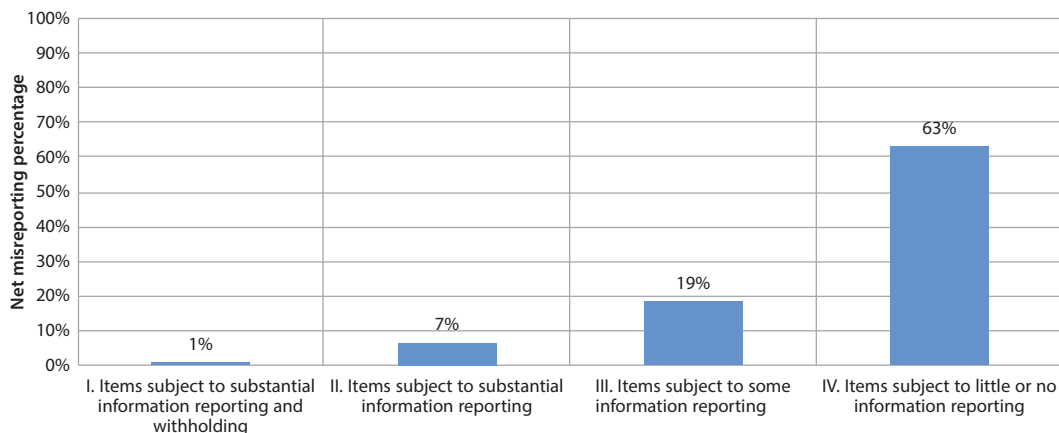
Source: United Kingdom, HM Revenue and Customs (2017).


## Alternative approaches to measuring the tax gap

Some countries, even with limited resources, have been able to build a reasonable understanding of their tax gap through a mix of top-down estimation, surveys and risk-based models. This may also include an in-depth understanding of one area, rather than a whole tax gap. International Monetary Fund (IMF) technical assistance to Estonia is an example of this (IMF, 2014). Other administrations have investigated tax gap estimation and reached a conclusion that the costs of measuring tax gaps outweigh the benefits, given data availability, resource investment required and the levels of uncertainty involved. Sweden, for example, has published a tax information map, which gives an indication of the information regime around different taxes and the changing levels of risk (Skatteverket, 2014). It followed an exercise to update their tax gap estimates. However, they concluded they did not have the necessary data to update their tax gap estimates. Some non-OECD countries have made good progress on developing tax information maps.

A tax information map approach builds on the clear finding set out in the United States IRS report on tax gaps, namely improving information assurance on tax regimes reduces the scope for non-compliance (IRS, 2016). Administrations can use this approach systematically to help reduce the tax gap, avoiding the interim measurement challenges.

Figure 14.3. Effect of information reporting on individual income tax reporting compliance, tax years 2008-10



StatLink  <http://dx.doi.org/10.1787/888933546963>

Source: IRS (2016), “Federal Tax Compliance Research: Tax Gap Estimates for Tax Years 2008–2010” (report), <https://www.irs.gov/pub/irs-soi/p1415.pdf>.

Random audit programmes are considered a high quality method to estimate tax gaps in large populations of registered taxpayers. Deployed alongside risk-based audits, they can be an effective deterrent to taxpayers and provide a strong evidence base for a range of compliance analysis. However, they are costly to administer and reduce the compliance resource available for risk-based audits.

Some countries are using and exploring methods for estimating tax gaps using risk based compliance information. This is difficult as risk based audits are more likely to have a higher incidence and amount of yield. This selection bias needs to be identified and controlled for before tax gaps can be estimated for the whole population. The Heckman two-stage estimation procedure is an econometric tool that allows analysts to take into

account the probability of audit and the characteristics that drive incidence and scale of yield. Application depends on the observable data around risk selection. The Italian Revenue Agency has used a Heckman approach to estimate tax gaps this way. Other fiscal authorities are also considering this approach and variations such as choice-based sampling. Italy makes an aggregate estimate of tax evasion each year using “top-down” methodology, and the resulting tax gap reflects overall non-compliance for Italy’s personal and corporate taxes, VAT and regional tax on productive activities.

### Limitations of tax gap estimates

While tax gap estimates can provide a rich source of data for tax administrations, they do have a number of limitations which means that they are not a good basis for explicit performance targets (which may lead to suboptimal resourcing and prioritisation decisions). The main limitations are:

- **Error and Uncertainty:** There are many sources of error including systematic errors in the assumptions used, missing data and standard errors due to sampling. Whilst users can place heavy scrutiny on annual movements in data, the scale of error and uncertainty makes year on year changes limited in meaning and it is better to observe the longer term trends. For this reason, few tax administrations publish data annually.<sup>1</sup>
- **Lagged data:** Many tax gap estimates are heavily lagged, for example the United Kingdom published tax gap estimates for 2014-15 in October 2016. Within this some component estimates were projected forward from actual data relating to the 2012-13 tax year. The reason for this lag is that compliance interventions may take a long time to complete – particularly the high yielding cases.
- **Wider factors:** Tax gaps can change due to economic factors beyond the control of tax administrations – such as changes to the tax base including from economic cycles. Changes to tax policy, for example movements in tax rates, can shift the tax gap up or down. These can be mitigated to an extent by expressing the tax gap as a percentage of tax liabilities, rather than as a cash value.
- **Volatility and Revisions:** Tax gaps can change, and be revised for a number of reasons unrelated to actual taxpayers’ behaviour. These include new or revised economic data used in modelling the tax base, new data from compliance activity where cases are settled late and differ from forecast yield, and from improved methodology or changes in data source.

### Note

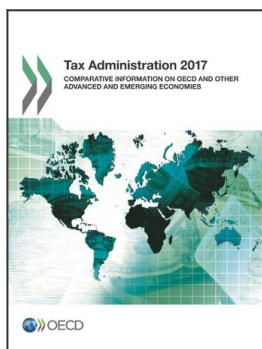
1. The exception is for VAT, where European Commission publishes VAT gap estimates annually for EU-26 and EU 28 member countries (CASE, 2016).

## References

- CASE (2016), “Study and Reports on the VAT Gap in the EU-28 Member States: 2016 Final Report”, TAXUD/2015/CC/131, Center for Social and Economic Research, Warsaw, [https://ec.europa.eu/taxation\\_customs/sites/taxation/files/2016-09\\_vat-gap-report\\_final.pdf](https://ec.europa.eu/taxation_customs/sites/taxation/files/2016-09_vat-gap-report_final.pdf).
- IMF (2014), *Republic of Estonia: Technical Assistance Report – Revenue Administration Gap Analysis Program – The Value-Added Tax Gap*, IMF Country Report No. 14/133, IMF Publishing, Washington, <http://dx.doi.org/10.5089/9781498370110.002>.
- IRS (2016), “Federal Tax Compliance Research: Tax Gap Estimates for Tax Years 2008–2010” (report), US Internal Revenue Service – Research, Analysis & Statistics, Washington, <https://www.irs.gov/pub/irs-soi/p1415.pdf>.
- Skatteverket (2014), “The Development of the Tax Gap in Sweden 2007-12” (report), Skatteverket, [www.skatteverket.se/download/18.15532c7b1442f256baeae28/1395223863657/The+development+of+the+tax+gap+in+Sweden+2007-12.pdf](http://www.skatteverket.se/download/18.15532c7b1442f256baeae28/1395223863657/The+development+of+the+tax+gap+in+Sweden+2007-12.pdf).







**From:**

## **Tax Administration 2017**

Comparative Information on OECD and Other Advanced and Emerging Economies

**Access the complete publication at:**

[https://doi.org/10.1787/tax\\_admin-2017-en](https://doi.org/10.1787/tax_admin-2017-en)

### **Please cite this chapter as:**

OECD (2017), "The measurement of tax gaps", in *Tax Administration 2017: Comparative Information on OECD and Other Advanced and Emerging Economies*, OECD Publishing, Paris.

DOI: [https://doi.org/10.1787/tax\\_admin-2017-19-en](https://doi.org/10.1787/tax_admin-2017-19-en)

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to [rights@oecd.org](mailto:rights@oecd.org). Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at [info@copyright.com](mailto:info@copyright.com) or the Centre français d'exploitation du droit de copie (CFC) at [contact@cfcopies.com](mailto:contact@cfcopies.com).