Journal of Public Economics 264 (2026) 105812



Contents lists available at ScienceDirect

Journal of Public Economics

journal homepage: www.elsevier.com/locate/pubec



Tax evasion at the top of the income distribution☆

John Guyton[a], Patrick Langetieg[a], Daniel Reck[b,*], Max Risch[c], Gabriel Zucman[d]

[a] Internal Revenue Service, Washington, DC USA
[b] University of Maryland, College Park, MD USA
[c] Carnegie Mellon University, Washington, DC USA
[d] Paris School of Economics and UC Berkeley, Berkeley, CA USA

HIGHLIGHTS

- IRS random audit data from 2006 to 13 miss evasion by high-income individuals.
- Offshore tax evasion is virtually never detected in random audits.
- Audits rarely examine individuals' pass-through income at the entity level.
- Other data: missed evasion is primarily in the top 1% of the income distribution.
- The top 1% share of unreported income is 9–33 pp higher than random-audit estimates.

ARTICLE INFO

Keywords:
Tax evasion
Inequality
Offshore
Pass-through businesses

ABSTRACT

We study tax evasion at the top of the U.S. income distribution using micro-data from audits and enforcement initiatives. Leveraging enforcement that revealed noncompliance, we find that recent individual random audit data fail to capture sophisticated evasion via offshore accounts and pass-through businesses. Consequently, estimates based solely on these data under-state evasion by the highest-income Americans. We construct new distributional estimates of US noncompliance. Circa 2006–2013, accounting for sophisticated evasion (holding estimated non-sophisticated evasion fixed) increases the share of unreported income belonging to the top 1% of the distribution by 9 to 33 percentage points.

1. Introduction

How much in taxes do high-income individuals evade? What are the main forms of tax noncompliance at the top of the income distribution? Because taxable income and tax liabilities are highly concentrated at the top of the income distribution, understanding noncompliance by high-income taxpayers is critical for the analysis of tax evasion, for tax enforcement, and for tax rates and bases.

A key difficulty in studying tax evasion by high-income individuals is the complexity of the forms of tax evasion available to them. Non-compliance by high earners often involves legal and financial intermediaries, such as shell companies and offshore banks, sometimes in countries with a great deal of secrecy. Moreover, a large fraction of the income of top earners derives from closely-held businesses. Misreporting in closely held businesses can be significant and yet difficult to detect due to resource constraints within the tax authority, to the complexity of business structures with intertwined entities, and to the lack of third-party reporting. This complexity means that one single data source is unlikely to uncover all forms of non-compliance at the top of the income distribution.

☆ We thank Gerald Auten, Pierre Bachas, Karen Cincotta, Brian Galle, Bhanu Gupta, Anne Herlache, Tom Hertz, Xavier Jaravel, Drew Johns, Barry Johnson, Camille Landais, Katie Lim, Emily Lin, Larry May, Alicia Miller, Erik Ogilvie, Annette Portz, Ahmad Qadri, Peter Rose, Emmanuel Saez, Brenda Schafer, Clifford Scherwinski, Joel Slemrod, Matt Smith, Johannes Spinnewijn, David Splinter, Alex Turk, and Alex Yuskavage for helpful discussion, support, and comments on preliminary versions of this work. Francesco Armillei, Jeanne Bomare, Idann Gidron, and Baptiste Roux provided excellent research assistance. All remaining errors are our own. Financial support from the Washington Center for Equitable Growth, the Stone foundation, Arnold Ventures, and the Economic and Social Research Council is gratefully acknowledged. All findings, opinions, and errors are those of the authors alone and do not necessarily represent the opinions of the Internal Revenue Service or Treasury Department.

* Corresponding author.
Email address: dreck@umd.edu (D. Reck).

https://doi.org/10.1016/j.jpubeco.2026.105812
Received 21 October 2024; Received in revised form 15 October 2026; Accepted 16 October 2026

0047-2727/© 2026 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/).

In this paper, we attempt to quantify and overcome this limitation in the U.S. context by combining a wide array of sources of micro data, including (i) individual random audit data, (ii) random audits of S-corporations, an important form of private businesses in the U.S., (iii) the universe of operational audits conducted by the Internal Revenue Service (IRS), and (iv) focused enforcement activities (e.g., on offshore bank accounts and on specific evasive schemes used by private business owners). Drawing on this unique combination of data, we show that estimates based solely on individual random audits from 2006–2013 underestimate tax evasion at the top-end of the income distribution. Specifically, we find that under the audit procedures used during this period, individual random audit data do not capture the most sophisticated evasion occurring via offshore intermediaries and pass-through businesses. We provide a theoretical explanation for these facts, and we propose a methodology to improve the estimation of the size and distribution of tax noncompliance in the United States.

The starting point of our analysis is the IRS individual random audit program, known as the National Research Program (NRP). Stratified random audits are commonly used to study and measure the extent of tax evasion.[1] Researchers use random audit data to test theories of tax evasion (Kleven et al., 2011), and tax authorities use them to estimate the extent of tax evasion – the *tax gap* – and select audits (IRS, 2019). Analyzing what individual audits detect in a representative sample of the full population yields important insights for policymakers and researchers, but when it comes to tax gap estimation especially, the main difficulty, widely discussed in prior research, is that general purpose audits may not detect all tax evasion. We show that NRP individual random audits from 2006–2013 appear to be well-designed to detect simple and common forms of tax evasion, such as unreported self-employment income, overstated deductions, and the over-claiming of tax credits. But, we argue, these audits did not detect more sophisticated types of evasion, at least during the period we study, because doing so would require additional information, resources, and/or specialized staff.

Our main contribution is to demonstrate the limits of NRP random audit data spanning tax years 2006 to 2013 when it comes to estimating tax evasion at the top of the income distribution. We find that in NRP individual random audit data from this period, detected evasion declines sharply at the top of the income distribution, with less than 1% of income found by auditors to be under-reported in the top 0.01%. Our analysis uncovers two key limitations of these audits that can account for this drop-off: tax evasion through foreign intermediaries (e.g., undeclared foreign bank accounts) and tax evasion via private businesses (e.g., under-reported revenues or overstated expenses in a partnership). We stress that these limitations apply to NRP individual random audits during our sample period and to the audit procedures they entailed; they are not necessarily fundamental limitations of random audit data.

We find that offshore tax evasion went almost entirely undetected in the random audit data.[2] To establish this result, we analyze the sample of U.S. taxpayers who disclosed hidden offshore assets in the context of specific enforcement initiatives conducted in 2009–2012. The very top of the income distribution is dramatically over-represented in this sample. We find that offshore evasion was rarely detected in the audits, even when it was in fact occurring.

We also find that tax evasion occurring in pass-through businesses (S corporations and partnerships) is highly under-detected in the individual random audit data. Pass-throughs are private businesses whose income is taxed as income to their owners; pass-through ownership and income are highly concentrated (Cooper et al., 2016). During our sample period, examiners auditing pass-through owners during an individual random audit usually did not examine the degree to which pass-through businesses duly reported their income, especially for complex businesses. Thus, while the taxable income of taxpayers in the bottom 99% of the income distribution is comprehensively examined, up to half of the taxable income earned at the very top is not comprehensively examined under the current individual random audit procedures. Analyzing microdata from a small-scale random audit program for S corporations, we show that evasion in these businesses is substantial: about 20% of net business income is under-reported, five times more than the total pass-through business income under-reporting detected in individual random audits. We also show that the adoption of sophisticated tax evasion schemes involving pass-through entities—micro-captive insurance and syndicated conservation easements—is prevalent among high-income taxpayers.

We investigate the consequences of undetected offshore and pass-through under-reporting for the measurement of the distribution of unreported income and overall income inequality. The precise quantitative importance of undetected offshore and pass-through evasion is uncertain because we do not have enough data to definitively correct estimates based on individual random audit data. We propose and discuss the empirical rationale for three sets of assumptions, under which we impute the effect of accounting for offshore and pass-through evasion. These three sets of assumptions represent our chosen benchmark scenario, a more conservative low-end set of assumptions, and a stronger high-end set of assumptions.

Across all three imputations, we find only slightly more evasion in aggregate than in the standard IRS methodology, but we find that accounting for offshore and pass-through evasion is quantitatively important at the very top of the income distribution. Our adjustments increase estimated unreported income by a factor of 1.11 to 1.29 in the aggregate.[3] Individual NRP audit data suggest that 11.4% of under-reporting belongs to the top 1% of the true income distribution. Including imputed pass-through and offshore under-reporting increases this share by 9 to 33 percentage points. The quantitative importance of undetected offshore and pass-through evasion is also robust to the inclusion of other undetected evasion identified using the Detection Controlled Estimation (DCE) methods the IRS uses in its Tax Gap Studies; nevertheless, we show that accounting for undetected evasion identified by these methods introduces a large amount of uncertainty about the distribution of unreported income. Our imputation results suggest that pass-through and offshore under-reporting are also important for the overall extent of income inequality (e.g., the top 1% income share including under-reported income). Quantitative uncertainty about the exact extent and concentration of offshore and pass-through under-reporting, as well as distributional uncertainty around Detection Controlled Estimation, also generates uncertainty about the top 1% share of income including under-reported income.

We suggest a theoretical explanation for why general-purpose audits are not uniformly able to detect noncompliance across the income distribution. If we extend the canonical model of Allingham and Sandmo (1972) to allow taxpayers to pay a fixed cost to reduce their probability of detection, high-income taxpayers will find it optimal to pay this fixed cost if their desired rate of evasion is nonzero. Audit rates are significantly higher at the top than at the bottom of the distribution, making evasion that is less likely to be detected and corrected upon audit more attractive at the top.

[1] We use the term tax evasion in this paper to refer to both unintentional and intentional noncompliance with tax obligations, and do not attempt to distinguish between them. We note that this definition of evasion may include behaviors taxpayers would argue are legal, and where the line between legal tax avoidance and evasion is unclear, our definition requires taking a stance. When using audit data, we defer to auditor recommendations to delineate what behaviors are evasion, which is conventional in the literature. Gray areas nevertheless introduce some uncertainty into our analysis, which we discuss throughout the paper.

[2] Our data cover the period prior to the collection of third-party reported information on foreign bank accounts, which started in 2014.

[3] These ratios compare total under-reported income with and without including imputed offshore and pass-through under-reporting.

Related literature. These findings provide a new picture of the distribution and composition of tax non-compliance, with implications for tax enforcement and for the effective progressivity of the US tax system. To optimize tax enforcement, it is important to know where in the income distribution missing tax revenues can be recovered and their sources. For a complete understanding of how the tax system shapes incentives, and how it treats different taxpayers, it is necessary to complement information on the distribution and composition of reported income with that on unreported income.

Our findings also have implications for the academic literature on tax evasion. Recent research suggests that taxpayers seldom evade taxes on third-party-reported income (Kleven et al., 2011; Carrillo et al., 2017; Slemrod et al., 2017; IRS, 2019), and that deterring evasion where enforcement is not supported by third-party information requires increasing the audit rate, the penalty rate, or tax morale (Luttmer and Singhal, 2014). This characterization works well for the middle and the bottom of the income distribution, but it misses the importance of the concealment of evasion (even from auditors) at the top and the adoption of aggressive interpretations of tax laws. Our results suggest that beyond audit rates and/or penalties, compliance among high-income, high-wealth taxpayers is influenced by audit procedures, audit selection rules, and the subtleties of reporting requirements. From a government revenue perspective, the top of the income distribution is the subpopulation where understanding tax evasion is the most important, due to the concentration of income and the progressivity of the individual income tax.

Due to a lack of data, there is relatively little research about noncompliance by high-income individuals. Recent research sheds light on one such form of noncompliance, offshore tax evasion (Johannesen et al., 2020; Alstadsaeter et al., 2019; Londoño-Vélez and Ávila-Mahecha, 2021). Relative to this body of work our main contribution is to cover a wider range of sophisticated noncompliance, including most importantly noncompliance through private businesses, a key source of income at the top of the income distribution. This is particularly important in the US, where a high and rising fraction of taxable individual income at the top of the distribution flows from private pass-through businesses (Cooper et al., 2016; Smith et al., 2019). As much as 50% of taxable income for the top 0.01% highest earners derives from such pass-throughs, a distinguishing feature of the US tax system. Understanding noncompliance involving pass-throughs is therefore essential to paint an accurate picture of the size and distribution of US individual income tax noncompliance. Our results suggest that the growth of pass-through structures since the 1980s coincided with the development of new strategies for sophisticated tax evasion, strategies facilitated by pass-through ownership structures. We find that circa 2007, evasion via pass-through businesses made a contribution to the tax gap that was perhaps twice as large as that of offshore evasion. Since 2007, offshore evasion has been subjected to an extensive international crackdown (De Simone et al., 2020; Casi et al., 2020), while, as we discuss further below, pass-through businesses have grown in importance and audits of pass-through businesses have fallen dramatically. Compared to earlier work, our results suggest that sophisticated tax evasion is broader and more systematic than the concealment of wealth in offshore accounts specifically, and that tax policy shapes the types of sophisticated evasion strategies that high-income, high-wealth persons adopt.

The rest of this paper is organized as follows. Section 2 studies the distribution of noncompliance detected in individual random audit data. Sections 3 and 4 provide direct evidence that offshore and pass-through evasion are highly concentrated at the top of the income distribution and are rarely uncovered in individual random audits. In Section 5, we impute the effect of accounting for undetected evasion on rates of under-reporting through the income distribution and the distribution of unreported income. Section 6 summarizes our theoretical reasoning, and Section 7 concludes. The Appendix contains additional empirical and theoretical analysis.

2. The distribution of evasion detected in random audits

2.1. Background on IRS random audits

The National Research Program (NRP) random audits are the main data source used to study the extent and composition of individual tax evasion in the United States (see, e.g., Andreoni et al., 1998; Johns and Slemrod, 2010; IRS, 2016a, 2019; DeBacker et al., 2020).[4] NRP auditors assess compliance across the entire individual tax return—the Form 1040—based on information from the schedules of this Form, third-party information reports, the taxpayer's own records, and measures of risk that compare all this information to information on the broader filing population.[5] The procedures followed in the 2006–2013 random audits were standard audit procedures for audits of individual taxpayers conducted by the Small Business and Self-Employed Operating Division of the IRS.

Our analyses use the NRP pooled data from the random audits conducted for tax years 2006–2013. The NRP uses a stratified random sample which over-samples top earners. Our pooled sample includes 105,167 audited taxpayers, of which 12,003 are in the top 1% of the reported income distribution. We use the NRP weights to compute statistics that are representative of the full population of individual income tax filers. Our sample is large enough to obtain precise estimates for groups as small as the top 0.01% (although splitting this top group by other characteristics tends to leave us with too little statistical power for informative analysis). Our main statistic of interest is the *rate of income under-reporting*—the amount of income under-reported expressed as a fraction of true income.[6] In the main text we focus on point estimates; confidence intervals for the rate of income mis-reporting are reported in the Online Appendix (Fig. A1). We use a market income concept from Piketty and Saez (2003), defined as total income (Line 22 of the 2012 Form 1040) less Social Security benefits (Line 20b), unemployment compensation (Line 19), alimony (Line 11), and taxable refunds (Line 10).[7] As we show below, other income definitions yield similar results.

It has long been acknowledged that in the context of an audit, some noncompliance may go undetected. The IRS uses a methodology, known as Detection Controlled Estimation (DCE), to estimate undetected noncompliance (Feinstein, 1991; Erard and Feinstein, 2011). Official estimates of the individual income tax gap for the period we study (e.g., IRS, 2019) use DCE methodology, as does prior work on the distribution of noncompliance (Johns and Slemrod, 2010). In this section, we describe what is detected in the course of individual random audits without any correction for undetected noncompliance.[8] We incorporate

[4] Further background on the NRP is in the Internal Revenue Manual here: https://www.irs.gov/irm/part4/irm_04-022-001.

[5] We use the terms "NRP audits" and "NRP auditors" to refer to audits conducted as part of the National Research Program. Earlier IRS random audit studies under the Taxpayer Compliance Measurement Program (TCMP) consisted of line-by-line examinations of the individual tax return. The NRP aims to provide a similarly comprehensive measure of compliance at a reduced administrative cost and burden on the taxpayer. See Brown and Mazur (2003) for more on the TCMP and how the NRP uses revised procedures to achieve similar objectives.

[6] Tax Gap studies (IRS, 2016a, 2019; Johns and Slemrod, 2010) often estimate a similar quantity called the Net Misreporting Percentage, income under-reporting divided by the total of the absolute value of true income, which can differ from what we estimate for components of income that can be negative. We use a different term here partly because we never use absolute values of negative components of income.

[7] Piketty and Saez (2003) use this market income concept to examine the composition of income, while most of their reported tabulations are based on a gross income concept that does not exclude these components of income but does exclude capital gains. See further discussion in (Piketty and Saez, 2001, pp. 42–44).

[8] DeBacker et al. (2020) perform a similar analysis and obtain similar results. However, because of our subsequent results on offshore and business evasion, our interpretation of the patterns seen in the NRP is different. We argue that the

the additional under-reporting identified by DCE into our analysis in Section 5.3; until this section, we disregard DCE.

2.2. The distribution of detected evasion

We start the analysis by showing the rate of detected income under-reporting across the income distribution. Unless otherwise noted, all our analyses in this paper rank taxpayers by their estimated true income (with different measures of "true income" depending on the method used to estimate unreported income).[9] In aggregate, 4.0% of true income is found to be under-reported in NRP random audits.[10] Fig. 1(a) shows that the rate of income under-reporting hovers around 4% to 5% through most of the income distribution and falls sharply within the top 0.1% to less than 1% in the top 0.01%.[11,12] As shown by Appendix Fig. A1, this profile of evasion is relatively precisely estimated.

Fig. 1(a) also decomposes unreported income by type of income. By far the largest type of unreported income is sole proprietor income, reported on Schedule C of the income tax return. Under-reporting in this category comprises about 50% of all detected evasion. The next-largest category involves corrections to Form 1040 Line 21 income ("Other income"), which mostly reflect disallowed business losses carried over from previous years. Adjustments to line 21 are relatively uncommon but they can be large when they occur. The taxpayers with the largest adjustments in this category typically have negative reported income due to past business losses, but once those losses are disallowed, their exam-corrected income falls in the top 1% of the income distribution. Additional information on the composition of under-reported income in the full population and in the top 1% is reported in Appendix Table A1.

Four remarks are in order. First, our results are robust to using other definitions of income. Appendix Fig. A2 shows that using adjusted gross income rather than market income gives nearly identical results except at the very bottom of the distribution. Second, NRP random audits detect little evasion on wages, interest, dividends, and capital gains. A natural explanation for this fact is that these forms of income are subject to substantial third-party reporting (IRS, 2016a; Kleven et al., 2011).[13] However, interest, dividends, and capital gains accruing to offshore accounts only began to be subject to information reporting with the implementation of the Foreign Account Tax Compliance Act in 2014, after our period of study. Thus, the low evasion rates on financial capital income recorded in the 2006–2013 NRP may, in part, be due to the fact that some evasion on offshore capital income went undetected.

Third, there is an asymmetry in the detected rates of evasion across different types of business income. For sole proprietor income, which is supported by relatively little third-party information (Slemrod et al., 2017), the under-reporting rate is 37% overall and 19% for the top 1%. For partnership and S corporation business income, also supported by relatively little third-party information, detected noncompliance is much lower: 5% overall and 2% for the top 1%.[14] As discussed below, sole proprietor income is subject to extensive examination in the context of the NRP, while the examination of S corporation and partnership business income faces practical limitations.

Fourth, detected evasion among those with very high incomes is extremely low. In the top 0.01% by exam-corrected income, just 0.6% of true income is under-reported. This is a direct consequence of the fact that the NRP uncovers little noncompliance on interest, dividends, pass-through business income, and capital gains—the key sources of income in the top 0.01%. This observation is especially surprising given the lack of comprehensive information reporting on key sources of income at the top. Fig. 1(b) illustrates how the extent of information reporting changes across the income distribution. In the bottom 99% of the distribution, about 90% of market income is wage and pension income, which is subject to substantial information reporting and withholding. The remainder is primarily self-employment (sole proprietor) income with little to no information reporting. Within the top 1%, there is a dramatic shift away from wages, pensions and sole proprietor income, toward private business income and capital gains, for which there is only limited information reporting.[15] Prior literature suggests a strong empirical relationship between the presence of third-party information and rates of evasion (Kleven et al., 2011; IRS, 2019). IRS (2019) estimates that the rate of under-reporting on income subject to substantial information reporting and withholding is just 1%, while the rate of under-reporting on income subject to "some information" reporting is 17%. As such, we might expect the shift in the composition of income we observe in Fig. 1(b) to be accompanied by an increase in the importance of under-reporting of investment and business income, but we observe the opposite in Fig. 1(a).

2.3. Direct evidence for undetected evasion at the top

We now provide simple and direct evidence that the random audit data miss significant top-end evasion. We compare the amount of evasion estimated at the top of the income distribution in random audit data with the amount found in operational audits. Operational audits include all audits other than NRP random audits: correspondence audits, conventional in-person audits, sophisticated audits of high-income/high-wealth individuals, and a variety of other specialized audit programs. The IRS prioritizes audits of taxpayers who, based on a variety of factors, it expects to be non-compliant, so operational audits are not typically conducted at random. On average between 2007 and 2013, 17% of tax units in the top 0.01% were audited per year.[16]

low detected evasion at the top is a consequence of the fact that sophisticated evasion is less likely to be detected, not that high-income taxpayers are much more compliant.

[9] True income is reported income plus unreported income. Ranking taxpayers by reported income would lead to downward-biased estimates of the rate of income under-reporting at the top, because the act of under-reporting income moves taxpayers down the distribution of reported income. Fig. A3 and Table A2 illustrate how re-ranking from reported to corrected income shapes these estimates.

[10] This estimate is smaller than the official IRS (2019) estimates of noncompliance for this period, in which 11% of aggregate true income is unreported, because the official estimates include undetected noncompliance estimated by DCE methods.

[11] Unless otherwise noted, our estimates include all taxpayers, including those found over-reporting income and those with no change in income upon audit. Taxpayers who under-reported income under-reported 4.5% of aggregate true income, while taxpayers who over-reported income over-reported the equivalent of 0.5% of aggregate true income. The majority of over-reported income is in the bottom half of the exam-corrected income distribution; the implications of over-reporting for aggregate tax liabilities and for noncompliance at the top are negligible.

[12] We omit the P0–P10 group in Fig. 1(a) because aggregate exam-corrected income in this group is negative, which complicates the interpretation of the rate of under-reporting. This excludes 1.4% of total net under-reporting from depiction in the Figure. Although about 21% of total net under-reporting is found for individuals in the bottom bin of the *reported* income distribution, we show in Appendix Table A2 that the vast majority of this under-reporting is done by taxpayers who rank further up in the *exam-corrected* income distribution. See also Fig. A3 and Table A3.

[13] Capital gains were subject to some information reporting throughout our period of study; a reform added the requirement that brokers report not just sale price but also cost basis starting in tax year 2011.

[14] Schedule K-1 provides some information on pass-through business income, but whether this is truly "third-party" information depends on whether a given individual owner can control what is being reported on the K-1. Moreover, the K-1 amounts could already be understating income due to under-reporting on the business's tax return. We discuss both of these issues in Section 4.

[15] In the top 0.01%, about two-thirds of income derives from private businesses, capital gains, and "other income." An additional 15% derives from interest and dividends, some of which (e.g., investment income accruing to offshore accounts) were subject to limited information reporting during our sample period.

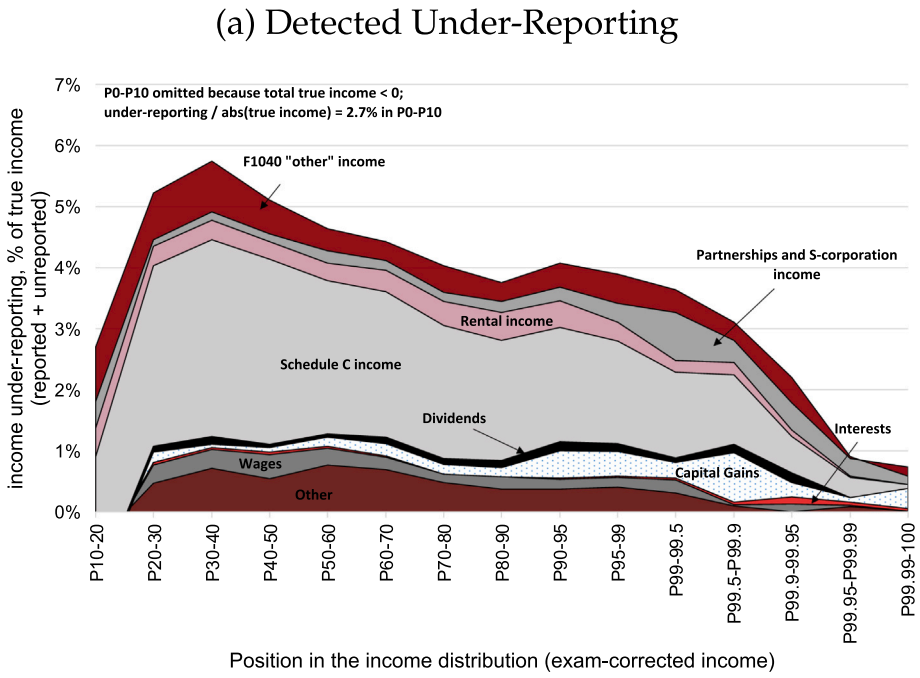


Fig. 1. Detected under-reporting and the composition of income according to random audit data. Notes: Fig. 1(a) shows unreported income detected in 2006–2013 NRP individual random audit data, without any correction for undetected evasion, expressed as a fraction of exam-corrected income. Tax units are ranked by their exam-corrected market income (defined as total income reported on Form 1040 minus Social Security benefits, unemployment insurance benefits, alimony, and state refunds). Detected unreported income decreases sharply within the top 1% of the income distribution. Misreporting of Schedule C income comprises the bulk of detected evasion. Little evasion is detected for partnership and S corporation business income and financial capital income, important sources of income at the top. We omit the P0–P10 group in Fig. 1(a) because aggregate exam-corrected income in this group is negative (refer to Appendix Tables A2 and A3 for more information on the bottom 10%). Fig. 1(b) plots the share of exam-corrected market income in each of the four categories used by IRS (2016a) to describe the comprehensiveness of third-party information and withholding. "Little or no information" includes non-farm proprietor income, Line 21 other income, rents and royalties, farm income, and Form 4797 income. "Substantial information" includes interest and dividends. "Some information" includes partnership and S corporation business income and capital gains. "Substantial information and withholding" includes just wage and salary income. Chart 1 of IRS (2016a) reports estimated under-reporting rates of 63% for "little or no information," 19% for "some information," 7% for "substantial information," and 1% for "substantial information and withholding." We observe in the figure a shift in the composition of income from the bottom 99% to the top of the top 1%, away from income with substantial information reporting and toward income with only limited information reporting (e.g., Schedule K-1 reporting for partnerships and S corporations, 1099-B reporting for some but not all capital gains).

Because only a fraction of the population is subject to an operational audit in a given year, evasion uncovered in operational audit data should be much lower than the population-weighted NRP estimates of evasion. However, as shown by Fig. 2, this is not the case at the top. The population estimate of evasion for the top 0.01% from the NRP falls substantially below the amount detected in operational audits alone. On average over fiscal years 2007-2013, in operational audits, auditors recommended $967 million (in 2012 dollars) per year of additional taxes for the top 0.01% (by reported income). In the extreme scenario where all non-audited taxpayers evaded zero, this implies that the top 0.01% by reported income evaded at least 1.2% of taxes owed. This lower bound for the amount of evasion in the top 0.01% is already far larger than the NRP point estimate, which is less than 0.05%.[17] In the next two bins—P99.9 to P99.95 and P99.95 to P99.99—the lower bound based on unpaid taxes according to operational audits is comparable to the full population NRP estimate, despite the fact that less than 10% of taxpayers in these groups were subject to an operational audit. These results provide direct evidence that NRP audits from our sample period miss some noncompliance at the top.[18]

Random audit data from the period we study face two main limitations. First, the available tools, procedures, and resources place limits on the extent to which some types of evasion are detected, especially at the top. Until recently, there was little evidence available on the nature and magnitude of these sophisticated types of evasion, making it hard to quantify them. We examine new evidence on this issue in Sections 3 (offshore evasion) and 4 (pass-through businesses). Second, even for a given set of tools and procedures, examiners vary in their propensity to detect evasion (e.g., because of differences in experience). The DCE methodology we incorporate in Section 5.3 was designed to address this issue.

3. Offshore evasion

In 2008, the IRS and the U.S. Justice Department began an ambitious crackdown on offshore tax evasion, described in Johannesen et al. (2020). Key steps in this process included 1) legal actions against specific foreign banks, during which banks turned over records on Americans' concealed accounts, 2) the establishment in 2009 of Offshore Voluntary Disclosure programs, whereby taxpayers could disclose prior noncompliance and pay penalties but avoid criminal prosecution, and 3) the 2010 passage and 2014 implementation of the Foreign Account Tax Compliance Act. In this Section, we leverage the retrospective information created by this crackdown to study how accounting for offshore evasion modifies evasion detected in 2007, the year preceding the start of the crackdown.

3.1. Background and data on offshore evasion

To first give some texture to our analysis, we gathered all public records from the Department of Justice website listing indictments, settlements, or convictions for offshore tax evasion from 2009–2021 (DOJ, 2021). These records contain descriptions of 178 prosecuted cases of offshore tax evasion. Naturally, these cases are selected and likely represent the high-end in terms of noncompliance. A few results are worth noting. First, noncompliance in this sample is sophisticated. In 78% of the cases, offshore assets were held through at least one intermediate offshore structure (e.g., shell company or trust) and in 35% of the cases through multiple intertwined offshore structures.[19] Second, the amounts of unreported income are highly skewed, ranging from hundreds of thousands of dollars to $200 million over several years. Third, in nearly all cases, individuals were accused or convicted of failing to pay tax on the financial income generated by the assets in the account. Moreover, in about 30% of cases, the records suggest that pre-tax business profits were also diverted offshore and the corresponding income taxes under-paid. Last, 93% of prosecuted individuals were male.

We now present the IRS micro-data we use for our analysis of offshore evasion. We construct two lists of individuals who are likely to have been evading taxes on income from their offshore assets prior to the crackdown that started in 2008. These lists build on Johannesen et al. (2020), who found that the initial wave of enforcement in 2008 and 2009 caused a large increase in the reporting of offshore accounts and the associated financial income. The first list comprises participants in the Offshore Voluntary Disclosure Program (OVDP). We gathered data on all OVDP participants from 2009 to 2015 and matched 50,020 OVDP participants to their individual tax returns.[20] We refer to this sample as the *OVDP* sample.

The second list consists of individuals reporting that they own offshore assets by filing a Foreign Bank Account Report (FBAR) for the first time between 2009 and 2011. U.S. persons who are the beneficial owners of more than $10,000 in offshore financial wealth have been required to disclose this wealth to the government since the 1970s by filing an FBAR. We use only first-time FBAR filers with U.S. addresses, disclosing an account in a tax haven.[21] Johannesen et al. (2020) show that the large majority of these taxpayers had been evading U.S. tax on these assets prior to disclosing them in response to enforcement.[22] We match 31,752 such taxpayers to their individual income tax returns. We refer to this sample as the *FBAR* sample. Individuals in this sample disclosed $124 billion in offshore wealth between 2009 and 2011. Total

[16] Appendix Fig. A5a depicts the fraction of tax units subject to an operational audit by fiscal year for the top 1%, 0.1% and 0.01% of reported AGI over time. Consistent with publicly available data, audit rates increased from the beginning of our sample period until about 2013 and then fell due to budget cuts. Public data on audit rates come from the annual IRS Data Book, available at https://www.irs.gov/statistics/soi-tax-stats-irs-data-book.

[17] We note that the difference between the NRP tax gap and the operational audit tax gap in Fig. 2 may not be statistically significant, due to sampling variation in the NRP (see Appendix Fig. A1). However, a statistically significant difference is not necessary for the substantive point we make here. If operational audits of 17% of the top 0.01% each year uncover half of all evasion in this group, which is less extreme than the lower bound scenario but still very conservative, the NRP point estimate should be twice the operational audit total. The NRP point estimate is sufficiently precise to rule this out with high confidence.

[18] Although Fig. 2 provides an informative comparison between what is assessed in operational vs. NRP audits, it is not directly informative about the true level of the tax gap at the top, for two reasons. First, since only a small and selected fraction of the population is subject to an operational audit, one cannot infer the true level of tax evasion using operational audit data alone. Second, because in operational audit data we only observe reported (not corrected) income in the year of the audit, we rank tax units by reported income in Fig. 2. When ranking by reported income, top earners mechanically have low evasion, since they are selected on high declared income.

[19] Because descriptions of cases do not always detail how concealed offshore assets were held, these numbers are lower bounds on the frequency of sophisticated holdings of assets.

[20] This 50,020 figure does not include approximately 6000 program participants who we could not match to their individual tax returns. About two-thirds of these were businesses. The rest did not file a tax return in the year we wished to analyze, e.g., because their participation in OVDP was too recent.

[21] We use the same list of tax havens as Johannesen et al. (2020): Anguilla, Antigua and Barbuda, Aruba, Bahamas, Bahrain, Belize, Bermuda, British Virgin Islands, Cayman Islands, Cook Islands, Cyprus, Dominica, Grenada, Guernsey, Hong Kong, Isle of Man, Jersey, Liechtenstein, Luxembourg, Malta, Mauritius, Monaco, Netherland Antilles, Panama, Singapore, St. Kitts and Nevis, St. Lucia Island, Switzerland, and Turks and Caicos Islands. Johannesen et al. (2020) constructed this list using countries mentioned in OECD (2000), plus some additional countries with strong banking secrecy. This is not an official definition used by the IRS, which has no official list of countries it considers tax havens.

[22] We note that this sample may contain some individuals who had an offshore account for legitimate reasons and were unaware of their FBAR filing obligation prior to increased enforcement, but we find it less plausible that very high-income individuals with accounts in havens were unaware of these obligations.

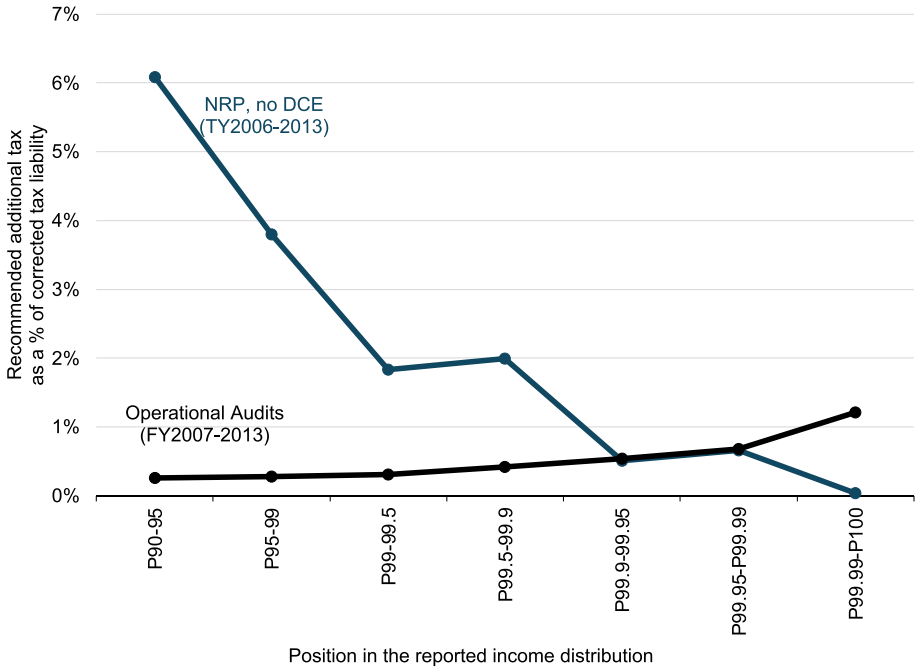


Fig. 2. Operational audits versus population-weighted random Audits. Notes: This figure compares noncompliance detected in operational audit data to population estimated noncompliance in the NRP, focusing on the top 10% of the distribution. Unlike in other figures, we rank individuals by reported income, and we focus on unpaid taxes, including, e.g., over-reporting of deductions and credits, rather than the extent of under-reporting of income. Corrected income and under-reporting of income specifically are not observed in the operational audit data. As in all our analyses of NRP audit data, we use the auditors' recommended adjustments before any disputes and appeals. We plot total evaded tax as a fraction of total tax due in each bin, for both operational audits (pooling fiscal years 2007–2013) and population-weighted NRP audits (pooling fiscal years 2006–2013). Random audits uncover a very small amount of evasion in the top 0.01% by reported income. Operational audits represent a lower bound on total evasion because they only capture evasion of audited taxpayers. Yet they uncover substantially more evasion than the NRP population estimate in the top 0.01%.

reported FBAR wealth was about $275 billion in 2011, indicating that a sizable share of all wealth reported on FBARs corresponded to wealth in tax havens newly disclosed by filers with U.S. addresses. As we discuss below, the best estimate we know of for total wealth held in tax havens by US households is around $1 trillion in 2007 (Alstadaeter et al., 2018). This suggests that around 12 percent of all the wealth that was concealed in 2007 was disclosed by individuals in our FBAR sample in 2009–2011.

We rank each individual in these lists in the income distribution, using income data from the tax year after the disclosure of the offshore account. The results in Johannesen et al. (2020) suggest that this is the year in which individuals begin complying with their tax obligations. We rank individuals by adjusted gross income (AGI) for simplicity. We report similar results using rankings based on other definitions of income.

3.2. Empirical analysis of offshore evasion

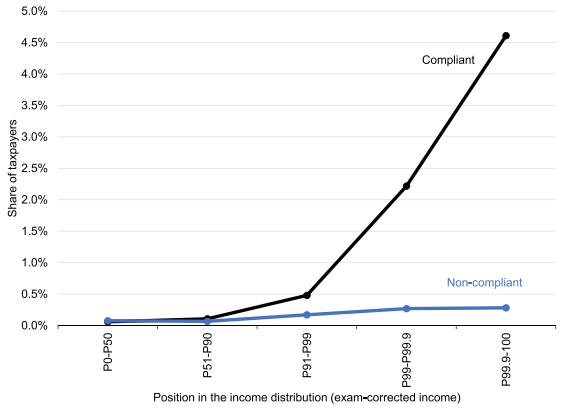
We first show that NRP audits very seldom detected offshore tax evasion in the time period we study. As the NRP stratified random sample and the offshore lists contain disproportionately many observations of high-income individuals, there is some overlap between them—i.e., some of the taxpayers in our lists of likely offshore evaders were also randomly audited as part of the NRP. Before tax year 2009, FBAR compliance was not specifically examined in NRP audits. After auditors started examining FBAR compliance, 41 taxpayers were subject to an NRP audit before they appeared on our list of first-time FBAR filers with U.S. addresses and haven accounts. Of these, fewer than 5 were flagged by NRP examiners for non-compliance with their FBAR obligation. Among all first-time FBAR filers, 187 taxpayers were audited in the NRP before disclosing an offshore account in 2009-2011, and again in fewer than 5 cases was any FBAR non-compliance detected. Likewise, of the 98 OVD participants whose FBAR compliance was examined in a random audit before entering OVD programs, fewer than 5 were flagged for FBAR non-compliance. In brief, random audits very rarely uncovered offshore evasion among taxpayers who were in fact likely to be evading.

Two caveats about our interpretation of these findings are worth noting. First, these figures are based on small samples. Second, taxpayers with offshore evasion detected in a random audit would no longer be non-compliant by the time we construct our lists of likely evaders. To alleviate these concerns, in Fig. 3(a) we plot the rates of detected noncompliance by offshore wealth in the full NRP sample (not restricting to taxpayers who also appear in our lists of likely evaders). These rates are extremely small. In fact, they are much smaller than the fraction of taxpayers from each group of the income distribution who appear on our lists of likely evaders (shown in Fig. 3(b)), a lower bound for the true fraction of offshore evaders. As Fig. 3(b) shows, the probability of appearing on our offshore lists reaches close to 7% in the top 0.01% of the income distribution.[23] Far more high-income individuals appear on our lists of offshore evaders than the (population-weighted) estimates from NRP audit data would suggest, even though these lists only cover a subset of all offshore evaders.

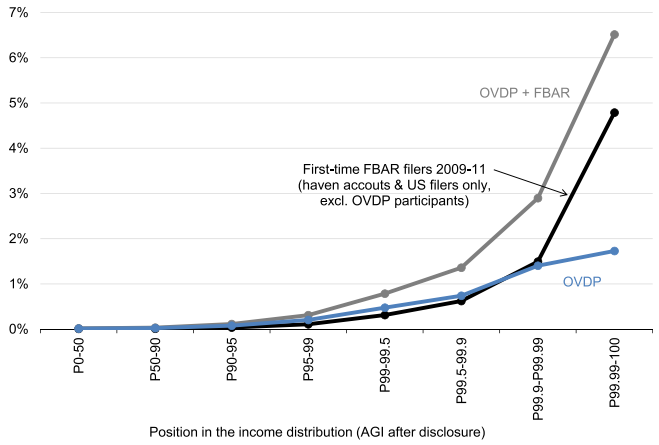
Fig. 3(c) shows the distribution of offshore wealth by rank in the income distribution using wealth reported on FBARs in the FBAR sample. Of the $124 billion in offshore wealth disclosed, 21% belongs to

[23] Appendix Fig. A4 shows that our choice of income definition matters little for these estimates. We compare specifications using AGI, as in Fig. 3(b), with total positive income (which essentially re-ranks those with large business losses toward the top), and the sum of interest, dividend, and capital gains income (a rough proxy for wealth). The profile is similar across these three income definitions, though it is steepest for financial capital income, followed by positive income.

(a) Detection of offshore accounts in NRP



(b) Share Disclosing by Income Rank



(c) Distribution of Offshore Wealth

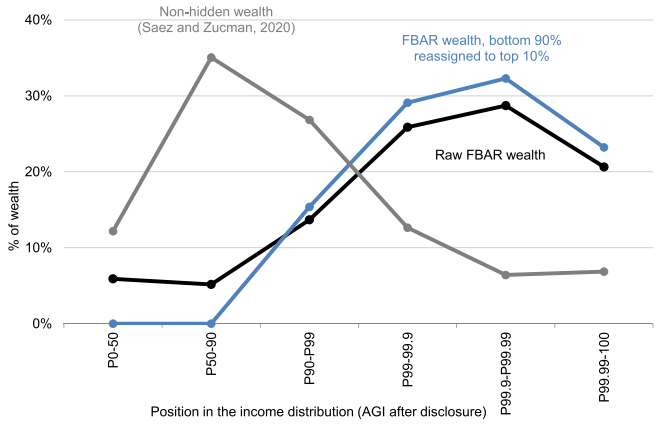


Fig. 3. Findings from data on offshore Evasion. Note: This figure summarizes the main findings on offshore wealth from data on the OVDP and FBAR samples of likely offshore evaders. Panel (a) reports the share of taxpayers estimated to own either a compliant or non-compliant offshore account in the NRP random audit data. Auditors indicated whether each taxpayer had an FBAR filing requirement and whether the taxpayer complied with that requirement. We observe that rates of detected non-compliance are very low, much lower than the lower-bound rates of non-compliance shown in Panel (b). Panel (b) plots the fraction of the full population that appears on our list of likely offshore evaders, by bin of adjusted gross income (measured in the tax year after disclosure of the offshore account), accounting for overlap between the lists (as OVDP participants were required to file delinquent FBARs). We observe a steep profile of the probability of disclosing a previously hidden account by income rank. Nearly 7% of taxpayers in the top 0.01 percent of the income distribution appear in one of the two lists. In Panel (c), we plot wealth shares for non-hidden wealth from Saez and Zucman (2016) updated in Saez and Zucman (2020) by bin of market income (defined as total income reported on Form 1040 minus Social Security benefits, unemployment insurance benefits, alimony, state refunds, and other income), versus wealth reported on FBARs by the first-time FBAR filers with U.S. addresses and accounts in tax havens (ranking by positive market income after disclosure). We observe that FBAR wealth is extremely concentrated at the top of the income distribution.

the top 0.01% of the income distribution and 29% to the rest of the top 0.1%. This offshore wealth is far more concentrated at the top than non-hidden wealth, of which about 7% belongs to the top 0.01% according to estimates from Saez and Zucman (2016), as updated in Saez and Zucman (2020).[24] The contrast confirms that findings in the previous figures were not simply driven by the overall concentration of wealth at the top of the distribution, but that concealed offshore wealth is *especially* concentrated at the top. Even the relatively small amount of FBAR wealth attributed to the bottom 90% of the income distribution (17% when ranking by AGI and 11% when ranking by total positive income) may actually belong to the top. Most FBAR wealth in the bottom 90% comes from a small number of large accounts; the median level of FBAR wealth for those in the bottom 50% of the distribution is around $200,000 and the mean is $2.5 million. If the true income of these large account holders could be observed, it would likely be near the top. To illustrate how much this might matter, Fig. 3(c) shows the impact of

[24] Our focus is documenting the large difference between ownership shares of offshore and domestic wealth rather than the change in wealth shares over time. Using alternative estimates of wealth shares would lead to similar findings.

reassigning FBAR wealth from the bottom 90% to the top 10% of the income distribution, in proportion to the FBAR wealth already attributed to the top 10%.

One caveat is that our samples of likely evaders are not necessarily representative of all individuals engaging in offshore evasion. Both the FBAR and OVDP samples comprise individuals who chose to disclose their offshore wealth via the OVDP or via a likely "quiet disclosure" (see Johannesen et al., 2020). We do not have direct evidence on the direction of the selection, but data from other countries suggest offshore wealth may be even more concentrated at the very top than we estimate. Alstadsaeter et al. (2019) use leaked data from HSBC Switzerland and estimate that 52% of offshore wealth in that bank was owned by taxpayers in the top 0.01% of the wealth distribution in Scandinavia.

4. Evasion of pass-through business income

Pass-through businesses (S corporations and partnerships) are not subject to the corporate income tax. Instead, all of the income of these businesses "passes through" to their owners' tax returns, where it is subject to applicable taxes. Ownership of pass-through entities is highly concentrated among the highest-income taxpayers, and the use of pass-through business structures has been on the rise since 1986 (Cooper et al., 2016). As such, obtaining accurate estimates of noncompliance in such structures is increasingly important. In this section we attempt to make progress on this question by leveraging additional data, focusing on the year 2007 to facilitate aggregation (in Section 5 below) with the offshore evasion results.

4.1. Background on pass-through businesses

Administratively, pass-through businesses file returns reporting entity-level income. They allocate this income to their owners on a form called the Schedule K-1. Individual owners should report the income allocated to them on Schedules K-1 on their individual tax returns. When the owner of a pass-through business can control what the business reports, the Schedule K-1 issued by that business is not from an independent or unrelated third-party; in businesses where there is a single owner or a tight network of owners, the potential scope for noncompliance is similar to sole proprietorship income.[25] When the owner is passive, the business may under-report income and as a result allocate too little income to its owners. Confirming the flow of income, deductions, credits and other tax features of pass-through businesses takes expertise and resources. Partnerships create a specific additional challenge to the audit process, because partnerships can be owned by other entities, sometimes leading to complex ownership structures involving numerous partnerships, corporations, trusts, or other intermediaries (Cooper et al., 2016).

Conceptually, there are two types of potential non-compliance by individual owners of pass-through businesses: *individual-level under-reporting,* e.g., failure to report income allocated to the individual on a Schedule K-1, or mis-reporting whether the owner is active or passive (which has tax consequences), and *entity-level under-reporting*, which occurs when income on the pass-through business return is under-reported. In the context of NRP random audits of individuals, resource constraints, audit procedures, and the tools available to auditors limit the examination of entity-level under-reporting. First, as detailed below, when individuals report partnership or S corporation income on their individual tax returns, auditors rarely examine the tax returns of the corresponding pass-through businesses. Significant resources and expertise are necessary to audit up through pass-through returns and ensure that the correct income (and other tax features) flows through to the relevant individual income tax returns. The IRS does conduct audits to examine tax compliance of pass-through businesses and their owners, but these audit programs are unrelated to NRP random audits of individuals. Second, there is no recurring random audit program for pass-through business returns themselves. The most recent random audit program for partnerships was conducted in 1982. A small random audit study of S corporations was conducted for tax years 2003–2004.

This situation has a number of implications. First, individual random audit data likely underestimate tax evasion occurring via entity-level under-reporting. In Appendix Table A1, we see that in these data, only 4.6% of partnership and S corporation income is found to be under-reported, compared to 36.7% for sole proprietorship income, which is subject to direct and comprehensive examination. Fig. 4(a) contrasts the probabilities that noncompliance was detected in NRP individual random audits for sole proprietorship income (Schedule C) and pass-through business income (Schedule E). About 60% of the population of taxpayers with Schedule C income are estimated to be under-reporting their Schedule C income. By contrast, only 14.5% of taxpayers with pass-through business income are estimated to be under-reporting their pass-through business income. These cases primarily correspond to individual-level under-reporting rather than entity-level under-reporting. Only 3.8% of taxpayers with pass-through business income are found to be under-reporting income via an audit of the pass-through business return.[26] Detected entity-level under-reporting represents one-quarter of all instances of detected pass-through under-reporting.

Second, when entity-level tax returns are examined, detected noncompliance tends to be high. As reported in Fig. 4(b), conditional on an entity being examined, more than 70% of business income is found to be under-reported on average, as opposed to 50% for sole proprietorships. Consequently, the small number of cases where examiners found under-reporting at the entity level (one quarter of cases with detected under-reporting) accounts for 58% of all detected pass-through under-reporting in dollar terms. Naturally, the high under-reporting in examined businesses may partly reflect selection (auditors may be more likely to audit entities with observable traces of under-reporting). Still, this finding suggests that a lack of comprehensive examination of pass-through entities may bias overall estimates from individual random audit data significantly.

Third, because the ownership of pass-through businesses is concentrated, the bias occurs primarily at the top of the distribution. Fig. 4(c) shows the fraction of reported income that the various groups of the reported income distribution earn via pass-through businesses in 2007, our benchmark year. For the bottom 90%, less than 5% of income comes from pass-throughs. However, among the highest earners this fraction increases to 45%. In other words, comprehensive audits of associated pass-through entities would be required to fully examine almost half the income reported by the highest-income individuals.

Fourth, the bias affects several income categories, not only partnership and S corporation business income. As shown by Fig. 4(c), the income that flows to individuals from pass-throughs does not consist only of business income, but also includes dividends, interest, rents, and capital gains. Determining compliance for such pass-through investment income (reported on Schedule K-1) is more resource-intensive than investment income reported (on 1099 forms) by third parties directly to the individual and the IRS.[27] In aggregate, about 15% of dividends,

[25] In 2017, according to Statistics of Income (SOI) tabulations of S corporation tax returns, 66% of all S corporations (earning 42% of all S corporation business income) had a single shareholder. When there is more than one owner, misreporting of pass-through income may be riskier than misreporting of sole proprietorship income (Kleven et al., 2016).

[26] More NRP related business audits occur for S corporations than for partnerships: About 75% of the audited related businesses are S corporations despite the fact that more NRP participants are partnership owners than are S corporation owners. Based on conversations with experts, our understanding is that when audits of pass-through businesses occur in the context of the NRP, the audited pass-through entities are typically small, simple businesses where the individual taxpayer being audited has access to the business's records. Large pass-through businesses—where income is concentrated—are very rarely examined.

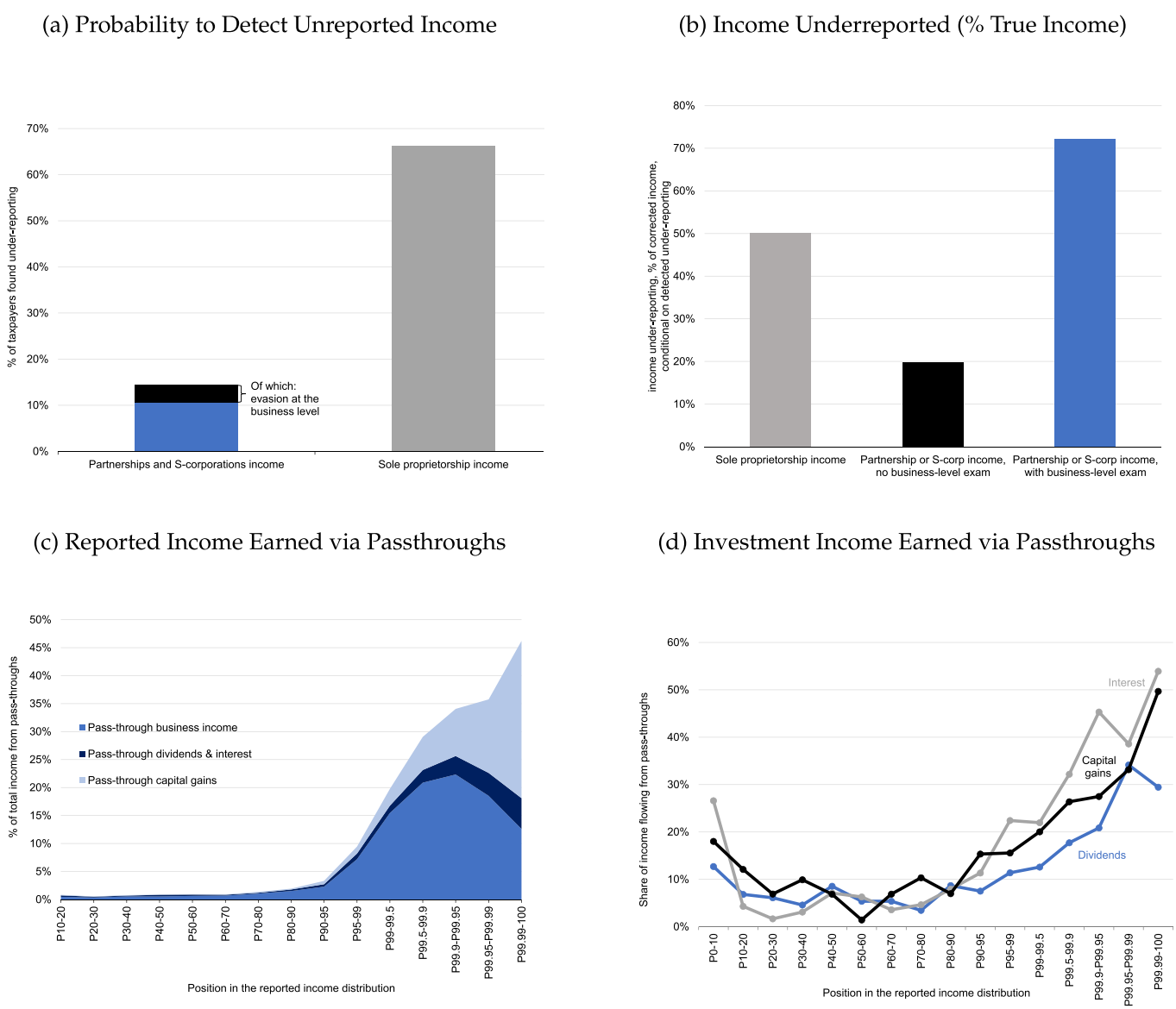


Fig. 4. Pass-Through Income: Detected evasion in the individual random audits and Concentration. Note: Panel (a) shows the unconditional probabilities that noncompliance is detected for sole proprietorship income (Schedule C) and pass-through business income (Schedule E) in 2006–2013 NRP random audits. Only 14.5% of taxpayers with pass-through business income are found to be under-reporting their pass-through business income. Among these cases, only a quarter corresponds to cases in which evasion is detected at the business level. Panel (b) shows the fraction of true business income found underreported in 2006–2013 NRP random audits for sole proprietorships, pass-through businesses when the entity is examined, and pass-through businesses when the entity is not examined. Panel (c) shows the fraction of reported market income earned via pass-through businesses by reported market income in 2007, by bin of reported market income. Income earned via pass-through businesses includes business income (S corporation and partnership profits), investment income (capital gains, dividends, and interest), and positive rents (lumped with business income) flowing from pass-throughs. For rents, we assume that 50% of positive rental income derives from pass-throughs and assume that this ratio is constant across the distribution; for other forms of investment income, pass-through investment income is taken from Panel (d). Panel (d) shows the fraction of reported dividends, interest, and capital gains earned via pass-throughs, by reported market income. These fractions are estimated in the population-weighted 2006–2013 NRP sample by matching 1040 individual income tax returns to Schedules K-1.

20% of interest, and 30% of capital gains flow from pass-through businesses. The size of these flows (which largely go unexamined in the context of individual random audits) suggests potential for a significant under-estimation of aggregate noncompliance on investment income. Moreover, as shown by Fig. 4(d), the fraction of investment income that derives from pass-throughs is highly skewed, so that the potential bias is again concentrated at the very top. In the top 0.1% of the income distribution, about 45% of interest and capital gains and 30% of dividends flow from pass-throughs.

Fifth, the magnitude of the tax gap due to pass-through evasion, and thus the magnitude of the bias from failing to account for entity-level pass-through evasion, is likely to have grown over time. Appendix Fig. A6 illustrates how partnership and S corporation income has grown as a share of overall income at the top of the distribution since the 1980s. The first panel shows that top 1% income shares have risen

[27] A further complication is that income that should be taxed as, e.g., business income may be reported as capital gains due to the lower tax rate on long-term capital gains. There is potential for legal avoidance along these lines, noncompliance and, possibly, some gray area.

substantially over time (by 1.83 times), and the majority of that growth (66%) is attributable to pass-through income, which rises from 11% to 36% of top 1% income over this period. The second panel isolates the trend in partnership and S corporation income going to the top 1% as a share of total income, which rises steadily over this period (from 1% to 7%), including through the period of heightened offshore enforcement. Additionally, Fig. A5b depicts audit rates of individuals, pass-throughs and other corporations over time using data from IRS (2022). We observe that pass-throughs were already subject to low audit rates prior to the precipitous decline in the last decade. These already low audit rates declined by over 80% from 2011 to 2019; the current audit rate for partnerships and S-corporations is about 0.05%, which is lower than the audit rate for even very low-income individuals and very small C corporations.[28] We do not have data with which to credibly quantify the growth in evasion via pass-throughs over time, but these two facts suggest that, perhaps unlike offshore evasion, pass-through evasion may have grown substantially in recent years.

4.2. Evidence from random audits of S corporations

To provide quantitative insights on entity-level under-reporting, we analyze data on the S corporation random audit program from tax years 2003–2004. The data come from audits of 4515 S corporation tax returns. For line items on the S corporation tax return (Form 1120-S), we observe originally reported and exam-corrected amounts.[29] The sample is stratified based on risk and assets; large S corporations are over-sampled (for more details, see Johns, 2009). We use sampling weights to construct representative population estimates, pooling tax years 2003 and 2004.

We estimate entity-level under-reporting as under-reported receipts plus over-reported deductions. Following Johns (2009), we do not include corrections to officer compensation deductions in our measure of overall income under-reporting because those corrections are offset one-for-one at the individual owner level by changes in wage income.[30] To examine entity-level under-reporting through the individual income distribution, we also link the audited S corporations' returns to their owners' tax returns via Schedules K-1. To obtain the best available estimate for owners' rank in the true income distribution, we use "quasi-corrected" income, defined as reported market income from the owner's Form 1040 plus the individual owner's share of detected entity-level S corporation under-reporting (excluding mis-reported officer compensation).

These data are subject to similar potential limitations as individual random audit data. First, we make no corrections for undetected evasion, as in Section 2.2. Second, resource constraints and audit procedures can limit the comprehensiveness of the examination of noncompliance, especially in complex businesses. Like individual random audits, these S corporation audits were conducted by examiners from the Small Business and Self-Employed (SBSE) division of the IRS, and the audit procedures were the same as routine SBSE audits of S corporations. Given these limitations, we interpret the data as likely to provide a lower bound for the extent of entity-level under-reporting in pass-through businesses. In distributing overall non-compliance through the individual income distribution, we face a third limitation: we do not observe noncompliance on the individual tax returns (Forms 1040) of the owners of the audited S corporations. Insofar as owners of under-reporting S corporations also tend to under-report elsewhere on their individual tax return (see, e.g., Joulfaian, 2000), the estimated location of entity-level under-reporting will be biased toward the bottom of the distribution due to insufficient re-ranking (see Fig. A3 and Table A2 for an illustration of how accounting for re-ranking shifts under-reporting upward in the distribution).

We estimate that S corporations under-report 19.5% of true net business income. Appendix Table A4 presents a line-by-line decomposition. Of total under-reporting, 26% represents under-reported gross receipts or sales,[31] 69% represents over-reported deductions,[32] and 5% represents mis-reporting of net gains from the sale of business property (Form 4797) or "Other Income" (Form 1120-S Line 5).

In Fig. 5, we examine pass-through under-reporting through the individual income distribution. Fig. 5(a) reports the distribution of 1) reported, 2) exam-corrected, and 3) under-reported S corporation income by owner income bin.[33] Both reported S corporation income and S corporation income corrected for entity-level under-reporting are concentrated at the top of the individual income distribution, with 49% (45%) of reported (corrected) S corporation income belonging to individuals in the top 0.1%. In total, 79% (75%) of reported (corrected) S corporation income belongs to owners in the top 1%. The reported income shares are larger than the corrected income shares because we estimate that under-reported income is less concentrated than reported income, with 51% of under-reporting in the top 1%. Most of this difference is attributable to a drop-off in estimated mis-reporting rates at the very top of the owner income distribution, which we further examine in Fig. 5(b).

Fig. 5(b) reports income under-reporting rates in different parts of the owner income distribution, separately for large S corporations—defined as those in the top decile of the net assets distribution—and others. For S corporations in the bottom 90% of the asset distribution, the decline in under-reporting rates as one moves up the income distribution is not entirely surprising given the characteristics of many of these firms (see, e.g., Smith et al., 2023). In P90–P99.5, S corporations often comprise self-employed, skilled professionals operating as S corporations. These corporations are not very different from sole proprietorships, and indeed we estimate comparably high under-reporting rates of about 30%. In the top 0.1%, small-asset S corporations are more likely to represent

[28] In 2019, individuals with between $1 and $25,000 of total positive income were subject to an audit rate of 0.37%, while C corporations with between $1 and $250,000 of assets were subject to an audit rate of 0.16%. For further details refer to Table 17 of IRS (2022). The audit rate for partnerships and/or S corporations in 2019 is the lowest of any group of tax returns for which an audit rate is reported in Table 17. In earlier years, the audit rate for partnerships and S corporations was among the lowest of the group-specific audit rates reported in the table.

[29] The focus of the audit program was on the accuracy of business income reporting, i.e., the front page of the Form 1120-S. We do not have data on examinations of, e.g., tax credits claimed by S corporations (i.e., the information on Schedule K of the 1120-S).

[30] For example, an owner who chooses to under-report officer compensation relative to the "reasonable compensation" standard will report too much ordinary business income relative to that standard. Mis-classification of officer compensation as ordinary business income allows owners to avoid Medicare and potentially other employment taxes. This type of non-compliance is frequently detected in these audits (Johns, 2009). It matters for the tax gap but not for the extent of income under-reporting. Our only methodological departure from (Johns, 2009) is that we estimate misreporting rates as a share of total net income, rather than the total of the absolute value of net income (see footnote 6).

[31] The under-reporting rate for receipts on their own is lower than for most other line items: 0.3% of gross receipts is under-reported, but a 0.3% under-reporting rate of gross receipts translates to 5.1% of net S corporation income.

[32] Over-reported deductions here exclude officer compensation but include the cost of goods sold. The largest component of over-reported deductions is Form 1120-S Line 19: "Other Deductions." However, some corrections to line 19 pertain to line-switching, i.e., when an examiner determines that deductions reported on line 19 should have been entered elsewhere. Such line switching will net out for our primary purpose here, but it necessitates caution when interpreting Table A4 in terms of which types of deductions are most commonly under-reported.

[33] We are unable to use the finer income bins we used in previous figures due to the smaller sample size of the S corporation study.

supplemental income to the individual's main sources of income, e.g., speaking fees or consulting work, where there may be more information reporting and less evasion. This decline in the under-reporting rate may be over-stated due to the insufficient re-ranking discussed above, however.[34]

S corporations in the top 10% of the assets distribution are more similar to C corporations. For these large S corporations, we estimate under-reporting rates of about 15% through most of the income distribution, similar to the C corporations' under-reporting rate suggested by IRS tax gap studies of (12–18% depending on the year). For top 0.1% owners, however, the under-reporting rate for large S corporations falls to about 5%. There are at least two possible interpretations for this finding. First, there might truly be little noncompliance in these large, top-owned private firms. Second, there may be significant noncompliance in these large private firms that the random audit program failed to uncover. This may be a consequence of audit procedures: thoroughly auditing multi-establishment S corporations (e.g., retail chains or car dealerships), which are concentrated in the top 10% of assets and top 0.1% of income, requires far more resources than auditing a small S corporation. Given this, we approach the low estimated rate of entity-level S corporation under-reporting at the very top of the individual income distribution, which echoes the drop in detected individual noncompliance in Fig. 1(a).[35]

To quantitatively investigate this issue, we analyze data on the participation in two specific evasive schemes involving pass-through entities: microcaptive insurance schemes and syndicated conservation easements. In evasive micro-captive insurance schemes, business owners pay a fee to an offshore company that they also own and that supposedly provides insurance services. This payment is deducted as a business expense in the US, reducing US tax liabilities, while the fee does not increase tax liabilities because the offshore company that receives it is incorporated in a territory where there is no income tax (e.g., Bermuda). If the micro-captives do not meet the legal criteria for providing insurance, then the payments are evasive (for more details, see IRS, 2016b; GAO, 2020). The IRS identified microcaptive schemes as abusive and has taken steps to curb them, including a letter campaign and the issuance of Notice 2016-66, which identified a class of microcaptive insurance schemes as potential tax evasion and required taxpayers who had participated in these schemes to disclose their participation on Form 8886, which is the form for disclosing all such "Listed Transactions" (see IRM 4.32.2.8.2.2.3.1). To identify participants in microcaptive insurance schemes, we use the initial Form 8886 filings in response to IRS Notice 2016-66. We observe 12,874 S corporation owners disclosing participation in microcaptive insurance schemes during tax years 2017 to 2020 and we assign them to income ranks using their AGI in the year after the Form 8886 filing. An internal IRS review of these filings found that the "majority" of them were indeed abusive GAO (2020).

Syndicated conservation easement schemes involve the donation of the development rights on property to a non-profit entity for conservation, which generates a tax deduction (see IRM 4.38.1.11.5). By over-valuing the development rights, taxpayers in evasive syndicated conservation easement schemes claim deductible donations larger than the deductions they are entitled to. The word "syndicated" refers to the version of the conservation easement where a group of individuals jointly owns a pass-through business (typically a partnership) that owns the property on which the conservation easement is taken (for more details, see United States Senate, 2020; IRS Criminal Investigations, 2025).[36] To identify participants in likely evasive syndicated conservation easements, we use the initial Form 8886 filings in response to IRS Notice 2017-10, which identified syndicated conservation easements as "transactions of Interest." We observe 26,117 such Form 8886 filers during tax years 2017 to 2020 and we assign them to income ranks using their AGI in the year after the 8886 filing.[37] US Department of Treasury (2020) reports statistics on these 8886 filings: in 2018, the value of the charitable deduction exceeded investors' investment in the syndicate in all but 1.8% of disclosures; the ratio of the claimed deduction to investment was 4.9 on average. Total claimed deductions were about $6 billion in 2016 and about $9 billion in 2018.

Fig. 5(c) presents the probability that an individual appears on our list of S corporation owners participating in a micro-captive insurance scheme by individual income bin. To help us understand how these findings relate to the S corporation random audit results, we report separate probabilities of micro-captive participation in large and small S corporations, splitting out firms in the top decile vs. bottom 90% of the asset distribution as before. Fig. 5(d) plots the probability of participation in a syndicated conservation easement transaction. In both of these figures, as for offshore evasion in Fig. 3(b), we observe that participation in sophisticated schemes rises sharply with income even within the top 1%. For micro-captive insurance, we further find that the relatively high participation rate among very high-income owners is almost entirely driven by large S corporations, which contrasts sharply with the random audit findings in Fig. 5(b). Fig. 5(c) and (d) suggest that some of the top-end drop in detected entity-level under-reporting in S corporations from Fig. 5(a) and (b) reflects differential detection of evasion through the distribution of S corporation size × owner income. The available data, however, limit our ability to definitively correct for the under-detection of sophisticated, undetected, entity-level under-reporting in pass-through businesses.

5. Implications for the distribution of evasion

In this section, we explore the implications of the findings of the previous two sections for the distribution of under-reported income. An implication of our results so far is that evasion at the top of the distribution is not only under-estimated in random audit data, but it is also more uncertain. We do not have a representative random sample of

[34] Appendix Table A5 shows estimated under-reporting rates for single owner, two-owner and multiple-owner S corporations. Under-reporting rates are similarly high among single- and two-owner firms, around 25% on average. Under-reporting rates are lower, though not trivial, among multiple owner firms at about 12.5%. Single-owner S-corps are the predominant form across the owner quasi-corrected income distribution, including at the very top. Among each type, under-reporting rates fall to about 5% at the very top of the distribution.

[35] In Appendix Fig. A7, we decompose large S corporations further into those in the 90–95th percentiles and those in the top 5% of assets. For those in the 90–95th percentiles, under-reporting is fairly stable across the distribution, including at the top, and the average under-reporting rate among these firms is about 22%. Under-reporting is lower among top 5% firms, particularly at the bottom and very top of the distribution, though it is relatively high in the bottom part of the top 1% of the distribution. Lower under-reporting among top 5% firms could reflect higher compliance among the largest firms or NRP audit procedures, as just discussed.

[36] There may also be evasive non-syndicated conservation easements, but we do not have a clean way to isolate them and they are not directly related to pass-through evasion.

[37] Both firms and individuals respond to these notices. For microcaptive insurance schemes, we limit our analysis to S corporation owners to maximize comparability with the S corporation random audit data. For syndicated conservation easements, S corporation owners are less well-represented, so we include individuals filing Form 8886 and also the individual owners of the pass-through businesses filing Form 8886. In the case of pass-through ownership, there is some subjectivity about which owners should be included. First, some owners may not even claim the relevant charitable deduction, so we restrict our sample to owners who do claim the Schedule A line item in the year of interest or a recent prior year. Second, some owners, e.g., minority investors in a complex fund of funds, may not know they are invested in the position. Together with the Schedule A line item restriction, we use the materiality of the owner's stake in firms engaged in this position to proxy for the likelihood that the owner knows about the position. We require that the owner own at least 0.01% of the pass-through; we obtain a very similar profile with a 0.1% ownership or 1% ownership restriction, or with no such restriction.

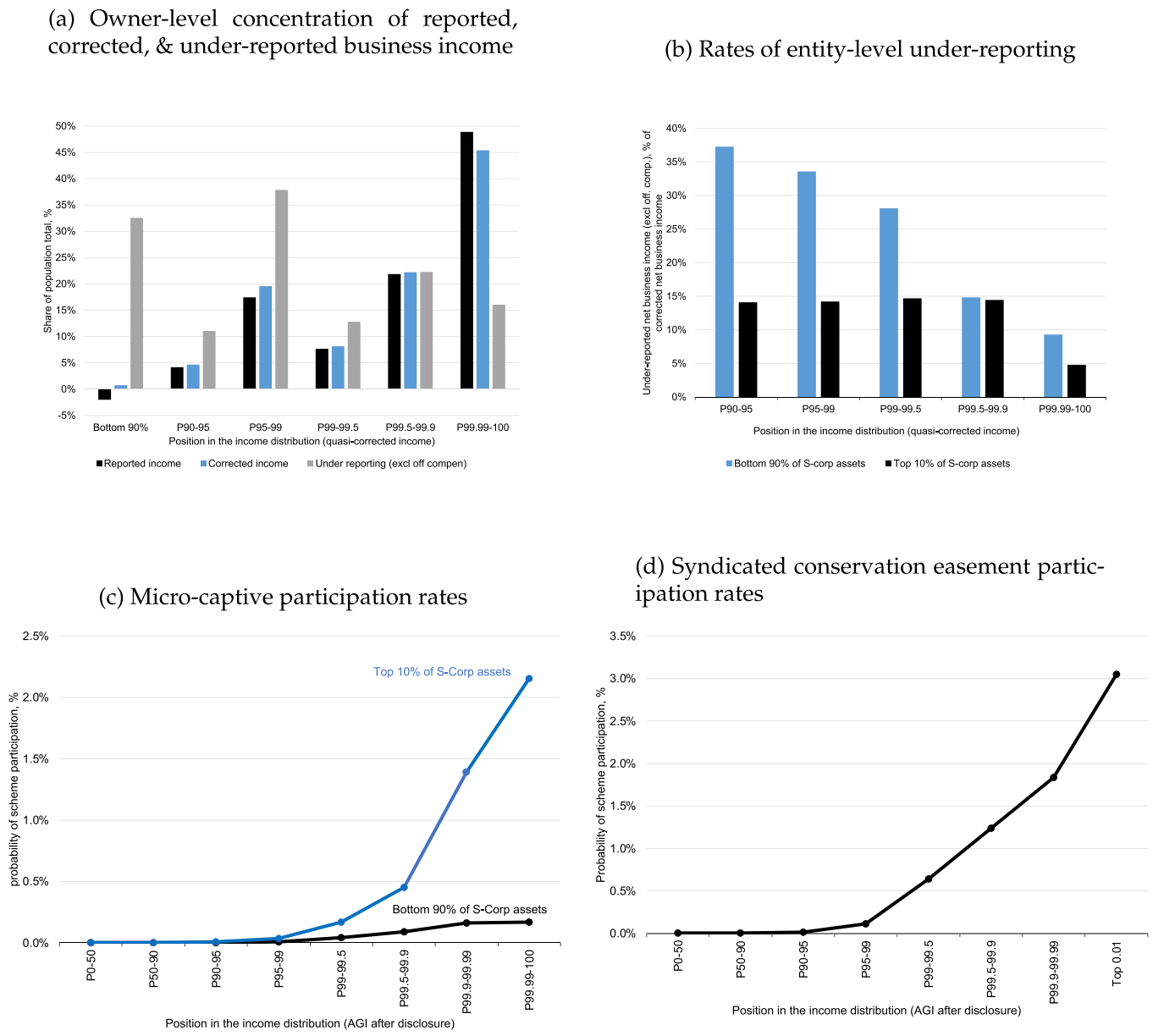


Fig. 5. Pass-through evasion: S-corporation random audits & specific schemes. Note: This figure presents data on entity-level under-reporting in pass-through businesses. Panels (a) and (b) are drawn from the S corporation random audit data from tax years 2003–2004. We rank individuals by their reported income plus the S corporation owners' share of S corporation under-reporting, which we call "quasi-corrected" income. Panel (a) presents the distribution of reported, exam-corrected, and under-reported S corporation net business income by owner income bins. We exclude mis-classified officer compensation from under-reporting for the reasons discussed in the text. Panel (b) depicts estimated rates of entity-level under-reporting in S corporations, by owner income bins, splitting large and small S corporations (i.e., top 10% versus bottom 90% by assets). We observe that under-reporting is highly concentrated but not quite as concentrated as reported business income, because of a drop in detected under-reporting for large S corporations with top-income owners. The next two panels show, however, that sophisticated evasion schemes are relatively frequently taken up by top-income owners of pass-through businesses. In Panel (c) we depict the rate of participation by owners of S corporations in micro-captive insurance schemes. We split these owners into two groups based on whether they own small or large S corporations. We observe that sophisticated evasion via micro-captives is concentrated among top-income owners of large S corporations (the same group Panel (b) suggests is relatively compliant). In Panel (d), we show that rates of participation in syndicated conservation easements are also high among top-income owners of partnerships and S corporations.

tax returns in which offshore and pass-through evasion are comprehensively examined. Instead, we have the evidence above, some aggregate statistics, and suggestive evidence from other studies. Given this uncertainty, we present a range of imputations under some transparent assumptions. We present benchmark assumptions, which represent our best guess, and low-end/high-end assumptions, which we are reasonably confident are not biased downward/upward, given our read of the available evidence. Each of these entails multiple specific assumptions, whose importance we further unpack in the Appendix. A noteworthy feature of these imputations is that the available evidence allows us to more easily discipline low-end assumptions with confidence than high-end assumptions, which generates an asymmetry in the gap between the low/high-end assumptions and the benchmark. Interested readers can implement alternative assumptions using the source files available on the academic authors' websites. We begin by adding imputed undetected offshore and pass-through evasion to NRP estimates without DCE. Then we additionally impute the distribution of undetected under-reporting identified by DCE.

Throughout this analysis, we assume the distribution of exam-detected evasion is that of the NRP random audit data from Fig. 1(a) and that adding undetected evasion and re-ranking by true income has a negligible effect on the distribution of exam-corrected income, apart from some double counting adjustments described below. In other words, if the top 1% has 18% of exam-corrected income without including any undetected evasion, we are assuming that they also have 18% of exam-corrected income when we add undetected income and re-rank by true income. See Assumption 1 of Iselin and Reck (2025) for a formal statement of this type of assumption.[38]

5.1. Assumptions for imputations

Table 1 lists all the assumptions we make for our benchmark, low-end, and high-end imputations.

Assumptions about offshore evasion. Our method for imputing offshore evasion follows Alstadsaeter et al. (2019). We designate 2007 as the base year in which we seek to impute offshore evasion; this is prior to the crackdown on offshore tax evasion that began in 2008.

In each imputation, we begin with an estimate of aggregate offshore wealth in tax havens owned by US households in 2007. In the benchmark, the figure is $1058 billion, the equivalent of 1.7% of total U.S. household wealth. This number is taken from Alstadaeter et al. (2018), Appendix Table A.3; Alstadaeter et al. (2018) imputed it by allocating the 2007 global amount of offshore wealth estimated in Zucman (2013) to each country, using retrospective statistics on the ownership of offshore bank deposits released by the Bank for International Settlements in 2016. In the low-end scenario, we assume total offshore wealth is $750 billion. This figure is based on the Boston Consulting Group's (BCG) Wealth Report of 2007, which estimated that wealthy North American residents held about $37.7 trillion of wealth, 2% of which was held offshore.[39] In the high-end imputation, we assume total wealth is $1.5 trillion, following Guttentag et al. (2005). These authors built on the BCG Wealth Report of 2003, according to which the total holdings of high-net-worth individuals in the world were $38 trillion, including $16.2 trillion for North American residents. "Less than 10%" of this wealth was held offshore according to BCG; adopting this purported upper bound, as in Guttentag et al. (2005), yields a total of $1.5 trillion.

Second, we make an assumption about the share of offshore wealth that is hidden from the IRS. Our assumptions here are based on United States Senate (2008, 2014) reports investigating the practices of several Swiss banks in the U.S. (prior to the 2008 crackdown). The investigation committee suggested that at least 95% of accounts at UBS Switzerland and Credit Suisse were undeclared just before the crackdown in 2008; they suggest the share of wealth undeclared (in dollars) was even larger because non-compliant accounts tended to hold more wealth. They cannot pin down the exact share of wealth concealed with certainty and, in the case of Credit Suisse, they suggest a lower bound figure of 85% based on the share of accounts that left the bank after the crackdown.[40] We assume 95% of haven wealth was hidden in the benchmark imputation, 85% in the low-end imputation, and 100% in the high-end imputation.

Third, we assume a nominal, taxable rate of return on offshore wealth to convert the stock of concealed offshore wealth to a taxable income flow. In the benchmark imputation, we assume a 6% return. This is an educated guess based on what is known about the portfolio composition of global offshore wealth and the rate of return on these assets in 2007.[41]

Table 1
Imputation assumptions.

	Benchmark	High-end	Low-end
		Offshore	
Aggregate offshore wealth	$1058 billion	$1.5 trillion	$750 billion
Share of hidden offshore wealth	95%	100%	85%
Taxable rate of return on hidden wealth	6.00%	11.00%	4.65%
Distribution of offshore wealth	60% to top 0.1% 35% to top 0.01%.	100% Nordic dist.	100% FBAR dist.
		Pass-Through	
Rate of under-reported business income	20%	26%	19.5%
Rate of under-reported capital gains	5%	10%	0%
Rate of under-reported dividends and interest income	3%	6%	0%
Distribution of undetected pass-through income	As reported pass-through income	As reported pass-through income	As S-corp audit data
		DCE	
The distribution of DCE-identified under-reporting	As exam-corrected incomes by type of income	As exam-corrected inc by type, combining sole prop & pass-through	As exam-detected underreporting, by type of income

Note: This table lists the assumptions we make about undetected under-reporting in our imputations. Refer to the main text for details and the rationale for each assumption.

[38] Iselin and Reck impose this assumption starting from the distribution of reported income and adding all unreported income; we impose it starting from exam-detected income and adding undetected income. Weisbach and Coleman (2026) show that such re-ranking effects cannot be exactly zero: re-ranking by corrected income will tend to decrease the share of exam-corrected income in the top 1%. However, microsimulations suggest these effects are indeed quantitatively small, intuitively because those pushed out of the top 1% after re-ranking by true income were at the bottom of the top 1% to begin with. Specifically, using microsimulation methods described in Guyton et al. (2023), adding DCE-identified income and re-ranking decreases the top 1% share of exam-corrected income by 0.6 pp using the "DCE2001" method and 0.2 pp using "DCE2019." Adding undetected pass-through and offshore income without DCE likely implies an even smaller effect: these imputations add less income in total relative to DCE. The DCE2001 method generates a larger re-ranking effect because it allocates most undetected income to a few returns with high detected evasion, reflecting a point about heterogeneity made by Weisbach and Coleman (2026). However, as we argue in Guyton et al. (2023), this aspect of DCE2001 is unrealistic. See also the discussion of Fig. 1 in Iselin and Reck (2025).

[39] Alstadsaeter et al. (2019, footnote 28 p. 2090) list all the available estimates of the global amount of offshore around 2007; the BCG estimate is the second lowest one, immediately after (and close to) an OECD estimate which is not broken down by country.

[40] We have much less detailed evidence outside Switzerland, but footnote 9 of the 2008 Senate report refers to earlier testimony by an insider in the Cayman Islands suggesting that "virtually all" American-owned accounts at his bank were undeclared.

[41] In the first draft of our paper, our rationale for this figure was as follows: Zucman (2013) estimates that in 2007, around 75% of global offshore wealth was invested in securities (mostly equities and mutual fund shares) and 25% in bank deposits. The average interest rate paid by Swiss banks on their term deposits was 4.3% in December 2006. Similarly, in 2006 the U.S. federal funds rate was in the range of 4.3% to 5.25%; the total nominal return (dividends reinvested) was 13.4% for the S&P 500 (and 20.65% for the MSCI World). With 25% of assets earning a 4.3% return in bank deposits and 75% earning half of a 13.4% return in securities (with the other half in unrealized capital gains), we arrived at our taxable 6% return. In newer data from third-party reporting under FATCA, discussed in more detail below, interest and dividend income in offshore haven accounts are somewhat higher than our initial guess; realized

In the low-end imputation, we use the average daily 10-year Treasury rate for the year 2007, 4.65%; this is similar to the interest rate on Swiss bank deposits. In the high-end imputation, we use the return on average equity for all U.S. banks, averaged over the year 2007: 11%.

Under these assumptions, total under-reported income from offshore accounts is $60.3 billion in the preferred scenario (0.7% of true total taxable income), $28.7 billion in the low-end scenario (0.3% of total income), and $165 billion in the high-end scenario (1.9% of total income). Our fourth assumption concerns how these totals are distributed throughout the income distribution. We plotted the share of wealth belonging to different parts of the income distribution for U.S. filers who disclose a haven account by filing an FBAR for the first time during 2009–2011 in Fig. 3(c). These shares are based on partial and potentially selected samples of offshore evaders. Some results in Johannesen et al. (2020) suggest the new FBAR filers from this period are negatively selected on income relative to all owners of offshore wealth. As such, we assume these shares are equal to the distribution of all concealed wealth in our low-end imputation. In the benchmark, we take a weighted combination of the distribution of offshore wealth observed among new FBAR filers and the distribution of hidden wealth estimated by Alstadsaeter et al. (2019) in Scandinavia, which is more concentrated at the top. We put equal weight on the two distributions, which implies that 60% of hidden wealth belongs to the top 0.1% and 35% to the top 0.01% (vs. more than 50% in Scandinavia). In the high-end imputation, we put 100% of the weight on the Scandinavian distribution.

Assessing offshore assumptions with newer FATCA data. We developed the assumptions laid out above using information that was available when we released the original working draft of this paper. A recent analysis of far more comprehensive data on offshore wealth in havens, using the universe of third-party information reports under the Foreign Accounts Tax Compliance Act (FATCA), allows us to gain some insight into the accuracy of our initial assumptions (Johannesen et al., 2024). This validation exercise is subject to some caveats. Johannesen et al. study data from tax years 2015 to 2018, after FATCA attempted to curb offshore tax evasion. Offshore wealth and income could be different between 2007 and this period for a variety of reasons, including repatriation in response to FATCA (De Simone et al., 2020), and the possibility that taxpayers may avoid realizing capital gains more often in tax-compliant accounts.

That being said, these authors find that Americans' total offshore wealth in havens was around $2 trillion, which is similar to what we would expect under our first assumption about total wealth.[42] While income reporting is incomplete in FATCA data, as discussed in detail in Johannesen et al. (2024), their analysis of reported income in offshore accounts suggests that our benchmark 6% return is also reasonable.[43] The results in this study are consistent with our assumption that new FBAR disclosures are negatively selected on income relative to all offshore wealth. The new FBAR disclosures we analyzed here, and those drawn from Johannesen et al. (2020), are restricted to offshore accounts owned directly by individuals, while Johannesen et al. (2024) finds that accounts owned by entities, mainly partnerships, are an important component of haven wealth and much more concentrated in their ownership. These authors estimate that about 33% of wealth in havens owned by individuals and partnerships belongs to the top 0.01% of the income distribution, compared to 36% in our benchmark imputations and 23% in the new FBAR sample and the low-end imputation.

Assumptions about pass-through evasion. To impute pass-through evasion we require assumptions about 1) what share of various types of pass-through income is under-reported at the entity level, and 2) how this under-reporting is distributed by owner income. One way to discipline these quantities would be to rely on the S corporation audit study data from Section 4.2. Under the assumptions that the S corporation random audits detect all entity-level under-reporting and that the rate and distribution of under-reporting are similar for S corporation business income and other forms of pass-through income (and similar across S corp study years, tax years 2003–04, and our period of interest), we would assume 19.5% of pass-through income is under-reported and distribute this according to the shares of under-reported income plotted in Fig. 5(a).

We argue that in light of the available evidence, the S corp study should be regarded as a lower bound for the amount and concentration of all under-reported income in partnerships and S corporations; we therefore make these assumptions in our low-end imputation. How we discipline a more middle-of-the-road set of assumptions depends on how we think about the limitations of these data and legal ambiguities. As discussed above, in our analysis of syndicated conservation easements and microcaptive insurance schemes, the S corporation NRP data are subject to limitations in their capacity to capture sophisticated and potentially legally ambiguous forms of noncompliance.[44]

The most important form of pass-through income besides S corporation business income is partnership income, in which we have much less comprehensive data on under-reporting: the last random audit study of partnerships was in 1982, when TCMP random audits produced an estimated income under-reporting rate of 26% for partnerships, although obviously under a different tax policy regime (GAO, 1995). Partnerships are smaller than S corporations in terms of assets, which could suggest a higher non-compliance rate (smaller S corps have more non-compliance in the S corp audit data). Simple partnerships have similar margins for evasion to small S corporations, while complex partnerships are very different from large S corporations. Empirically, the complexity of partnership structures (defined as tiered ownership) rises sharply with owner income within the top 1% of the income distribution (see Appendix Fig. A8).

There are some additional margins for evasion in complex partnerships; such margins are myriad and usually involve shifting income or assets between partners. One simple example would be for a U.S. individual to incorporate a shell company in an offshore tax haven, make this company a partner in a U.S. partnership, and conceal the ownership of the company from the IRS. New reporting rules under FATCA make this more difficult,[45] but this is one potential mechanism for offshore tax evasion. Partnerships can also allocate income between partners flexibly using "special allocations" to take advantage of differential tax rates across partners or types of income. Love (2024) estimates that these allocations generate about $20 billion in tax reductions per year over 2011-2020, 66% of the which accrues to the top 1% of the distribution (29% to the top 0.01%). Partnerships can also shift assets within

capital gains are probably lower. Overall, a taxable return of 6% continues to appear to be reasonable based on these newer data.

[42] If our benchmark for total offshore wealth, $1.058 trillion was correct and offshore wealth grew by 8% year over year on average from 2007 to 2016, total wealth would equal about $2 trillion in 2016.

[43] The authors estimate a nominal taxable rate of return for all offshore wealth of about 5%. The estimated return is higher in tax havens: the rate of return in havens is 5.0% based on interest and dividends alone, and it is 6.5% when including capital gains (imputed as 14% of reported gross proceeds from sales of assets). The estimated return is also somewhat higher for accounts owned by individuals and US partnerships (7.4% and 6.4% respectively). The correct number for our imputations is the nominal taxable rate of return for wealth in havens with owners subject to individual income taxes.

[44] These specific schemes alone are not large enough to imply a substantial adjustment to total under-reporting, but they illustrate a broader concern we have with the use of SBSE audits to estimate noncompliance in large, complex pass-throughs.

[45] One limitation to FATCA is that such "shell companies" could be converted into "shell banks" and dodge FATCA reporting, which does not apply to financial institutions themselves. The extent to which this is occurring is unclear, but it is the source of "the largest tax evasion case in U.S. history" (in nominal dollars) (United States Senate, 2022).

ownership networks to reduce taxes on capital gains and exploit depreciation rules. The IRS (2024) suggests that this "shell game" generates an estimated $10 billion in tax reductions per year; they do not report distributional statistics but given the complexity of the partnerships playing the shell game it is reasonable to expect that it is highly concentrated.[46] Cooper et al. (2016) find that 15% of entity-level partnership income flows in circles within ownership networks.[47]

Although their effect is to avoid tax on a substantial amount of income, the legality of many of these arrangements is unclear. Some of the tax benefits of flexible partnership arrangements are legally obtained, and they are subject to anti-abuse provisions in the law. As discussed above, partnership audits are low and declining (Appendix Fig. A5b), so complex positions are seldom challenged in practice. When they are challenged, the resulting disputes can take years and strain IRS resources (GAO, 2023). However, a recent study of operational audits of partnerships estimates that audits of complex (tiered) partnerships yield $20 for every $1 invested in auditing them, compared to $10 to $1 for simple partnerships (Hess et al., 2024), so there is some signal that these arrangements are not always compliant.

Rather than try to integrate all of the piecemeal evidence above into a complicated structural imputation, which would require taking an explicit stance on the extent and legality of all these positions, in our benchmark we elect a transparent and simple approach, supposing that rates of under-reporting are equal in the top and bottom of the distribution but total under-reporting is similar in magnitude to what we assume in the lower bound. In the benchmark imputation for pass-through evasion, we assume 20% of pass-through business income is under-reported. We also include some under-reporting of investment income received by pass-throughs (which was unexamined in the S corporation audit study), assuming 5% of pass-through capital gains, and 3% of pass-through dividends and interest are under-reported. These assumed rates are equal to the under-reporting rates for investment income directly earned by individuals in the individual NRP data (Appendix Table A1). We then assume under-reported pass-through income is distributed similarly to reported pass-through income. For example, if the top 1% (by reported income) earns 60% of reported pass-through business income, we assume that the top 1% (by true income) also earns 60% of unreported pass-through business income, which is equivalent to assuming rates of evasion are constant in different parts of the distribution.[48] The resulting distribution of under-reporting is more concentrated at the top of the income distribution than the shares of unreported S corp income (see Fig. 5(a)), which we attribute to limited detection of sophisticated evasion in the S corp random audit data and/or the importance of complex partnerships at the very top of the distribution. In the high-end scenario, we increase the rate of under-reporting of business income to 26%, and we double the rates of under-reporting of pass-through investment income, supposing that the higher sophistication of pass-through investment income is associated with elevated misreporting. The 26% figure is similar to the estimate from the 1982 TCMP study and the estimate of sole proprietor misreporting in the top 1% (25% in our NRP data).[49] We use the same distributional assumption as the benchmark imputations in the high-end imputation.

Double counting. There is potential for overlap between the three components of under-reporting we include in these imputations: audit-detected evasion in individual random audit data, imputed offshore evasion, and imputed pass-through evasion. Double counting between imputed offshore evasion and the individual random audit data is negligible, because detection of offshore evasion is extremely rare in the random audit data, and detected FBAR noncompliance is associated with small corrections to income.[50] We focused our pass-through imputations on business income, and our offshore imputations on investment income, in order to minimize double counting between our imputations for offshore and pass-through income. In reality, pass-through owners may evade significant tax on their business income by diverting profits to offshore accounts; we do not explicitly account for this in our imputations.[51] Relatedly, our pass-through imputations presume small amounts of entity-level misreporting of investment income in pass-throughs, to minimize double counting of unreported offshore investment income that flows through pass-through businesses.

The main form of double counting we do need to address is entity-level pass-through business income that is included in both our imputations and individual random audit data (see Fig. 4(a)). When we add imputed pass-through under-reporting per the assumptions laid out above, we also remove entity-level pass-through evasion uncovered in the context of individual random audits. Specifically, 57.6% of partnership and S corporation income evasion detected in individual random audits is associated with an entity pickup (i.e., an audit of the corresponding business). We therefore remove 57.6% of audit-detected partnership and S corporation evasion.[52] We apply this double counting adjustment to partnership and S corporation business income, and do not make explicit double counting adjustments for the (relatively small)

[46] While the concentration of S corporation and partnership business income at the top of the owner income distribution is similar, the industry mix is somewhat different. The S corporation industry distribution better mirrors that of C corporations whereas partnership income is highly concentrated in finance and holding companies, and these industries account for much of the concentration of partnership income at the top of the distribution (Cooper et al. (2016)). Therefore, the degree to which the estimates from the S Corp NRP extrapolate to partnership non-compliance across the distribution also depends on whether non-compliance rates in finance, holding companies and professional service partnerships match those in other industries, which may be related to differential use of the practices discussed here.

[47] Love (2024) suggests that these circular structures likely arise due to the organic "daisy-chaining" of partnerships, implying these structures are unlikely to reflect intentional tax fraud. If the end result of this is that income in circular structures goes untaxed, they could nevertheless be noncompliant.

[48] In the bottom of the income distribution, net pass-through income is negative. Rather than assigning negative amounts of under-reporting, we assume zero under-reporting belongs to the part of the distribution where total income is negative. We observe that this does not require assuming that those with reported losses are perfectly compliant, but it does require that after including evaded income, evaders with reported losses have positive corrected net income. How we handle negative incomes in implementing the assumption that rates of misreporting are constant over the income distribution has a negligible quantitative effect on our imputations: we obtain very similar results using, e.g., absolute values to deal with negative total incomes.

[49] The 26% figure from TCMP includes all forms of partnership income, not just business income. We observe that in all three imputations, our under-reporting rate falls between the random audit figure for all sole proprietorships (37% under-reporting rate) and the IRS Tax Gap estimate for C corporations (12–18% depending on the year), which seems reasonable given the nature of most pass-through business activity. Another source of uncertainty owes to the fact that taxpayers may attempt to classify income as capital gains to benefit from the relatively low rate on long-term capital gains (see footnote 27). Because we are focused on overall income-under-reporting, we do not include any of this in our imputations.

[50] Using the under-reported financial income of those found to be FBAR noncompliant during NRP audits in Fig. 3(a), we estimate that detected offshore under-reporting amounts to at most 0.01% of exam-corrected income in each income group.

[51] For example, if offshore wealth grew by 5% per year due to evasion on business income, then accounting for this would be equivalent to increasing our assumed rate of return by 5 percentage points.

[52] An alternative would be to keep the entity-level under-reporting observed in the audit data as is and make a double-counting adjustment on the imputation side. However, entity pick-ups occur for less than 5% of pass-through owners, and they are highly selected on the nature of the business (see also footnote 26). We would need to account for the resulting selection bias in audit-detected entity-level evasion to make the double counting adjustment on the imputation side.

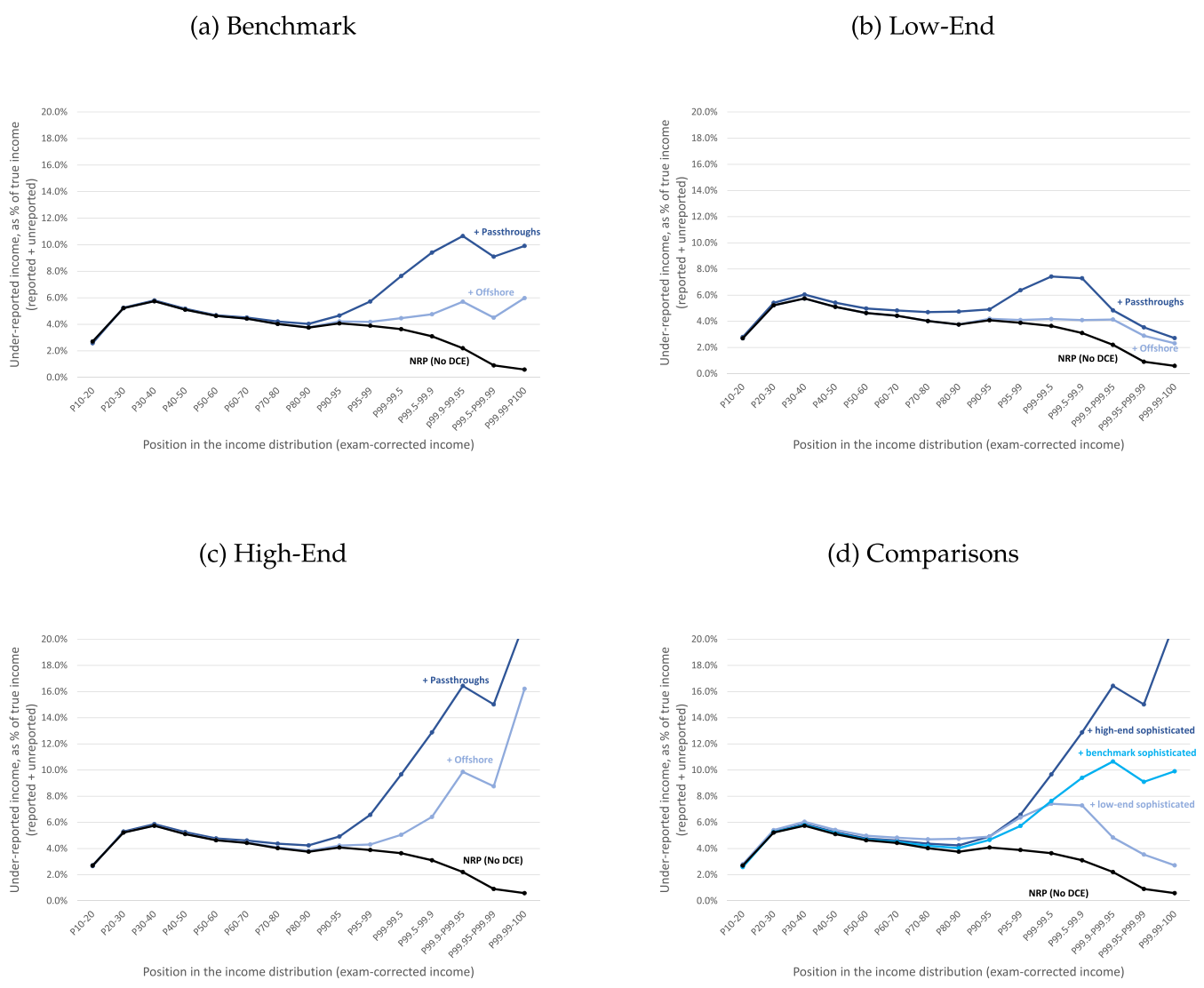


Fig. 6. Imputation results (Without DCE): Under-Reported income as a share of true Income. This figure reports the results of our imputations. The solid black line in each panel is the same as Fig. 1(a): unreported income as a share of true income according to NRP data without DCE or any other adjustments. We then add imputed offshore and imputed pass-through under-reporting under the imputation assumptions laid out in Table 1. The first three panels describe the benchmark, low-end, and high-end imputations respectively; the final panel compares how each set of assumptions shapes the profile of rates of under-reporting including offshore and pass-through evasion. We observe that accounting for undetected offshore and pass-through under-reporting meaningfully alters the profile of under-reporting in all imputations, but the extent to which it does so is uncertain.

amounts of undetected pass-through investment income that we include in the benchmark and high-end imputations.

5.2. Imputation results without DCE

Fig. 6 illustrates how imputing offshore and pass-through evasion reshapes the profile of the rates of under-reporting in Fig. 1(a). The first panel illustrates the benchmark imputation, and the second and third panels illustrate the low- and high-end imputations. The final panel compares the profile of under-reporting across different imputations. Table 2 reports the share of under-reported income belonging to different parts of the income distribution under our various assumptions.

Despite ample quantitative uncertainty about how much offshore and pass-through evasion matter, we extract three robust insights from these imputations. First, these forms of undetected evasion are concentrated at the very top of the income distribution across all specifications, so imputed offshore and pass-through evasion mainly loads onto the top 1%. This is unsurprising given the results in the previous two sections and the corresponding assumptions in the imputations.

Second, across all our imputations, incorporating offshore and pass-through evasion meaningfully alters the profile of under-reporting. Total under-reporting of true income in the top 1% is 2.3% of true income based on random audit data alone, compared to 9.2% in the benchmark, 5.6% in the low-end imputation, and 14.9% in the high-end imputation. Rates of under-reporting are similar in the top 1% and bottom 99% in the low-end imputation and higher in the top 1% in the other imputations.

Third, pass-through under-reporting is likely more important than offshore under-reporting, quantitatively. Under the benchmark assumptions, total pass-through under-reporting is more than twice the size of offshore under-reporting: $60 billion versus $130 billion in under-reported income for tax year 2007 (in 2012 $). Relatedly, if we disregard offshore evasion – e.g., to impute evasion in more recent years assuming that offshore evasion was nullified by the crackdown – we would still find significant amounts of undetected under-reporting in the top 1%.

Table 2
Imputation results (without DCE): shares of unreported income, 2006-2013, in % of total unreported income.

	NRP only	Benchmark	Low-end	High-end
P0–10	1.4%	1.1%	0.9%	1.0%
P10–20	0.7%	0.4%	0.5%	0.3%
P20–30	2.8%	1.9%	2.1%	1.5%
P30–40	4.9%	3.3%	3.7%	2.6%
P40–50	6.2%	4.2%	4.7%	3.3%
P50–60	7.6%	5.1%	5.9%	4.1%
P60–70	9.7%	6.6%	7.6%	5.3%
P70–80	11.9%	8.3%	10.0%	6.7%
P80–90	15.6%	11.2%	14.3%	9.2%
P90–95	12.2%	9.3%	10.6%	7.7%
P95–99	15.7%	15.7%	18.9%	14.2%
P99–99.5	3.9%	5.6%	5.9%	5.7%
P99.5–99.9	5.1%	11.1%	9.0%	12.3%
P99.9–99.95	1.1%	3.7%	1.7%	4.8%
P99.95–99.99	0.7%	5.0%	2.0%	6.9%
P99.99–100	0.6%	7.5%	2.1%	14.5%
Top 1%	11.4%	33.0%	20.7%	44.2%

Note: This table reports the results of our imputations for the share of total unreported income belonging to each part of the income distribution. The first column reports the distribution of unreported income in NRP data without DCE or any other adjustments. In the next three columns, we include imputed offshore and imputed pass-through under-reporting under the imputation assumptions laid out in Table 1. We observe that doing so increases the share of unreported income belonging to the top 1% by between 9 and 33 percentage points.

Under our low-end assumptions with zero offshore evasion (i.e., if pass-through evasion based on the S corporation random audit data is added to NRP data), 4.3% of true income in the top 1% is evaded, compared to 2.3% based on random audit data alone.

Despite these robust patterns, differences in assumptions across imputations generate significant variation in the results. We unpack these differences further in Appendix Figures A9 and A10, in which we begin with the benchmark and implement alternative assumptions one-by-one. For offshore evasion, most of the difference across specifications is attributable to our widely varying assumptions about the total amount of concealed offshore income, due to both the total amount concealed and the rate of return. Our assumption about how concealed income is distributed mainly matters for what portion of this under-reporting belongs to the top 0.01% versus the rest of the top 1%. For pass-through evasion, in contrast, the main difference between the low-end and benchmark imputations is due to varying distributional assumptions. We are reasonably confident that the overall amount of undetected pass-through misreporting is relatively large based on the S corporation random audit data, but we are more uncertain about the distribution of misreporting because we are unsure how much the limitations of these data matter at the very top of the distribution. In the benchmark, the rate of under-reporting falls within the top 0.1% of the distribution, because most of the under-reporting we impute is business income and pass-through income in the top 0.1% of the income distribution is mainly investment income (Fig. 4(c)). This drop-off is more pronounced in the low-end scenario than in the benchmark, and it occurs within the top 0.5% rather than the top 0.1%. Under-reporting in the p95–p99 part of the distribution is correspondingly higher in the low-end scenario. This occurs because in S corporation audit data, under-reported business income is less concentrated than reported business income in the top 1%, and more concentrated in p95-99 (see Fig. 5(a)).[53] The main difference between the benchmark and high-end scenario is mechanically driven by the higher rate of under-reporting assumed in the high-end scenario (we assume an identical distribution in both imputations).

5.3. Incorporating evasion identified by detection-controlled estimation

It has long been recognized that audit data do not cover all forms of evasion, and not only because of undetected evasion in the top 1%. Official tax gap statistics account for many types of undetected evasion using detection-controlled estimation (DCE) methods (IRS, 2019). We next consider how introducing evasion identified by DCE modifies the distribution of under-reported income relative to our previous results. Doing so allows us to account for undetected under-reporting in addition to the high-end types of undetected under-reporting we focused on above, to reconcile our estimates based on audit data with official tax gap statistics, and to confront the question of whether the offshore and pass-through evasion we imputed above is plausibly already included in DCE-inclusive tax gap estimates.

Overview of DCE. The basic idea of DCE is to identify undetected evasion by modeling the probability of detection of under-reporting, and then to construct a counterfactual scenario where this probability equals one everywhere. Methods currently used in IRS Tax Gap studies implement this idea using a model of auditor effects. The key underlying assumptions behind the method are 1) that auditor assignment rules generate exogenous variation in the probability of detection of under-reporting, i.e., auditors are assigned quasi-randomly,[54] and 2) that there is a subset of auditors with 100% detection rates. Building on these assumptions, researchers estimate a model of the detection process to compute total evasion in a counterfactual where all auditors are replaced by those auditors with perfect detection rates (for details, see Feinstein, 1991; Erard and Feinstein, 2011).

The evidence in Sections 3 and 4 suggests that the assumption that the top auditors have 100% detection rates is too strong, at least for the top of the distribution. Fig. 3(a)/(b) and 4(a) show that the detection of offshore evasion and entity-level evasion in pass-through businesses is so rare that these forms of evasion are unlikely to be detected even by thorough auditors. We attribute this finding to limitations of auditors' information and audit procedures. Specifically, detection of offshore noncompliance is so vanishingly rare that it cannot possibly be captured by auditor effects, and this is plausibly driven by the auditors' limited information. Relatedly, we note that one of the most effective tools employed by the IRS during the recent crackdown on offshore evasion was the "John Doe Summons" (see IRM 25.5.7); issuing such a summons requires the IRS to attest to the Department of Justice that the noncompliance at issue is widespread and cannot be detected by the IRS without a court order. Detection of entity-level pass-through under-reporting is slightly less rare than offshore evasion – we see detected entity-level under-reporting for about 4% of pass-through owners in Fig. 4(a). Our understanding, from talking to experts, is that variation in whether an entity-level audit occurs is primarily driven by audit procedures and the nature of the business owned by the audited individual, not by auditor effects.[55] In this case, the most effective auditors do not always comprehensively examine pass-through entities, so entity-level under-reporting cannot be fully captured by DCE.

Nevertheless, if we relax the 100% detection assumption to account for the possibility that some under-reporting is undetectable by any auditor, DCE methods would still identify some undetected under-reporting. We can think of the forms of evasion identified by DCE methods as *detectable but undetected* evasion, which could include many forms of

[53] The inclusion of some under-reported pass-through investment income in the benchmark and not the low-end imputation also contributes to this difference in the profile of under-reporting rates but this is much less important quantitatively than the assumption about the distribution of under-reported business income.

[54] A concern with this assumption is that auditors may be assigned to cases in a manner that selects on suspected evasion. We discuss this in the final section of Guyton et al. (2023).

[55] See footnote 26 for more details.

evasion besides the two forms of evasion we considered above, which are mostly *undetectable*.[56]

The primary challenge in incorporating the evasion implied by DCE into our analysis is that existing methods are primarily used to identify a total amount of undetected evasion, rather than evasion throughout the income distribution, especially at the very top. Distributing the undetected evasion identified by DCE requires making additional conceptual and statistical assumptions about the relationship between detection probabilities and true income. Because the estimates of undetected evasion are large, this issue creates significant uncertainty. In Guyton et al. (2023), which is included in the Online Appendix, we discuss this methodological challenge in depth, and we present results employing an array of different methods for distributional analysis that build on DCE. These methods include the methods employed by Johns and Slemrod (2010) and the different methods used in IRS (2007) and IRS (2019) to map total under-reporting to the tax gap (which requires some distributional assumptions due to the non-linearity of the tax schedule).

Methodology to incorporate DCE. We begin by estimating aggregate income under-reporting according to the DCE model, using the methods from the most recent tax gap study, IRS (2019). These estimates pertain to tax years 2008–2013, because IRS (2019) used random audit data for this period to implement DCE. We adapt these estimates to our full sample period of 2006–2013, assuming that rates of under-reporting for each type of income are similar for tax years 2006–2013 and 2008–2013.

We then make a distributional assumption about the location of DCE-identified evasion in the income distribution. For transparency, our preferred approach is to distribute DCE adjustments similarly to how we distributed offshore and pass-through evasion above: to assume that some share of under-reporting belongs to different parts of the distribution and then use empirical data to discipline these shares. We label this approach Macro-Allocated DCE (MA-DCE) to distinguish it from microsimulation methods in which the distribution of DCE adjustments emerges from allocating DCE evasion to specific taxpayers and then simulating re-ranking by DCE-adjusted income, as we discuss further in Guyton et al. (2023).

As above, we present benchmark, low-end, and high-end imputations based on distributional assumptions. In the benchmark, we allocate undetected under-reporting proportionally to exam-corrected income, income component by income component. For example, if X% of interest income belongs to the top 1% of the exam-corrected income distribution according to NRP random audit estimates from Section 2.2, we assume X% of DCE-identified undetected under-reported interest income belongs to the top 1% of the true income distribution. With this allocation, X% of interest income belongs to the top 1% both before and after we add DCE adjustments to exam-corrected estimates, so this method is approximately distributionally neutral for each type of income by design. Adopting this distributionally-neutral-by-component assumption is essentially equivalent to assuming that for each component of income, the share of true income that is DCE-identified under-reporting is constant throughout the income distribution.[57] For example, our approach is approximately equivalent to assuming that if Y% of total true interest income is DCE-identified under-reporting in the full population, then in each part of the income distribution, Y% of interest income is DCE-identified under-reporting.

For a low-end assumption on the distribution of DCE-identified under-reporting, we assume that the share of detected and undetected evasion belonging to different parts of the distribution is the same. In other words, if X% of detected under-reported interest income belongs to the top 1% by audit-corrected income in the NRP data, we assume X% of DCE-identified interest income belongs to the top 1% by DCE-corrected income. This is much more conservative with respect to the concentration of DCE at the top of the distribution, because audit-detected under-reporting is much less concentrated at the top than reported income. This specification yields a lower bound for the distribution of DCE adjustments under the assumption that the probability of detection of misreporting is weakly decreasing with true income. For our high-end assumption around DCE, we assume distributional neutrality component-by component as in the benchmark, but we combine partnership business income, S corporation business income, and sole proprietorship income into a single component of income.

Aggregate estimates. We replicated the analysis of individual under-reporting that generates the estimate of the individual filer tax gap in the most recent IRS Tax Gap study (IRS, 2019).[58] With DCE (and without imputed offshore or pass-through evasion), we estimate that 10.7% of true income is under-reported, of which 3.8% is detected in exams and 6.9% is undetected evasion identified using DCE methods.[59]

Appendix Table A7 and Fig. A11 describe the aggregate DCE adjustments by type of income. About 80% of the aggregate DCE adjustment comes from forms of income that are moderately or highly concentrated at the top of the distribution: Schedule C income, capital gains, rental income, pass-through business income, and line 21 other income (e.g., net operating loss carry-forwards).[60] Less than 10% of the aggregate adjustment comes from wage and pension income, which are relatively more equally distributed.[61] As a result, we observe, comparing Table A1 to Table A7, that DCE adjustments tilt the composition of under-reported and true income toward forms of income that are concentrated at the top of the distribution.

Double counting. As above, there is potential overlap between DCE-identified evasion and imputed entity-level pass-through under-reporting. We assume the share of DCE-identified pass-through under-reporting that is due to entity-level (as opposed to individual-level) corrections is the same as the share of audit-detected pass-through under-reporting that is due to entity-level corrections (57.6%).[62] When we include both DCE-identified evasion and imputed pass-through evasion, we therefore remove this amount from DCE-identified evasion, to mitigate double-counting.

Distributional estimates. Going forward, we use the shorthand *sophisticated evasion* to refer to offshore and pass-through evasion together

[56] "Detectable" here refers to whether detecting some type of non-compliance is feasible given audit procedures and information and resource constraints. The boundary between "detectable" and "undetectable" depends on the design of the audit program and related features of the overall tax system.

[57] As with pass-through under-reporting, when a given income component is negative in the aggregate in some part of the income distribution, we allocate zero DCE-identified under-reporting to this part of the distribution. That is why we describe this approach as "approximately" distributionally neutral by type of income. Refer to Iselin and Reck (2025) for formal analysis and more discussion of the negative incomes issue.

[58] We thank Drew Johns for sharing the relevant simulations and for helping us to understand the underlying methods.

[59] In 2012 dollars, $975 billion of income was under-reported and $300 billion dollars of individual income tax (including self-employment taxes and refundable credits) was unpaid on average over 2008–2013. The latter figure closely matches the official tax gap figure for 2011-2013, $290 billions (IRS, 2019, Table 2 p. 11). The individual income underreporting tax gap is $245 billion and the self-employment under-reporting tax gap an additional $45 billion.

[60] In 2012, the top 1% of tax filers earned 22.7% of reported market income, 19% of Schedule C income, 83% of capital gains, 78% of pass-through business income, and more than 100% of rental income (which in aggregate was negative).

[61] In 2012, the top 1% of tax filers earned 12% of wage income and 6% of taxable pension income excluding Social Security.

[62] Some assumption along these lines is necessary because the portion of DCE-identified evasion that is due to entity-level evasion is not identified in the DCE model. Our assumption is equivalent to assuming that auditor effectiveness is orthogonal to whether an entity-level pickup occurs, which is consistent with what we know about the data-generating process (see also footnotes 26 and 52).

and to distinguish these types of undetected evasion from DCE-identified evasion. In panel A of Fig. 7, we compare rates of under-reporting for the three sets of assumptions about sophisticated evasion from the previous subsection and our benchmark assumption about DCE-identified under-reporting. In panel B, we compare the benchmark, high-end, and low-end imputations of DCE adjustments, under our benchmark assumptions about sophisticated evasion. Appendix Table A8 reports the imputed distribution of unreported income including DCE under the same sets of assumptions about DCE-identified and sophisticated evasion.

DCE does not plausibly account for most undetected offshore and pass-through evasion, so our imputations continue to suggest that incorporating offshore and pass-through evasion makes a substantial difference to the profile of under-reporting, across all specifications. With DCE but without offshore and pass-through evasion, the share of true income that is under-reported by those in the top 1% is 12.4% in the top 1% under the benchmark DCE assumption. If we add offshore and pass-through evasion, the top 1% misreporting rate increases to 17.1%, 14.1%, and 21.8% under the benchmark, low- and high-end assumptions for sophisticated evasion.

However, we do observe large differences in the profile of under-reporting across the income distribution depending on what distributional assumptions we make about DCE. DCE-inclusive estimates of the share of income under-reported in the top 1% are especially sensitive to distributional assumptions over DCE-identified evasion. Imputed rates of under-reporting differ by between 2 and 5 percentage points in the bottom 99% of the distribution depending on what distributional assumption we make about DCE. At the top of the distribution these differences grow large: the rate of under-reporting varies by about 10 percentage points in the top 0.1% in Fig. 7(b). Mechanically, this sensitivity of misreporting rates at the top to assumptions about DCE is driven by the fact that reported nonwage income is much more concentrated at the top than audit-detected under-reported income, so which of these is used to discipline the substantial non-wage under-reporting identified by DCE matters a lot. We hope future research will develop principled methods for refining these distributional assumptions.[63] Relatedly, we observe that the effect of accounting for offshore and pass-through evasion on the share of unreported income that belongs to the top 1% depends on the extent to which these shares also increase when we allocate DCE-identified under-reporting.[64]

5.4. Evasion and the distribution of overall income

Our finding that important forms of evasion at the top are unobserved in random audit data suggests that prior estimates of income and its distribution based on random audit data may be biased. For the total income, the bias from missing offshore and pass-through evasion is relatively small: in our benchmark imputation, adding offshore and pass-through evasion increases total income by a factor of 1.016,[65] Because the missing income is highly concentrated in the top 1%, however, the bias, and the uncertainty around DCE, are much more important when we focus on the income of the top 1%.

Appendix Tables A9 through A11 present imputations of the concentration of fiscal (taxable) market income including under-reporting under our assumptions about under-reported income, for the full range of assumptions we considered in the previous subsection. Without under-reporting, 20.3% of income belongs to the top 1% of the reported income distribution on average over 2006–2013. Detected under-reporting in the random audit data is significantly less concentrated than reported income: Table 2 reports that 11.4% of unreported income belongs to the top 1% ranked by corrected income. As such, if only audit-detected under-reporting is included in under-reported income, the top 1% income share falls, to 19.8%. Given what we found in Table 2, it is mechanical that adding offshore and pass-through evasion will increase the top 1% income share. Adding these types of evasion increases the top 1% income share by 1.1 percentage points under the benchmark assumptions without DCE, 0.3 pp under the low-end assumptions and 2.1 pp under the high-end assumptions. However, the level of the top 1% income share inclusive of under-reporting is uncertain, especially when we include DCE, because of the uncertainty around the distribution of DCE-identified evasion discussed above. The imputed top 1% income share varies from 20.1% to 21.9% excluding DCE-identified under-reporting. Including DCE-identified under-reporting and imputed offshore and pass-through under-reporting, across all the specifications illustrated in Fig. 7, the top 1% income share ranges from 20.3% to 22.4% (21.3% under the benchmark assumptions for every component of undetected evasion).

These findings have important implications for prior work seeking to measure the distribution of National Income over time. Untaxed business income, which includes under-reported pass-through and sole proprietor income, is a key source of uncertainty in prior work. Piketty et al. (2018) assume that sharp increases in the concentration of reported business income were accompanied by similar increases in the concentration of unreported business income, while Auten and Splinter (2024a) assume (via a microsimulation) that the share of unreported income that belongs to the top 1% is constant over time at about 18%.[66] Auten and Splinter (2024a) argue that this feature of their estimates is empirically validated by their use of audit data to calibrate their microsimulation. Our imputations of unreported income shares (including DCE) in Table A8 suggest that between 21.9% and 39.4% of unreported income belongs to the top 1% in the period we study, which is larger than the 18% figure in Auten and Splinter's microsimulations, plausibly because the audit data and DCE methods they use do not account for offshore and pass-through evasion. A similar critique applies to recent work on the distribution of the tax gap by Gorman et al. (2025).[67] Iselin and Reck (2025) discuss the implications of this issue for the dynamics of inequality in National Income.

[63] The distributions of DCE-identified evasion that result from prior microsimulation methods – the multiplier method from IRS (2007) and Johns and Slemrod (2010), the slight modification of this used by Auten and Splinter (2021), and a newer method used in IRS (2019) – rely on ancillary assumptions that are not empirically disciplined, so they do not fill the gap in our understanding that we identify here. We discuss this issue further and illustrate rates of under-reporting using these microsimulation methods in Guyton et al. (2023).

[64] This is mechanical: when DCE-identified evasion is relatively concentrated, adding additional concentrated under-reporting makes relatively little difference to the overall concentration. Consequently, in every imputation in which we include both DCE and offshore and pass-through under-reporting, unreported income shares are significantly higher than the 11.4% share suggested by NRP exam corrections alone.

[65] This figure is the ratio of 1) fiscal market income including audit-detected and DCE-identified under-reporting and under-reported offshore and pass-through income (with the double counting adjustment), and 2) fiscal market income including audit-detected and DCE-identified under-reporting.

[66] This statement is based on figures Auten and Splinter added to the supplementary material for their paper – the Excel file on Splinter's website – in response to a comment by Iselin and Reck (2025). Besides evaded income, the other main source of untaxed business income driving the divergence between these studies is excess depreciation allowances; see Piketty et al. (2024), which also reviews some more minor sources of disagreement, and Auten and Splinter (2024b). The sensitivity analysis in Section V of Auten and Splinter (2024a) contains a brief discussion of the effect of accounting for offshore tax evasion on the distribution of income, which is broadly consistent with our benchmark imputations.

[67] These authors use the same methods as Auten and Splinter (2024a) where income tax evasion is concerned; they ignore the substantial distributional uncertainty we attribute to DCE methods and largely ignore the implications of our analysis for undetected offshore and pass-through income. For example, in sensitivity analysis, they assume 25% of undetected pass-through tax evasion belongs to the top 1%, compared to 51% of income under-reporting in the S corp random-audit study and our low-end imputations.

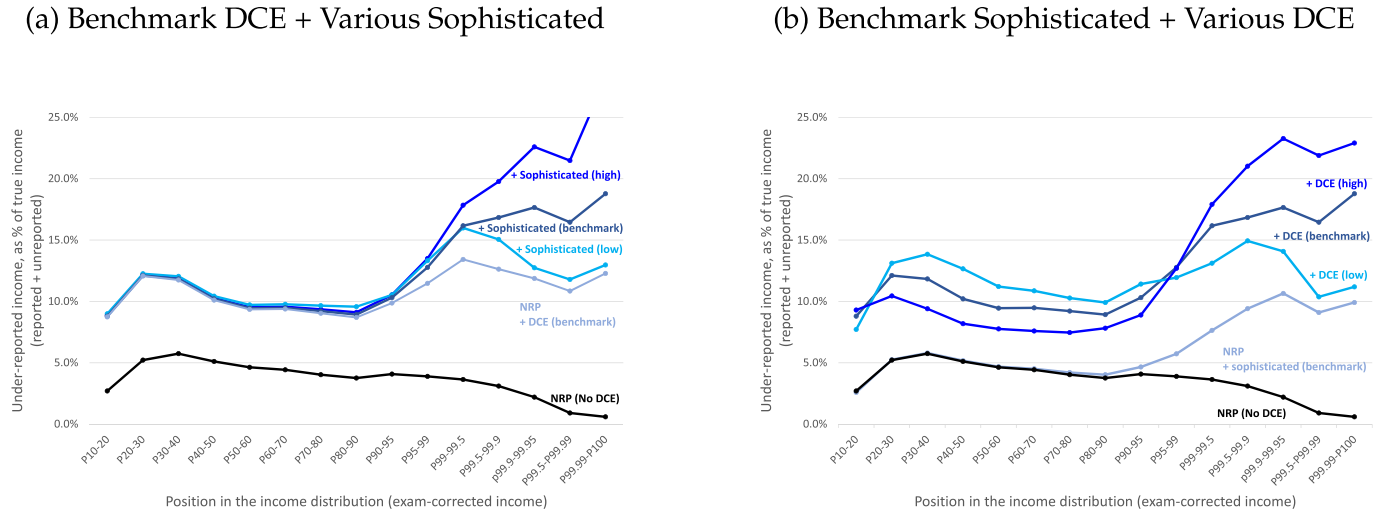


Fig. 7. Imputation results with DCE: Under-Reported income as a share of true Income. Note: This figure reports the imputed profile of rates of under-reporting in different parts of the income distribution, including evasion identified by DCE. As in the previous figure, the black line is the unadjusted NRP estimate from Fig. 1(a). In panel a, we add the imputed distribution of DCE-identified evasion according to the benchmark assumptions and then we add sophisticated evasion under benchmark, high- and low-end assumptions. In panel b, we do the reverse exercise, making the benchmark assumptions about sophisticated evasion and then adding DCE-identified evasion under various distributional assumptions. Refer to Guyton et al. (2023) for more detail on DCE allocation methods and additional illustrations of the distribution of DCE-identified evasion using microsimulation methods. We observe that incorporating sophisticated evasion alters the profile of under-reporting regardless of how we treat DCE, but our assumptions imply substantial quantitative uncertainty about how DCE-identified evasion contributes to the profile of under-reporting.

6. Theoretical implications

Appendix C examines some theoretical implications of our empirical results. In first part of this appendix, we propose an extension of the Allingham and Sandmo (1972) to explain why forms of evasion that are less likely to be detected by auditors are concentrated at the top of the income distribution. In this model, the taxpayer can choose to pay a fixed cost to adopt a concealment strategy that reduces their probability of detection. The fixed cost becomes a trivial share of income as income grows large, so, assuming the taxpayer's desired amount of evasion does not become a trivial share of income as income grows – a sufficient condition for which is that the taxpayer's preferences exhibit constant or increasing relative risk aversion – the benefits of adopting concealment strategies outweigh the costs at sufficiently high incomes. Higher audit rates at the top also incentivize concealment strategies, provided the audits are of the type that do not detect more sophisticated evasion.

The second part of Appendix C draws out some straightforward implications of our results for optimal tax administration. The model considers the allocation of administrative resources toward audits of two types of individuals, high- and low-income. One key difference between audit allocation decisions in reality and in models of optimal tax administration (e.g., Slemrod and Yitzhaki, 2002; Keen and Slemrod, 2017) is that in reality, the IRS must allocate a fixed set of resources determined by Congress among various activities. Devoting more resources to high-income individuals requires devoting fewer resources to other activities. In optimal tax models, no such tradeoff exists. Turning to sophistication, we argue that the adoption of sophisticated evasion strategies increases the cost of recovering revenue from high-income taxpayers. With an exogenous resource constraint, this decreases the optimal number of audits of high-income individuals, and if this effect is sufficiently strong then this can increase audits of low-income individuals. No such spillover effect occurs in optimal tax models (or equivalently when the resource constraint is set optimally), which we view as interesting given recent debates about the allocation of resources to various types of audits. Naturally, the preceding discussion holds the detection technology fixed; the presence of sophisticated evasion could increase or decrease the return to investing in specific detection technologies.

We observe that these theoretical arguments apply equally well to strategies that make explicitly illegal positions harder to detect and gray area avoidance strategies that make it less likely that the IRS will contest and penalize a position. Fig. A12, based on operational data, shows that very high-income taxpayers are much more likely to disagree with initial auditor recommendations, especially large recommendations. The share of dollars of recommended additional tax that are disputed increases sharply through the income distribution, from 10–20% in the bottom 90% to more than 50% in the top 0.01%. Such gray areas have two important implications, which are questions for future work. First, while we sought to only include non-compliant positions in our estimates and imputations, gray areas generate quantitative uncertainty about the magnitude of the tax gap at the top, and about the distribution of economic income (which includes evasion and some legal avoidance). Second, it is limiting to equate tax enforcement with increasing audit rates in the presence of frequent tax disputes: enforcement can also entail investing in litigating tax disputes and reforming rules to make gray area positions more explicitly illegal (for more discussion, see Hemel et al., 2021; Reck and Bomare, 2022).

7. Conclusion

We find that substantial evasion at the top of the income distribution went undetected in individual random audits from 2006–2013. Investigating taxpayers who voluntarily declared hidden wealth or started reporting foreign bank accounts in 2009–2012, we find that audits failed to uncover offshore tax evasion. Focusing on taxpayers who earn business income through partnerships and S corporations, we find that due to the resource constraints inherent in the conduct of random audits, a large fraction of this pass-through income was not examined in the context of these audits, biasing detected evasion downward at the top. Meanwhile, random audit data on S corporations suggest that under-reporting of business income on pass-through business tax returns is substantial, five times larger than that suggested by individual random audit data.

Theoretically, modeling the choice to conceal tax evasion from auditors can explain why random audits that employ the same procedures for all taxpayers do not detect all evasion especially at the top. Empirically,

we provide corrected estimates of the size and distribution of tax evasion in the United States. In our benchmark scenario, we find that under-reported income rises from about 10% of true income in the bottom 90% of the income distribution to 16% at the 99th percentile of income, where it remains constant or falls. Out of the overall top 1% under-reporting rate, at least 6 percentage points correspond to sophisticated evasion that is seldom detected in random audits. Accounting for tax evasion increases the top 1% income share in the United States.

We stress that the limitations that we describe here pertain to NRP random audits circa 2006–2013; whether changes to audit procedures might overcome these limitations is an important question for future research. Unlike IRS audits conducted by specialists, as in the Global High Wealth program (see IRM 4.52.1), these random audit programs were not designed to comprehensively audit extremely high-income, high-wealth individuals. To experts who are familiar with these audits, our results may be unsurprising. However, we nevertheless view these results as important in light of an increased academic and policy interest in top income shares and tax evasion at the top. Countries around the world use random audits to estimate the tax gap (see, e.g., OECD, 2017, chapter 14). Our findings suggest that incorporating data from random audits into estimates of top-end evasion and inequality requires carefully accounting for the sophistication of top-end evasion. In this regard, statistical tools (e.g., modeling the distribution of DCE-identified undetected evasion) and additional data (e.g., data on offshore and pass-through level non-compliance or from more comprehensive audits of high-income taxpayers) may generate quantitatively important insights.

From public reporting and evidence reviewed above, it seems likely that there are other forms of tax evasion that have the same properties as those we examine directly in this paper – sophistication and concentration among high income or high wealth individuals. Such forms of evasion could include, for instance, the abuse of partnership flexibility (see also Love, 2024), private inurement in tax-exempt organizations, and the use of offshore trusts to evade tax. The potential existence of more sophisticated strategies than we studied above underscores the main point of our theoretical analysis, that we should expect sophisticated evasion to be concentrated at the top of the income and wealth distributions. More research is needed to improve estimates of non-compliance at the very top in the United States. Further research is also needed to better understand potentially less concentrated types of difficult-to-detect evasion, such as payments under the table and cryptocurrency transactions, and their importance for measuring the income distribution and policymaking. There are also forms of under-reporting outside the scope of our analysis, including non-filer income and illicit-source income, whose relative concentration at the top of the distribution is unclear – see, e.g., TIGTA (2020) on high-income nonfilers, and Levitt and Venkatesh (2000) on the concentration of illicit source income.

We identify several potentially fruitful avenues for future work. First, it would be valuable to consider the importance of sophisticated evasion and gray area avoidance strategies for optimal tax administration policies involving high-income, high-wealth taxpayers. Second, more research is needed to fully understand the economics of the gray area between avoidance and evasion, which is often important for high-income individuals and large corporations. Third, further research could consider *strategic* interactions between the tax authority and high-income individuals involving sophisticated evasion. Finally, future work could consider the implications of our work for white-collar, financial crime more broadly.

Ethics declaration

The author(s) declare(s) that the study does not involve human or animal subjects.

Declaration of competing interest

The author declares that he has no relevant or material financial interests that relate to the research described in this paper. The findings, interpretations, and conclusions expressed in this paper are entirely those of the author and do not necessarily reflect the views or the official positions of the U.S. Department of the Treasury or the Internal Revenue Service. All results have been reviewed to ensure that no confidential information is disclosed.

Appendix A. Supplementary data

Supplementary data to this article can be found online at doi: 10.1016/j.jpubeco.2026.105812.

Data availability

The data that have been used are confidential.

References

Allingham, M.G., Sandmo, A., 1972. Income tax evasion: a theoretical analysis. J. Public Econ. 1 (3–4), 323–338.

Alstadaeter, A., Johannesen, N., Zucman, G., 2018. Who owns the wealth in tax havens? Macro evidence and implications for global inequality. J. Public Econ. 162, 89–100.

Alstadsaeter, A., Johannesen, N., Zucman, G., 2019. Tax evasion and inequality. Am. Econ. Rev. 109 (6), 2073–2103.

Andreoni, J., Erard, B., Feinstein, J., 1998. Tax compliance. J. Econ. Lit. 36 (2), 818–860.

Auten, G., Splinter, D., 2021. Comment: tax evasion at the top of the income distribution: theory and evidence. Comment, available online at http://www.davidsplinter.com/AutenSplinter-TaxEvasion.pdf.

Auten, G., Splinter, D., 2024a. Income Inequality in the United States: Using Tax Data to Measure Long-Term Trends. Technical Report 7.

Auten, G., Splinter, D., 2024b. Reply to Piketty, Saez, and Zucman (2024): Income Inequality in the United States (Unpublished comment). https://www.davidsplinter.com/.

Brown, R.E., Mazur, M.J., 2003. IRS's comprehensive approach to compliance measurement. Natl. Tax J. 56 (3).

Carrillo, P., Pomeranz, D., Singhal, M., 2017. Dodging the taxman: firm misreporting and limits to tax enforcement. Am. Econ. J. Appl. Econ. 9 (2), 144–164.

Casi, E., Spengel, C., Stage, B.M., 2020. Cross-border tax evasion after the common reporting standard: game over? J. Public Econ. 190, 104240.

Cooper, M., McClelland, J., Pearce, J., Prisinzano, R., Sullivan, J., Yagan, D., Zidar, O., Zwick, E., 2016. Business in the United States: who owns it, and how much tax do they pay? Tax Policy Econ. 30 (1), 91–128.

De Simone, L., Lester, R., Markle, K., 2020. Transparency and tax evasion: evidence from the foreign account tax compliance act (fatca). J. Account. Res. 58 (1), 105–153.

DeBacker, J., Heim, B., Tran, A., Yuskavage, A., 2020. Tax noncompliance and measures of income inequality. *Tax Notes*. https://www.taxnotes.com/tax-notes-federal/compliance/tax-noncompliance-and-measures-income-inequality/2020/02/17/2c3y5 (17 February 2020).

DOJ, 2021. Offshore compliance initiative news indictments, pleas, sentencings, and other developments. available online at https://www.justice.gov/tax/offshore-compliance-initiative (Archive June 2021).

Erard, B., Feinstein, J., 2011. The individual income reporting gap: what we see and what we don't. In: 2011 IRS-Tpc Research Conference, Publication 1500 (rev 4-2012), Washington, DC.

Feinstein, J.S., 1991. An econometric analysis of income tax evasion and its detection. RAND J. Econ. 22 (1), 14–35.

GAO, 1995. Tax Administration: IRS' Partnership Compliance Activities Could Be Improved. Letter report, 06/16/95, gao/ggd-95-151.

GAO, 2020. Abusie Tax Schemes: Offshore Insurance Products and Associated Compliance Risks. Letter report, july 2020, gao-20-589.

GAO, 2023. IRS Audit Processes Can Be Strengthened to Address a Growing Number of Large, Complex Partnerships. Report to the chairman, committee on finance, U.S. senate, gao-23-106020.

Gorman, W., McGuire, J., Splinter, D., 2025. Who evades taxes? The distribution of the U.S. tax gap. In: Proceedings of the 2025 IRS-Tpc Research Conference.

Guttentag, J., Avi-Yonah, R.S., 2005. Closing the international tax gap. In: Sawicky, M.B. (Ed.), Bridging the Tax Gap: Addressing the Crisis in Federal Tax Administration. Economic Policy Institute, pp. 99–110.

Guyton, J., Langetieg, P., Reck, D., Risch, M., Zucman, G., 2023. The distribution of undetected under-reported income identified by detection-controlled estimation methods. Unpublished working paper, included in the online appendix to this paper.

Hemel, D.J., Holtzblatt, J., Rosenthal, S., 2021. The tax gap's many shades of gray. Working paper, SSRN.

Hess, R., Black, E., Javed, Z., Hennessy, J., Lester, R., Goldin, J., Ho, D.E., Portz, A., 2024. The spiderweb of partnership tax structures. Working paper, ssrn.

IRS Criminal Investigations, 2025. Annual Report 2025. Publication 3583. https://www.irs.gov/pub/irs-pdf/p3583.pdf.

IRS, 2007. Tax year 2001 Federal tax gap overview. https://www.irs.gov/pub/irs-soi/01rastg07map.pdf.

IRS, 2016a. Federal Tax Compliance Research: Tax Gap Estimates for Tax Years 2008-2010. Publication 1415 (rev. 5-2016), Washington, DC.
IRS, 2016b. Transaction of interest – Section 831(b) micro-captive transactions. Internal Revenue Bulletin 2016-46, notice 2016-66. https://www.irs.gov/pub/irs-drop/n-16-66.pdf.
IRS, 2019. Federal Tax Compliance Research: Tax Gap Estimates for Tax Years 2011-2013. Publication 1415 (rev. 9-2019), Washington, DC.
IRS, 2022. Internal Revenue Service data book 2021. Publication 55-b (rev. 2021), Washington, DC. https://www.irs.gov/pub/irs-prior/p55b--2022.pdf.
IRS, 2024. New IRS Teams Being Established; New Guidance Designed to Stop Partnerships From Using Sophisticated Tax-Free Transactions That Lack Economic Substance. Notice Ir-2024-166.
Iselin, J., Reck, D., 2025. Misreported income and the dynamics of income inequality. Working paper. https://www.danreck.com/papers.
Johannesen, N., Langetieg, P., Reck, D., Risch, M., Slemrod, J., 2020. Taxing hidden wealth: the consequences of us enforcement initiatives on evasive foreign accounts. Am. Econ. J. Econ. Policy 12 (3), 312–346.
Johannesen, N., Reck, D., Risch, M., Slemrod, J., Guyton, J., Langetieg, P., 2024. The offshore world according to fatca: new evidence on the foreign wealth of us households. Tax Policy Econ. 38 (1), 61–99.
Johns, D., 2009. Preliminary Results of the 2003/2004 National Research Program S Corporation Underreporting Study. Presentation, 2009 IRS-tpc research conference.
Johns, A., Slemrod, J., 2010. The distribution of income tax noncompliance. Natl. Tax J. 63 (3), 397–418.
Joulfaian, D., 2000. Corporate income tax evasion and managerial preferences. Rev. Econ. Stat. 82 (4), 698–701.
Keen, M., Slemrod, J., 2017. Optimal tax administration. J. Public Econ. 152, 133–142.
Kleven, H.J., Knudsen, M.B., Kreiner, C.T., Pedersen, S., Saez, E., 2011. Unwilling or unable to cheat? Evidence from a tax audit experiment in Denmark. Econometrica 79 (3), 651–692.
Kleven, H.J., Kreiner, C.T., Saez, E., 2016. Why can modern governments tax so much? An agency model of firms as fiscal intermediaries. Economica 83 (330), 219–246.
Levitt, S.D., Venkatesh, S.A., 2000. An economic analysis of a drug-selling gang's finances. Q. J. Econ. 115 (3), 755–789.
Londoño-Vélez, J., Ávila-Mahecha, J., 2021. Enforcing wealth taxes in the developing world: quasi-experimental evidence from Colombia. Am. Econ. Rev. Insights 3 (2), 131–148.
Love, M., 2024. Who benefits from partnership flexibility? Technical report, Working Paper, SSRN.
Luttmer, E.F., Singhal, M., 2014. Tax morale. J. Econ. Perspect. 28 (4), 149–168.
OECD, 2000. Towards Global Tax Co-Operation. Report to the 2000 Ministerial Council Meeting and Recommendations by the Committee on Fiscal Affairs.
OECD, 2017. *Tax administration 2017*. https://www.oecd.org/en/publications/2017/09/tax-administration-2017_g1g7dd34.html.
Piketty, T., Saez, E., 2001. Income inequality in the United States, 1913-1998 (series updated to 2000 available). National bureau of economic research working paper no. 8467.
Piketty, T., Saez, E., 2003. Income inequality in the United States, 1913–1998. Q. J. Econ. 118 (1), 1–41.
Piketty, T., Saez, E., Zucman, G., 2018. Distributional national accounts: methods and estimates for the United States. Q. J. Econ. 133 (2), 553–609.
Piketty, T., Saez, E., Zucman, G., 2024. Income Inequality in the United States: A Comment (Unpublished comment). https://gabriel-zucman.eu/.
Reck, D., Bomare, J., 2022. Different from you and me: tax enforcement and sophisticated tax evasion by the wealthy. LSE Public Policy Rev. 2 (4).
Saez, E., Zucman, G., 2016. Wealth inequality in the United States since 1913: evidence from capitalized income tax data. Q. J. Econ. 131 (2), 519–578.
Saez, E., Zucman, G., 2020. Trends in US income and wealth inequality: revising after the revisionists. NBER working paper no. 27921.
Slemrod, J., Yitzhaki, S., 2002. Tax avoidance, evasion, and administration. In: Handbook of Public Economics, vol. 3. Elsevier, pp. 1423–1470.
Slemrod, J., Collins, B., Hoopes, J.L., Reck, D., Sebastiani, M., 2017. Does credit-card information reporting improve small-business tax compliance? J. Public Econ. 149, 1–19.
Smith, M., Yagan, D., Zidar, O., Zwick, E., 2019. Capitalists in the twenty-first century. Q. J. Econ. 134 (4), 1675–1745.
Smith, M., Zidar, O., Zwick, E., 2023. Top wealth in America: new estimates under heterogeneous returns. Q. J. Econ. 138 (1), 515–573.
TIGTA, 2020. High-Income Nonfilers Owing Billions of Dollars Are Not Being Worked by the Internal Revenue Service. Treasury Inspector General for Tax Administration Publication 2020-30-015.
United States Senate, 2008. Tax Haven Banks and U.S. Tax Compliance. Staff Report of the Permanent Subcommittee on Investigations, Washington, DC.
United States Senate, 2014. Offshore tax evasion: the effort to collect unpaid taxes on billions in hidden offshore accounts. Majority and Minority Staff Report, Permanent Subcommittee on Investigations, Washington, DC. https://www.hsgac.senate.gov/wp-content/uploads/imo/media/doc/REPORT%20-%20OFFSHORE%20TAX%20EVASION%20(Feb%2026%202014,%208-20-14%20FINAL).pdf.
United States Senate, 2020. Syndicated Conservation-Easement Transactions. Investigative Report of the Senate Finance Committee, Washington, DC.
United States Senate, 2022. The Shell Bank Loophole. Investigative Report of the Senate Finance Committee, Washington, DC.
US Department of Treasury, 2020. Letter from Commissioner Charles P. Rettig to Senate Finance Committee Chair Charles Grassley. https://www.finance.senate.gov/wp-content/uploads/media/doc/Exhibit%20003%20-%20Letter%20from%20Rettig%20to%20Grassley%20and%20Wyden%20(2020.02.12).pdf (17 September 2020). Open letter.
Weisbach, D.A., Coleman, T., 2026. The effects of tax evasion on inequality. Working paper, ssrn.
Zucman, G., 2013. The missing wealth of nations: are Europe and the U.S. net debtors or net creditors? Q. J. Econ. 128 (3), 1321–1364.