Chapter 2
The Tax Gap

Introduction

How much tax revenue is lost due to noncompliance? The IRS and other researchers attempt to answer this question by estimating the difference between taxes owed and those actually paid. The result is known as the tax gap.

The tax gap consists of three categories of noncompliance: (1) underreporting, which is the amount of lost revenue from filed tax returns that underreport the amount of taxes owed; (2) underpayment, which is the difference between amounts that were reported to be owed, and amounts actually paid for correctly filed tax returns; and (3) nonfiling, which is the amount of tax revenue lost from returns that were never filed. The total amount of lost revenue for each of these three categories is determined by aggregating estimates of loss across the five major categories of tax: individual income, corporate income, employment, estate, and excise (see Table 2.1).\(^1\) The gross tax gap is defined as the sum of estimated noncompliance losses across types of tax and types of noncompliance.\(^2\)

Table 2.1 reports estimates of the gross tax gap in 2001.\(^3\) For that tax year, the IRS estimated that just under 84% of all taxes owed were paid on time. The IRS expected to recover approximately $55 billion of the gross tax gap through late payments, audits, and other enforcement, leaving a net tax gap for 2001 of $290

---


\(^2\) Tax payments are sometimes made late, potentially many years after the taxes were owed. To account for this, I use the term gross tax gap for the total amount of money that was not paid in a timely manner, and net tax gap for the final annual disparity between taxes owed and those paid after late payments are tallied. The generic term “tax gap” usually refers to the gross tax gap.

\(^3\) More recent estimates of the gross tax gap are not available.

---

billion. Table 2.1 was prepared by the US Treasury. It shows the tax gap by source and the certainty, attached to their estimates.

As one can see from Table 2.1, underreporting, at $285 billion, represents the overwhelming majority of the gross tax gap, and most of that comes from underreporting of individual income tax. In fact, individual income tax underreporting accounted for well over half (57%) of the total annual tax gap. Before we examine the practical policy implications of the tax gap, let us first take a look at the methodologies used to calculate the tax gap itself.

### Measuring the Tax Gap

The main challenge in estimating the size of the tax gap is determining the amount of taxes that were owed. Researchers studying the US tax gap have typically turned to data gathered by two IRS programs: the Taxpayer Compliance Measurement Program (TCMP), which conducted audits of a random sample of taxpayers from 1968 to 1988, and the National Research Program (NRP), which resumed the work of the TCMP in 2001 and continues to be active. The Taxpayer Compliance Measurement Program was a series of special audits that the IRS conducted every three years. TCMP audits randomly selected about 50,000 individual taxpayers. By their nature, TCMP audits were extremely comprehensive and exhaustive with an effort made to examine the entire tax return against third-party reports and individual’s tax records. The data collected from these audits was analyzed using a statistical technique known as discriminant function analysis (DIF). The goal of the analysis was to identify the characteristics of returns that are likely to yield additional revenue if audited. The higher the DIF score associated with a return the more likely that an audit of the return would yield additional revenue above a threshold amount. The primary use of DIF score was to select returns for routine audits. A second goal was to develop an understanding of the magnitudes of underreported income sources, over reported deductions, and

<table>
<thead>
<tr>
<th>Type of noncompliance</th>
<th>Individual income tax</th>
<th>Corporate income tax</th>
<th>Employment tax</th>
<th>Estate tax</th>
<th>Excise tax</th>
<th>Total ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underreporting</td>
<td>$197</td>
<td>$30</td>
<td>$54</td>
<td>$4</td>
<td>No estimate</td>
<td>285</td>
</tr>
<tr>
<td>Underpayment</td>
<td>23</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>34</td>
</tr>
<tr>
<td>Nonfiling</td>
<td>25</td>
<td>No estimate</td>
<td>No estimate</td>
<td>2</td>
<td>No estimate</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>$244</td>
<td>$32</td>
<td>$59</td>
<td>$8</td>
<td>$1</td>
<td>345</td>
</tr>
</tbody>
</table>

**Source** IRS

**Note** Figures may not sum to totals due to rounding
noncompliance levels as part of the effort to measure the tax gap. Routine audits are considerably less detailed than TCMP or NRP audits and typically focus on a fairly narrow range of return items. The National Research Project replaced the TCMP but the goals were essentially identical.

Although these programs provide data on the additionally owed tax that could be recovered from audited taxpayers, they fall short of providing the amounts that taxpayers truly owed. Routine audits are not likely to uncover all of the taxes that taxpayers do not pay or some amounts will generally remain undetected. However, several models have been proposed to infer the size of the true tax gap. Of the three categories comprising the tax gap, underpayment is the simplest to calculate. To do so, the IRS aggregates the observable differences between taxes reportedly owed and taxes actually paid. To determine the underreporting and non-filing portions of the tax gap, each of which present their own unique challenges, the IRS uses different statistical models to estimate the amounts of taxes owed by individuals in each category.

The IRS Non-Filing Tax Gap Model

The model used to impute the aggregate non-filing tax gap is best understood through the IRS data collection process for non-filing individuals. The IRS first draws a random sample from the pool of individuals who did not file tax returns. Next, the IRS attempts to locate each of the individuals. Each of the successfully located individuals is then evaluated to determine whether he or she owed taxes; those who owed taxes are described as delinquent. Among delinquent individuals, only some of the returns can be secured because others require some further action to process. Finally, a random sample of the located, delinquent, and secured returns is drawn for research purposes, containing data on the amounts assessed for each line item of each return.4

In 1988, the IRS reported non-filer data based on the Taxpayer Compliance Measurement Program (TCMP) audits. A probability sample of over 23,000 individuals who were potential nonfilers was selected. The probability sample was based on age, prior filing history, and other characteristics. Of these the IRS located 18,689 returns (and did not locate 4,597 returns). Of the 18,689 located returns, the IRS concluded that 4,796 were delinquent but that 13,928 were, in fact, not required to file. The IRS then secured TCMP data on 3,456 of 4,750 delinquent returns and examined a random sample of 2,198 of these for tax noncompliance.

In order to estimate the non-filing gap, the model imputes the aggregate taxes owed by all nonfilers from the final sample of examined returns by weighting each of the returns in the sample according to the portion of the aggregate population

---

that it represents. The weighting process allows the probability of a return being located to depend on the amount of taxes owed, and also for the probability of being secured to depend on the amount of taxes owed, through the following procedure.

First, a probit model is estimated by maximum likelihood to determine the relationship between the probability that an individual is located and the known characteristics of the individual. The characteristics used for each individual are age, marital status, whether a return was filed the previous year, and whether returns were filed more than a year ago. Next, using the coefficients from this estimation, the ex-ante probabilities of being located are computed for all individuals who were actually located. The inverse of each ex-ante probability is used as a weight for the located individual, allowing that person to represent a portion of all (located and unlocated) potential nonfilers. The IRS uses a similar process to weight secured and examined returns, so that they represent all (secured and unsecured) delinquent returns. The IRS uses a probit model to estimate the probability of each delinquent return being secured and examined, and uses the coefficients from this estimation to compute ex-ante probabilities of each actually secured and examined return being secured and examined. They use the inverses of the ex-ante secured probabilities as weights for each return.

The IRS non-filing tax gap model estimates reported taxes due among nonfilers by multiplying the amounts reported in the sample by the weights based on location probability and the weights based on secured probability. While these estimates provide tax amounts from the sample that are weighted to represent the population of potential nonfilers, it does not account for any amounts underreported by individuals in the sample, or take into account any amounts of their tax liability that they have already paid. Hence, the final estimate of the aggregate non-filing gap is based on the sum of the reported taxes and underreported taxes, less any amounts prepaid. Underreported taxes are determined following the procedure described in the next section.

In sum, the IRS approach to imputing the non-filing gap presumes that individuals who were located and whose returns were secured may not represent a random sample of the population of potential nonfilers, but only insofar as the individual characteristics—such as age, marital status, and filing history—of those whose returns are secured and located differ from those of the population. The approach therefore relies on the assumption that located (secured) individuals of a given age, marital status, and filing history owe amounts similar to those owed by

---

5 The methodology is analogous to adjusting for nonresponse in survey sampling.
6 The probit model is a maximum likelihood probability model wherein probabilities are determined using the cumulative normal distribution.
7 This information is based on prior returns filed.
8 These location probability weights are further adjusted based on whether each individual filed a married joint return, under the assumption that the returns for these individuals are twice as easy to locate.
9 For further detail see IRS Publication 1415 (rev. 4–96).
unlocated (unsecured) individuals with the same characteristics. In addition, the model maintains the assumption that those returns identified as delinquent constitute the entirety of the actually delinquent returns.

The IRS Underreporting Tax Gap Model

The primary strategy of the underreporting gap model is the same as that of the non-filing gap model: the model imputes the underreported taxes of individuals in the population of taxpayers by matching their characteristics to individuals whose underreported taxes are known. The challenge in the underreporting model is, of course, determining the actual amounts of underreported taxes for individuals in the sample. While the TCMP (and later the NRP) provide samples of individuals who have been audited, the amounts of taxes owed that IRS examiners detect for each individual in each sample are only lower bounds for the actual amounts owed, since examiners cannot efficiently determine all sources of income with certainty in the course of an audit.

To compensate for this, the IRS uses a set of multipliers for each line item of a tax return, which is used to modify the amounts detected. The multipliers are based on a study conducted in 1976 that compared the amounts that individuals owed based on documents collected in the Information Reporting Program (IRP)\(^{10}\) with amounts detected by IRS auditors without the aid of IRP documents. The study found that, for every dollar of unreported income detected by auditors, another $2.28 went undetected. This result has been used to justify a multiplier of 3.28 for the detected portion of many income line items for which IRP documents are not available, under the assumption that the detection of non-IRP income items is as accurate as the detection of income items for which IRP documents existed in the 1976 study.\(^{11}\) Income items verified with IRP source documents do not require augmenting multipliers, since those amounts are presumed to be accurate. For instance, state income tax refunds detected outside the IRP program are not augmented via the multiplier procedure.

Once the IRS determines the underreported income amounts for taxpayers in the TCMP sample, they impute the aggregate underreported income for the population based on a statistical matching procedure utilizing key returns characteristics including income, primary income source, age, filing status, and itemization.\(^{12}\) Then, they estimate the marginal tax rate for each line item and

\(^{10}\) IRP documents include wage and income statements collected by the IRS from employers, banks, and other institutions that provide individuals with income.

\(^{11}\) Several income items, such as tip and informal income, use different multipliers based on surveys or other data. For a discussion of these items, see IRS Publication 1415 (Rev 4–96), and Ho and Wong (1994).

\(^{12}\) This methodology is referred to as model assisted survey sampling in the sampling literature. For further details on the statistical matching procedure, see Ho and Wong (1995).
calculate the aggregate underreported tax, which is associated with the underreported income.\textsuperscript{13}

In sum, the underreporting model uses multipliers for undetected income, although the multipliers were derived from a study on income items for which IRP documents existed. If taxpayers are less likely to underreport income for items that have supporting documents (due to the likelihood of detection, for example), then these multipliers could understate the true amount of underreported income for non-IRP income items.

**The Detection-Controlled Estimation Model**

The detection-controlled estimation model\textsuperscript{14} is a somewhat different model for estimating the tax gap and, more generally, other quantities that may be only partially detected. Detection-controlled estimation allows for undetected (or fractionally detected) noncompliance by specifying two equations. The first equation refers to the propensity of the individual to evade taxes, while the second equation refers to whether an evasion was detected. Since the observable data only include detected evasions, the two equations are not separately identifiable. However, with certain assumptions about the “quality” of the IRS examiner present at each audit instance, i.e. the differential ability of a specific examiner to detect tax evasion, the model can be estimated to determine the probability and extent of tax evasion.

This model differs from the IRS tax gap estimation model, which determines the probability and extent of underreporting, and allows each line item in a tax return to have a unique detection probability. Instead, it assumes a homogenous detection probability per return, but exploits the possibility that different IRS examiners have different likelihoods of detecting evasion. Despite these differences, results from detection-controlled estimation and the IRS model are similar.

**Policy Implications of the Tax Gap**

The annual US tax gap represents a substantial percentage of the US annual budget deficit. The GAO estimates that this percentage is approximately 81–84\%.\textsuperscript{15} With predictable demographic trends, the rising cost of health care, and diminished federal revenue continuing to increase US deficits, decreasing the tax gap could

\textsuperscript{13} Marginal tax ratios are calculated for specific line items by recomputing total taxes due on the individual’s tax returns after income adjustments are made.

\textsuperscript{14} This model was developed by Jonathan Feinstein. See Feinstein (1990).

\textsuperscript{15} Ibid.
help mitigate these persistent fiscal challenges. Also while knowing the size of the tax gap can alert policymakers to the issue of noncompliance—including which types of noncompliance are increasing, decreasing, or newly emergent—addressing the tax gap itself requires a deeper understanding of what’s behind the numbers. Thus it is crucial to understand how and why taxpayers are not compliant. Understanding the factors behind noncompliance can help the IRS to determine which enforcement programs are working and where to most effectively direct their resources. For instance, it is essential for the IRS to determine whether taxpayers are noncompliant intentionally or unintentionally. This will help focus both their enforcement activities (e.g., audits and criminal investigations) and non-enforcement activities (e.g., clarifying forms and instructions to help taxpayers avoid mistakes) more efficiently. Intentional and unintentional noncompliance result to some degree from the complexity of the tax code. A significant source of this complexity is the ever-growing number of deductions, exemptions, and credits, collectively known as “tax expenditures.” The number of these preferential provisions has almost tripled in the last 30 years.\(^{16}\) An example of an expenditure than can lead to both intentional and unintentional noncompliance is the Earned Income Tax Credit (EITC). The EITC allows qualified low-income taxpayers to receive tax credits based on their income and number of children. Given that children must live with the filer for at least half the year, it is easy to see how some taxpayers could inadvertently include a non-qualifying child, while others could do so intentionally. The complexity produced by tax expenditures renders the tax code virtually incomprehensible to the average taxpayer, and provides countless opportunities for tax evasion. Thus, an essential part of any plan to reduce the tax gap must include improved taxpayer education and customer service as a way to decrease unintentional filing errors. Additionally, the use of technology (e.g., a new phone system and electronic filing) has streamlined customer interaction, reduced costs, and improved data analysis. Meanwhile, increased withholding and use of information returns—for payments to independent contractors, payments to corporations, or for capital gain income—would likely decrease underreporting and, therefore, decrease the tax gap, even if it imposes a burden on business and taxpayers.

While tax code simplification, education, increased withholding, and greater reporting will no doubt improve the tax gap, the IRS must also combat the detrimental effects of lost funding and lower enforcement levels. In the next chapter we will take a closer look at the punitive side of IRS enforcement and its effect on taxpayer noncompliance. In the next chapter we will take a closer look at the punitive side of IRS enforcement and its effect on taxpayer noncompliance.

---

The Causes and Consequences of Income Tax Noncompliance
Dubin, J.
2012, X, 282 p., Hardcover
ISBN: 978-1-4419-0906-0