

Sebastian Beer, Brian Erard, Matthias Kasper and Erich Kirchler

Tax Audits and Their Effects on Tax Compliance

TAX AUDITS AS AN INSTRUMENT TO DETER TAX EVASION

The US Internal Revenue Service (IRS) estimates that individual income tax filers underreported their taxes by an average of USD 278 billion annually between 2014 and 2016, representing 16.7 percent of taxes owed (Internal Revenue Service 2022). Tax audits play a key role in reducing this gap. Besides serving as a means to verify compliance and assess unreported taxes, audits also deter underreporting across the broader population, a concept known as the “general deterrent effect.” Additionally, individuals who experience an audit often increase their reported income in subsequent years, a phenomenon termed the “specific deterrent effect.”

Audits are typically envisioned as intense face-to-face interactions with tax examiners. However, the reality has shifted dramatically in the US and elsewhere, with most individual income tax audits now being conducted via mail-based “correspondence audits.” This represents a stark contrast to the 1990s, when over 80 percent of IRS audits were conducted in person (Figure 1). By 2023, around 85 percent of audits were handled through correspondence. This shift was likely driven both by cost considerations during tightening budget constraints – the average face-to-face audit costs USD 6,418, compared to just USD 564 for a correspondence audit (Boning et al. 2024) – and by advancements in digitalization and artificial intelligence, which have increased the scope for more automated approaches to tax enforcement.

Beer et al. (2024) provide a detailed account of the compliance responses of US small business taxpayers to operational tax enforcement, contrasting face-to-face and correspondence audits. Previous empirical evaluations have mostly focused on random audit programs involving face-to-face audits (e.g., Boning et al. 2024; Advani et al. 2023), or the effects of correspondence audits targeted at isolated issues (e.g., Hebous et al. 2023; Grana et al. 2024; Guyton et al. 2019). However, the specific deterrent effect of correspondence audits has received limited attention so far.

WHY SHOULD AUDITS AFFECT POST-AUDIT TAX COMPLIANCE?

The basic economic model of tax compliance (Allingham and Sandmo 1972) provides limited guidance

KEY MESSAGES

- Tax administrations increasingly use audits via mail (correspondence audits) to audit taxpayers
- Correspondence audits are cheaper than face-to-face audits but their effects on compliance are unclear
- We investigate the effects of correspondence and face-to-face audits on post-audit tax reporting
- We find that face-to-face audits generally have strong positive effects on subsequent compliance
- Correspondence audits sometimes reduce compliance, impacting the optimal balance between audit types

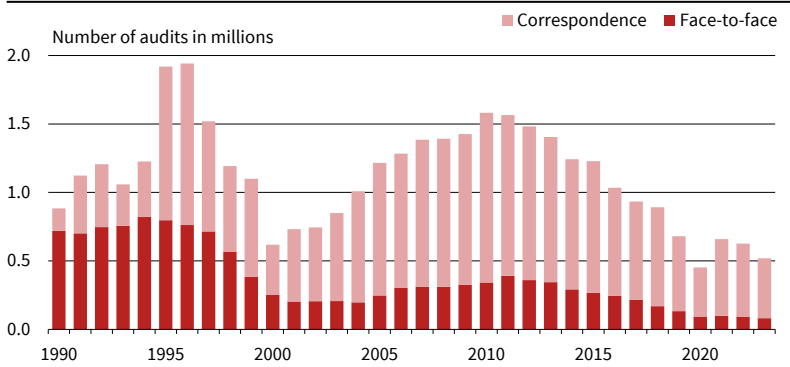
on how audits affect future reporting behavior: all parameters, including taxable income, tax rates, the audit rate, and penalties on unreported income, are assumed to be fixed and known with certainty. As a result, audits provide no new information that would alter future reporting behavior.

However, modifying the standard model to incorporate uncertainty or additional taxpayer motivations introduces causal pathways for “specific deterrence.” For instance, audits may lead to a heightened perception of future audit risk, prompting taxpayers to report more accurately (Kasper and Rablen 2023). Conversely, the “bomb-crater effect,” where taxpayers report less income following an audit, has been observed in experimental settings (Guala and Mittone 2006). This behavior is often attributed to a mistaken belief that the chance of receiving a second consecutive audit – akin to another bomb landing in the same crater – is exceptionally low.

Several theories provide an explanation why audits can influence future taxpayer behavior beyond their effect on perceived audit risk. These include motivations to recover losses (Maciejovsky et al. 2007), dynamic reporting considerations (Engel and Hines 1999), uncertainty about one’s tax liability (Scotchmer and Slemrod 1989), the tax authority’s capacity to detect noncompliance (Kasper and Alm 2022; Lancee et al. 2023), or indirectly through an audit’s impact on tax morale (Feld and Frey 2003). However, these models fail to provide a clear and unambiguous prediction of whether audits deter or encourage future noncompliance, with outcomes depending on the models’ underlying assumptions.

Figure 1

Allocation of Audit Types in the United States



Note: Audits of individual income tax returns.
Source: IRS; authors' calculations.

© ifo Institute

Audit effects may also vary by audit mode. Face-to-face audits are typically more thorough and direct, while correspondence audits are narrower in scope and often perceived as less serious. For example, a survey of known audit recipients finds that while most taxpayers acknowledge having been audited when the examination was conducted face-to-face, the majority claims not to have been audited when it was instead conducted via correspondence (Erard et al. 2019). This suggests that many taxpayers do not perceive a correspondence examination as a genuine audit. In addition, 40 percent of recipients fail to respond to IRS correspondence audit notices or the resulting statutory notice of deficiency (National Taxpayer Advocate 2018).

These differences could influence perceptions of audit risk, trust in the tax authority's ability to detect evasion, and overall tax morale, all of which may shape future compliance. To address this possibility, the authors estimate the specific deterrent effect separately for each type of audit.

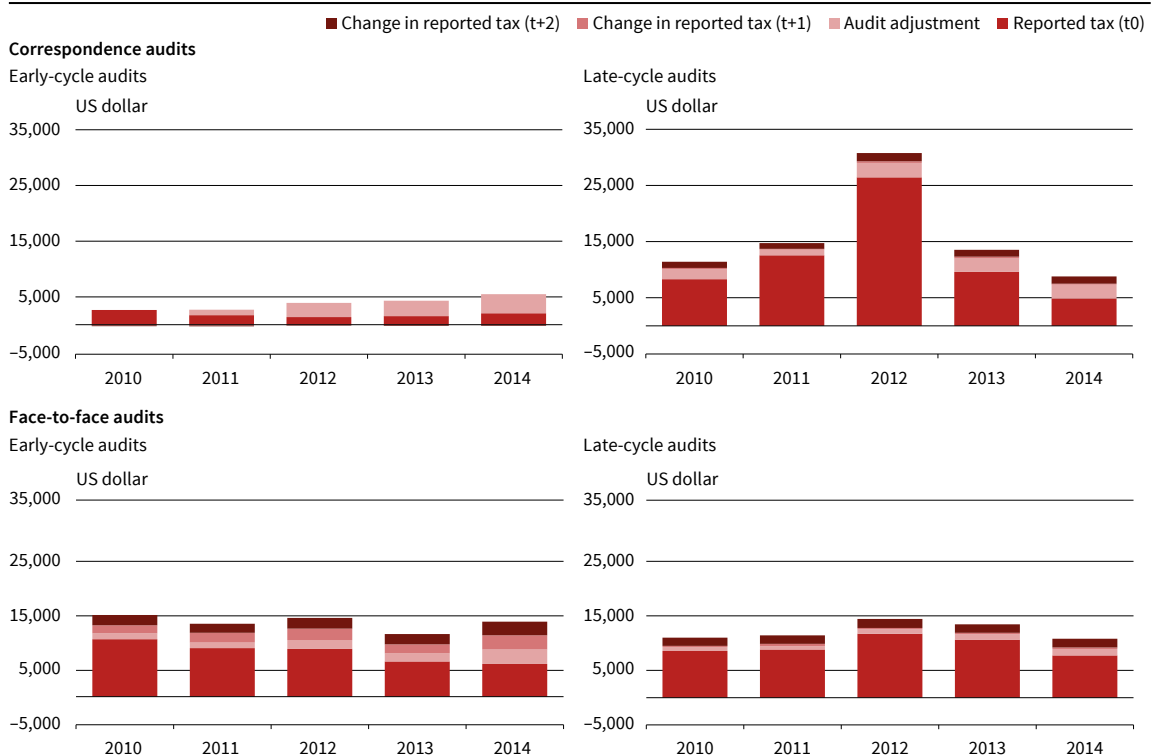
ESTIMATING THE EFFECT OF AUDITS ON POST-AUDIT TAX REPORTING

To estimate the compliance effects of face-to-face and correspondence audits, Beer et al. (2024) analyze administrative data that contains granular tax return information together with risk scores used for audit selection. In particular, the data includes detailed line-item information from each tax return filed for the reference audit year, the three prior years, and the two subsequent years. The data sample covers the tax years 2007 through 2016, with the main analysis focusing on the effects of audits of tax year 2014 returns, the most recent audit year in the data. In this year, the sample comprises a total of about 380,000 self-employed taxpayers, including over 3,000 who received a face-to-face audit, almost 14,000 who received a correspondence audit, and 360,000 who were not subjected to an audit for that year.

To estimate the effects of face-to-face and correspondence audits on future reporting behavior, Beer et al. (2024) compare future tax amounts reported by audited taxpayers to those reported by comparable unaudited taxpayers. The study employs "en-

Figure 2

Direct and Indirect Revenue Effects of Face-to-Face and Correspondence Audits



Source: Authors' calculations.

© ifo Institute

trophy balancing,” a method that reweights the data to ensure that audited and unaudited groups match in terms of relevant tax compliance characteristics, including a wide range of audit risk factors.¹ The analysis incorporates over 200 variables derived from tax returns and audit data to provide a robust comparison of audited and unaudited taxpayers. These include details like income levels and past tax reporting behavior, as well as the risk score used by the tax agency to guide its audit selection process.

To account for unobserved time-invariant differences between the audit groups and their balanced comparison groups, the authors then use a difference-in-differences estimation approach. This approach compares the difference in the change of reported taxes (rather than the level of taxes reported) over time between the audit and comparison groups.

Audits are often, though not always, initiated after a subsequent return has been filed. To account for differences in the timing and focus of audits, the authors categorize audits into early- and late-cycle audits. While early-cycle audits are initiated *before* the return for the following tax year has been filed, late-cycle audits are initiated *after* the following year’s tax return was filed, but before the second subsequent return was filed.

RESULTS

Figure 2 summarizes the results on the compliance effects of face-to-face and correspondence audits. It shows the mean amount of reported tax in the year of the audit (t_0), the audit adjustment (i.e., the additional tax assessed in the audit), and changes in reported tax (relative to weighted unaudited taxpayers) in the first ($t+1$) and second ($t+2$) year after the filing of the audited return. For late-cycle audits, the first-year change in reported tax serves as a “placebo test.” In these cases, the audit of the return filed for tax year t_0 (e.g., 2014) started only after the taxpayer filed the return for the next subsequent tax year (e.g., 2015). Therefore, there should be no change in reported tax in $t+1$ (e.g., 2015) in response to late-cycle audits.

The results show that both the audit type as well as the timing of audits affect compliance responses. Face-to-face examinations are consistently effective in improving the future reporting compliance of self-employed taxpayers relative to their unaudited counterparts. For audits of tax returns filed in tax year 2014, the most recent audit year in the data, early-cycle face-to-face audits lead to a substantial increase in reported tax, averaging 42 percent (USD 2,500) over the first two years post-audit. The increase in reported tax after late-cycle face-to-face audits is more moderate, at approximately 21 percent (USD 1,600).

¹ In essence, the technique adjusts the original sample weights within each audit group to the minimum extent required in order to align the distributional attributes of tax compliance characteristics (means, variances, covariances) within that group with those of the corresponding comparison group.

In contrast, the effect of correspondence audits on subsequent tax reporting is more modest and depends strongly on the timing of the audit. The estimates indicate that early-cycle correspondence audits have a counter-deterrent effect, reducing reported tax by 3 percent (USD 71) in the first year and 6 percent (USD 127) in the following year. Late-cycle correspondence audits, however, exhibit a pro-deterrent effect, with reported tax increasing by 26 percent (USD 1,294) in the first year after the audit.

Robustness tests confirm these findings across audits of returns filed from 2010 to 2013. As Figure 2 indicates, compliance responses are remarkably similar in magnitude in all audit years in the sample. Using an alternative inverse propensity score weighting method to identify comparison samples of unaudited returns also yields consistent results for all audit years, corroborating the robustness of the findings.

The factors underlying the observed variation in audit effects remain unclear. The counter-deterrent effect appears only in early-cycle correspondence audits, not late-cycle ones, suggesting that neither the impersonal nature nor the narrow focus of correspondence audits fully explains the phenomenon. The effect is primarily driven by taxpayers who either report no taxable income or fall within the highest positive income quartile (earning over USD 70,000). Additional analyses refute the hypotheses that differences in targeted issues – such as refundable credits for early audits versus business-related issues or other tax credits for later audits – might explain these disparities. A more plausible explanation may thus lie in psychological factors, however more research is needed to better understand the mechanism driving this phenomenon.

POLICY CONCLUSION

Audits potentially serve an important role beyond generating immediate revenue by deterring fu-



Sebastian Beer

is an Economist in the IMF’s Fiscal Affairs Department, where he provides advice on a broad set of tax policy issues to member countries. His research focuses on tax compliance, international corporate taxation, and the evaluation of policy reforms.



Brian Erard

operates an economics consulting practice, B. Erard & Associates LLC, in the Washington DC metro area, where he performs research and advises governments and businesses on tax administration and tax policy issues.



Matthias Kasper

leads the Research Group in Behavioral Economics at the Walter Eucken Institut in Freiburg, Germany. He studies tax compliance and the effects of institutional design on social norms and behavior.



Erich Kirchler

was Professor of Economic Psychology at the University of Vienna until he retired in 2020 and is Senior Fellow at the Institute for Advanced Studies, Vienna. His research investigates financial decision making and determinants of tax compliance.

ture tax noncompliance. Empirical studies generally show that audits increase future income reporting, though some laboratory experiments have observed “bomb-crater” effects, and earlier research has identified counter-deterrent effects when audits fail to detect noncompliance (Beer et al. 2020). However, most of this research has focused on random audits, and the role of audit modality has largely been ignored. In practice, tax audits are predominantly risk-based rather than random, and in many countries, there has been a significant shift over time from face-to-face audits to correspondence audits.

Beer et al. (2024) examine the impact of operational tax audits on future reporting behavior, with a focus on differences between correspondence and face-to-face audits. Their findings reveal that face-to-face audits lead to a substantial increase in reported tax in the first two years after the audit, supporting calls to expand enforcement efforts to boost tax collection.

The results also show that the specific deterrent effect of correspondence audits is strongly influenced by the timing of the audit. Correspondence audits conducted later in the audit cycle (after the following year’s tax return is filed) have a similar impact on future reporting behavior as face-to-face audits, both showing a strong pro-deterrent effect. However, early-cycle correspondence audits are linked to a modest counter-deterrent effect – an important finding as approximately half of all correspondence audits occur early in the examination cycle.

Overall, these findings provide important insights for optimal tax enforcement. Correspondence audits provide a cost-effective and scalable instrument for increasing compliance. However, the specific deterrent effect of face-to-face audits is more consistent and larger, which should be acknowledged in cost-benefit evaluations. Further research is needed to understand the differing outcomes between early- and late-cycle correspondence audits, which cannot be explained by differences in the types of tax issues targeted. One area that warrants further investigation is whether the time gap between filing and receiving an audit notice influences taxpayer compliance. More broadly, the findings suggest that further study on the optimal balance between face-to-face and correspondence audits is warranted.

REFERENCES

- Advani, A., W. Elming and J. Shaw (2023), “The Dynamic Effects of Tax Audits”, *The Review of Economics and Statistics* 105, 545–561.
- Allingham, M. G. and A. Sandmo (1972), “Income Tax Evasion: A Theoretical Analysis”, *Journal of Public Economics* 1, 323–338.
- Beer, S., M. Kasper, E. Kirchler and B. Erard (2020), “Do Audits Deter or Provoke Future Tax Noncompliance? Evidence on Self-Employed Taxpayers”, *CEifo Economic Studies* 66, 248–264.
- Beer, S., M. Kasper, E. Kirchler and B. Erard (2024), “Compliance Responses to Risk-Based Tax Audits”, *Unpublished Working Paper*.
- Boning, W. C., N. Hendren, B. Sprung-Keyser and E. Stuart (2024), “A Welfare Analysis of Tax Audits Across the Income Distribution”, *The Quarterly Journal of Economics*, qjae037, <https://doi.org/10.1093/qje/qjae037>.
- Engel, E. M. R. A. and J. R. Hines Jr. (1999), “Understanding Tax Evasion Dynamics”, *NBER Working Paper* 6903.
- Erard, B., M. Kasper, E. Kirchler and J. Olsen (2019), “What Influence Do IRS Audits Have on Taxpayer Attitudes and Perceptions? Evidence from a National Survey”, *National Taxpayer Advocate 2018 Annual Report to Congress*, Volume 2, Publication 2104C, December, 77–130, https://www.taxpayeradvocate.irs.gov/wp-content/uploads/2020/07/ARC18_Volume2_04_InfluenceAudits.pdf.
- Feld L. and B. S. Frey (2003), “Deterrence and Tax Morale: How Tax Administrations and Taxpayers Interact”, *European Review* 11, 385–406.
- Grana, J., I. Lindsay, L. Lykke, M. McGill, A. McGlothlin, L. Nicholl and A. Plumley (2024), “The Specific Indirect Effect of IRS Audits”, *International Tax and Public Finance*, <https://doi.org/10.1007/s10797-024-09866-5>.
- Guala, F. and L. Mittone (2005), “Experiments in Economics: External Validity and the Robustness of Phenomena”, *Journal of Economic Methodology* 12, 495–515.
- Guyton, J., K. Leibel, D. S. Manoli, A. Patel, M. Payne and B. Schafer (2019), “The Effects of EITC Correspondence Audits on Low-Income Earners”, *NBER Working Paper* 24465.
- Hebous, S., Z. Jia, K. Løyland, T. O. Thoreson and A. Øvrum (2023), “Do Audits Improve Future Tax Compliance in the Absence of Penalties? Evidence from Random Audits in Norway”, *Journal of Economic Behavior and Organization* 207, 305–326.
- Internal Revenue Service (2022), *Federal Tax Compliance Research: Tax Gap Estimates for Tax Years 2014–2016*, Publication 1415 (Revised 08-2022), <https://www.irs.gov/pub/irs-pdf/p1415.pdf>.
- Kasper, M. and J. Alm (2022), “Audits, Audit Effectiveness, and Post-Audit Compliance”, *Journal of Economic Behavior and Organization* 195, 87–102.
- Kasper, M. and M. D. Rablen (2023), “Tax Compliance after an Audit: Higher or Lower?”, *Journal of Economic Behavior and Organization* 207, 157–171.
- Lancee, B., L. Rossel and M. Kasper (2023), “When the Agency Wants Too Much: Experimental Evidence on Unfair Audits and Tax Compliance”, *Journal of Economic Behavior and Organization* 214, 406–442.
- Maciejovsky, B., E. Kirchler and H. Schwarzenberger (2007), “Misperceptions of Chance and Loss Repair: On the Dynamics of Tax Compliance”, *Journal of Economic Psychology* 28, 678–691.
- National Taxpayer Advocate (2018), *Annual Report to Congress*, Volume 1, Publication 2104C, December, https://www.taxpayeradvocate.irs.gov/wp-content/uploads/2020/07/ARC18_Volume1.pdf.
- Scotchmer, S. and J. Slemrod (1989), “Randomness in Tax Enforcement”, *Journal of Public Economics* 38, 17–32.