



# INCOME INEQUALITY IN THE UNITED STATES: A COMMENT

THOMAS PIKETTY  
EMMANUEL SAEZ  
GABRIEL ZUCMAN

---



TECHNICAL NOTE N°2024/04

SEPTEMBER 2024



WORLD  
INEQUALITY  
LAB

# Income Inequality in the United States: A Comment\*

Thomas PIKETTY (Paris School of Economics)

Emmanuel SAEZ (UC Berkeley)

Gabriel ZUCMAN (Paris School of Economics and UC Berkeley)

September 16, 2024

## Abstract

Auten and Splinter (2024) provide estimates of income inequality in the United States, starting with income observed in tax returns and making adjustments to account for untaxed income. We uncover an empirical issue in the allocation of untaxed income. The growing amount of partnership income exempt from taxation (due to increasingly generous fiscal depreciation rules) is allocated by Auten and Splinter (2023) not to owners of partnerships but to owners of sole proprietorships, who are much less rich. This creates a bias in the level and rise of the top 1% income share. We trace the remaining difference with the top 1% income share of Piketty, Saez and Zucman (2018) to assumptions made by Auten and Splinter (2024) about the distribution of untaxed business income, untaxed capital income, and non-cash, notional income. After clarifying these assumptions and confronting them to existing evidence, the Auten and Splinter (2024) estimates become similar in level and trend to those of Piketty, Saez and Zucman (2018).

---

\*Thomas Piketty: [piketty@psemail.eu](mailto:piketty@psemail.eu); Emmanuel Saez: [esaez@berkeley.edu](mailto:esaez@berkeley.edu); Gabriel Zucman: [zucman@berkeley.edu](mailto:zucman@berkeley.edu). We thank Andy Atkeson, John Iselin, Wojciech Kopczuk, Michael Love, Daniel Reck, John Sabelhaus, Danny Yagan, Owen Zidar, and Eric Zwick for helpful discussions and comments, and Gerald Auten and David Splinter for helping us understand their methodology and providing additional results.

# 1 Introduction

Auten and Splinter (2024), henceforth AS, provide estimates of income inequality in the United States. Following Piketty, Saez, and Zucman (2018), henceforth PSZ, AS start with income observed in tax returns and make adjustments to account for untaxed income. In contrast to PSZ, AS conclude that the top 1% income share has not increased much since 1980. Because the concentration of taxed income has increased dramatically (a non-controversial fact), AS must assume that untaxed income has become much more equally distributed to obtain their results.<sup>1</sup> Given the importance of the question, clarity is needed in understanding what features of AS’s methodology deliver this result.<sup>2</sup>

We begin in Section 2 by uncovering a quantitatively large issue in AS’s allocation of untaxed income. Partnerships are one of the main type of private business in the United States (see, e.g., Campbell and Robbins, 2023). About half of partnership income is legally exempt from taxation in 2019 due to generous depreciation rules in the tax code. An analysis of AS’s code reveals that this excess partnership depreciation is allocated by AS not to partnership owners, but to owners of sole proprietorships, who are much less rich. Because excess partnership depreciation has increased a lot since the late 1970s, this leads to a bias in the rise of the top 1% income share.<sup>3</sup>

Section 3 clarifies the core set of assumptions used by AS to distribute untaxed income, using a conceptual framework allowing for rigorous quantitative comparisons. For the main categories of untaxed income, we back out the shares of untaxed income going to the top 1% in AS, confront these shares to existing evidence, contrast them to the corresponding shares in PSZ, and explain what methodological choices underly the differences. Three main sources of likely bias in the rise of the top 1% income share in AS emerge.

The first involves private business income. While taxed business income is highly and increasingly concentrated, AS assume that untaxed business income is much more equally distributed, with little trend. In addition to the issue involving partnerships—the largest source of bias in AS’s methodology—another contributing factor is the treatment of S-corporations, the

---

<sup>1</sup>The share of fiscal income (excluding capital gains) earned by the top 1% has increased from 8.0% in 1979 to 17.6% in 2019 (Piketty and Saez, 2003, updated). When including realized capital gains, the rise in the top 1% share is slightly larger (in percentage points), from 10.0% in 1979 to 21.1% in 2019.

<sup>2</sup>Saez and Zucman (2020) examined a previous version of AS (Auten and Splinter, 2019). This comment examines the final published version of AS and focuses on new issues, as the methodology in AS differs markedly from Auten and Splinter (2019), even though the bottom line findings are similar.

<sup>3</sup>Iselin and Reck (2024), in another recent comment on AS focusing on tax evasion, also mentions this and note (footnote 8, p. 8): “This issue was pointed out to us by Gabriel Zucman when we approached him with some questions about the methods in PSZ for this comment.” Our comment zooms in on this issue.

other main type of private business in the United States. AS allocate the growing amount of S-corporation untaxed income to the owners of C-corporations, who are less rich as C-corporations can be owned by pension funds. The treatment of untaxed private business income explains 40% of the AS vs. PSZ divergence in the rise of the top 1% pre-tax income share between 1979 and 2019.<sup>4</sup>

Second, AS make questionable assumptions to allocate untaxed capital income. Tax-exempt investment income earned in retirement accounts is allocated by AS to funded and *unfunded* pension wealth, even though unfunded pension plans by definition have no assets. Corporate retained earnings are primarily allocated by AS to people reporting dividend income, even though high-dividend-paying corporations, everything else equal, have low retained earnings. These choices explain 20% of the difference with PSZ, who base their allocation of untaxed capital income on wealth distributions reconciled across multiple sources.

Last, AS allocate non-cash, notional income components in ways that reduce the level and rise in inequality. In AS, public goods expenditures are allocated like a large universal basic income equal to 9% of national income—essentially erasing poverty—and the government deficit is treated like a progressive tax. Other inequality studies (including PSZ) leave these non-cash components out of the picture, i.e., assume they do not affect inequality. In AS, regressive consumption taxes are assumed to boost the pre-tax incomes of the poor, without affecting their post-tax income. In PSZ, following the standard understanding of consumption taxes, these taxes do not affect pre-tax incomes but reduce the post-tax income of the poor. The treatment of non-cash, notional income explains most of the remaining difference with PSZ.

## 2 Excess Fiscal Depreciation and Its Distribution

### 2.1 The Size of Excess Fiscal Depreciation

To estimate the economic income of businesses in the National Income and Product Accounts, the Bureau of Economic Analysis (BEA) starts with the tax returns of these businesses and makes adjustments to convert taxable income into economic income. These adjustments are necessary to provide a consistent measure of aggregate income that is not affected by changes in the tax law. A key adjustment is the adjustment for depreciation. BEA replaces the depreciation reported by businesses in their tax returns by its estimate of their true economic depreciation. This adjustment is particularly large for non-corporate businesses (partnerships

---

<sup>4</sup>Differences in the allocation of business income tax evasion explain an additional 10% and are less important for 1979–2019 trends than in earlier versions of AS. Iselin and Reck (2024) analyze this issue in detail.

and sole proprietorships), which deducted \$642 billion in depreciation and amortization for tax purposes in 2019, but had only \$278 billion in economic depreciation. Partnerships and sole proprietorships thus had  $\$642 - \$278 = \$364$  billion in excess fiscal depreciation, the equivalent of 2.1% of national income.<sup>5</sup>

Although BEA lumps together partnerships and sole proprietorships in most of its series, it turns out that combining BEA lines with various IRS aggregates (which underlie BEA's totals) allows to separate the excess depreciation of partnerships from that of sole proprietorships, to within 1% accuracy. Table 1 details this computation for the year 2019. Slightly more than 100% of the total excess fiscal depreciation of non-corporate businesses turns out to come from partnerships. Specifically, excess fiscal depreciation amounted to \$411 billion in 2019 (2.4% of national income) for partnerships, while it was slightly negative (-0.3% of national income) for sole proprietorships. Appendix A provides complete details.

The excess fiscal depreciation of partnerships is primarily due to rules in the tax code allowing businesses to depreciate assets quickly and broadly, such as the full expensing of machinery and equipment (100% depreciation in year 1), accelerated depreciation rules in the oil and gas industry (where partnerships are over-represented), relatively fast depreciation of real estate, and generous amortization rules (allowing businesses, e.g., to write off contracts and goodwill). Appendix B provides case studies and quantifies the main sources of partnership depreciation. About half of the excess fiscal depreciation of partnerships owes to full expensing provisions in 2019.

For sole proprietorships, depreciation in tax returns is slightly lower than economic depreciation because depreciation of residential real estate used by sole proprietors (for business use of one's home) is strictly limited in the tax code.<sup>6</sup> Moreover, in contrast to partnerships, sole proprietorships make little investments in nonresidential fixed assets and thus benefit only marginally from full expensing provisions.

The excess fiscal depreciation of partnerships has sharply increased over time. As shown by Figure 1, it was negligible in 1980 and then rose to reach about 2.5% of national income in recent years. This rise reflects both the rise of partnerships as a form of business organization and the increasing generosity of the rules governing fiscal depreciation. Before the Tax Reform

---

<sup>5</sup>Unless otherwise noted, in this comment by national income we mean factor-price national income, i.e., national income excluding sales and excise taxes net of subsidies. In 2019, market-price national income was \$18.3 trillion and factor-price national income was \$17.4 trillion.

<sup>6</sup>In 2019, sole proprietors deducted only \$1.2 billion in depreciation for the business use of their home (Form 8829 filed by individuals, line 42), when BEA estimates that the net stock of residential real estate used by sole proprietorships was \$1,920 billion.

Act of 1986 most large private businesses were organized as C-corporations; partnerships and S-corporations then grew in importance. This caused a rise in the amount of assets owned by partnerships, including assets for which depreciation is faster in the tax code than in the national accounts. In addition, fiscal depreciation became more generous with the gradual transition of the US tax system to full expensing and changes to amortization rules.<sup>7</sup> In contrast, excess fiscal depreciation for sole proprietorships has remained slightly negative throughout the period. Before 1980, excess fiscal depreciation was negligible for both types of businesses.

## 2.2 The AS Treatment of Excess Fiscal Depreciation

The ownership of partnerships is highly concentrated. An accurate allocation of the large amount of partnerships' excess fiscal depreciation is thus critical to obtain an accurate estimate of the level and rise of the top 1% income share.

An analysis of AS's publicly available code reveals that AS allocate this excess partnership depreciation not to partnership owners, but to owners of sole proprietorships, who are much less rich. The relevant lines of code in AS are the following:

```
if (&yr > 1980)and(tPropDepr>0) then do;
UNDER    = UNDER    + 0.85*PropExpn
+ (1000000*\&\&nfcc\&yr - 0.85*totexp)* (PropDepr/tPropDepr)
+ 1000000*\&\&nfres\&yr*(pPARTSCP + pBUSN)/(ppartscptot+ptotbusn);
```

These lines add to AS's estimates of underreported income (UNDER, more on this in section 3.1 below) the excess fiscal depreciation of partnerships and sole proprietorships (nfcc) and the residual amount of untaxed income earned by these businesses (nfres).

The excess fiscal depreciation of partnerships and sole proprietorships (\$381 billion in total in 2019 in AS's code) is allocated in two steps. AS first consider a specific form of fiscal depreciation, known as Section 179 expensing (PropExpn, \$45 billion in 2019), which can be directly observed in tax returns.<sup>8</sup> They allocate 85% of this expensing directly to the individuals

---

<sup>7</sup>Bonus depreciation rules in force in 2001–2004 and 2008–2017 allowed businesses to deduct from taxable income a large percentage of the cost of investments the year they made these investments. In 2018, the Tax Cut and Jobs Act doubled the bonus depreciation deduction from 50% in 2017 to 100%. In 2004, the American Jobs Creation Act allowed sports teams to amortize their intangible assets.

<sup>8</sup>Section 179 expensing represents only a small fraction of excess depreciation made by passthrough businesses because it is capped at \$1 million (per tax return and per business in 2018 with inflation adjustments in subsequent years) and applies only to businesses that invest less than \$3.5 million in equipment in the year (again in 2018), so that large partnerships and S-corporations, where most investment is concentrated, do not qualify. Out of the \$45 billion in Section 179 expensing claimed in 2019, less than \$7 billion was from partnerships.

claiming these expenses, which is a valid approach. About 90% of excess depreciation ( $\$381 - 0.85 \times \$45 = \$343$  billion) is then allocated proportionally to depreciation deductions reported by sole proprietorships only (**PropDepr**), such as Uber or Lyft drivers. This approach is invalid, since this excess depreciation comes from partnerships, not sole proprietorships (Figure 1).

Analyzing an earlier version of AS (Auten and Splinter, 2019), Saez and Zucman (2020) highlighted the treatment of excess depreciation as a key source of discrepancy with PSZ and pointed a methodological issue. “In Auten and Splinter (2019), business profits earned by the top 1% but not taxable (due in particular to generous depreciation rules) are classified as tax evasion; tax evasion is then allocated to the bottom 99% based on an erroneous reading of random audit data” (abstract). In response, AS revised their methodology to allocate excess depreciation separately from tax evasion. However, as shown above they allocate excess depreciation to sole proprietors, not to partnership owners. In both AS and Auten and Splinter (2019), only about 10%–15% of excess fiscal depreciation thus ends up being allocated to the top 1%, explaining why the bottom line findings are similar in the two versions. In both cases, too little excess depreciation is allocated to the top 1%, albeit for different reasons.

### **2.3 Who Earns Excess Fiscal Depreciation?**

Partnerships are “pass-through” entities, whose profits and losses flow to partners and are subject to taxation at the partner level. The ownership of partnerships is dramatically more concentrated than that of sole proprietorships. The top 1% of the fiscal income distribution earns about 60%–70% of partnership income as opposed to about 15% of sole proprietorship income in recent years.

Ideally, partnership excess depreciation should be allocated to the ultimate individual owners of the corresponding partnerships. In practice, it is not possible to fully trace the ultimate ownership of partnerships, which can be owned not only by individuals but also by corporations (the shareholders of which might not be known), trusts, non-profits, and non-residents, sometimes through complex holding chains (Cooper et al., 2016). Because about 70% of total partnership income is directly observable in individual income tax returns, and this income flags partnership ownership, a natural starting point involves allocating excess depreciation proportionally to partnership income observed in individual tax returns. PSZ follow this approach.

A potential concern with this approach is that the partnerships that have excess depreciation may be different from the partnerships that generate income observable in individual tax returns. For example, law partnerships may have little excess depreciation but may constitute most of

the partnership income earned by individuals, while by contrast heavy-industry partnerships may have the lion's share of excess depreciation and may be joint ventures among publicly listed corporations, which are more equally held than law partnerships.

To understand whether this concern is likely to bias the PSZ methodology, one needs to examine it more closely. PSZ allocate excess fiscal depreciation (like other forms of untaxed partnership income) first to individuals reporting partnership losses so as to fully offset these losses, and then, if any untaxed income remains to be allocated, proportionally to partnership profits.<sup>9</sup> As shown by Appendix Figure A1, service sector partnership (like law firms) make little losses. Partnerships in capital-intensive sectors, by contrast, account for the bulk of losses and also for the bulk of depreciation—which is logical since depreciation requires assets and reduces income. The allocation of untaxed income to people reporting losses targets owners of capital-intensive firms that are likely to have excess depreciation. Moreover, because losses observable in individual tax returns account for about 70% of total partnership losses (as detailed in Appendix C.2), the distribution of losses reported by individuals is likely to be informative of the distribution of all partnership losses.

To quantify the potential margin of error involved, we can relax the assumptions made by PSZ. First, we can change the weight put on losses. In PSZ, \$1 of reported loss is assumed to reflect \$1 of untaxed income such as excess depreciation. This leads to allocating about half of untaxed partnership income to individuals reporting losses (as losses represent the equivalent of about half of the amount of untaxed income) at the end of the period.

Assume now that \$1 of reported loss reflects \$ $a$  of true economic loss and \$ $1 - a$  of untaxed income. Figure 2 considers values ranging from  $a = 1$  (reported losses are all real losses and have no associated untaxed income) to  $a = -1$  (a \$1 million reported loss in fact corresponds to \$1 million in real profit and \$2 million in untaxed income). In the  $a = -1$  scenario, all untaxed income is de facto allocated to individuals reporting losses in recent years. A negligible amount goes to partners in skill-intensive industries like law firms that have high profits but little losses. It turns out that because both partnership profits and losses are highly concentrated at the top of the income distribution, the effect is modest relative to the  $a = 0$  assumption (a \$1 million loss corresponds to \$1 million in untaxed income) used by PSZ.

Second, Figure 2 considers scenarios about who earns the 30% of partnership profit and losses not directly observable in individual tax returns. The PSZ methodology assumes that the underlying untaxed income is distributed like the untaxed income of partnerships directly

---

<sup>9</sup>Appendix C.1 provides additional discussion of the treatment of losses in PSZ.



held by individuals. Cooper et al. (2016) document that in 2011, 68% of net ordinary business income distributed by partnerships directly went to individuals, 9% to S-corporations, 5% to C-corporations, 4% to estates and trusts, 2% to foreign partners, 1% to tax-exempt investors, and 11% to unidentified partners.<sup>10</sup> Love (2021) shows that these unidentified partners are mostly foreign corporations in tax havens, which in turn may be owned by US pension funds and other nonprofits (e.g., investing in hedge funds through offshore blockers), US individuals, and foreigners. Informed by this evidence, we consider a low-end scenario where 30% of all untaxed partnership income goes to broad financial wealth (including pension wealth and the wealth of nonprofits), and an intermediate scenario where 15% goes to broad financial wealth and 15% ultimately to individual partners.<sup>11</sup> In all cases, 55% to 72% of partnership excess depreciation goes to the top 1% in 2019—as opposed to 65% in PSZ and only 11% in AS.

### 3 Untaxed Income and its Distribution

Suppose that  $y$  is fiscal income and  $z = y + s$  is a broader notion of income, with  $s$  being income not included in fiscal income, such as underreported income (tax evasion) or excess fiscal depreciation. How does adding  $s$  affect the top 1% income share?

Let  $Z, Y, S$  be the macroeconomic aggregates of  $z, y, s$  with  $Z = Y + S > Y$ . Let  $sh(y)$  be the share of  $y$  going to the top 1%  $y$ -income earners and  $sh(z)$  be the share of  $z$  going to the top 1%  $z$ -income earners. Let  $s_y$  be the share of  $s$  income going to the top 1%  $y$ -income earners, and  $s_z$  be the share of  $s$  income going to the top 1%  $z$ -income earners. Naturally,  $s_z > s_y$ , and there is often a debate on whether  $s_z$  or  $s_y$  is the most meaningful statistic for understanding how  $s$  affects income concentration. As detailed in Appendix D.1, neither is. The relevant statistics is the share  $s_s$  of the extra income  $S$  that goes to the top 1% defined as:

$$sh(z) = sh(y) \cdot (1 - S/Z) + s_s \cdot S/Z$$

---

<sup>10</sup>E.g., 3.4% of all income distributed by partnerships was paid to S-corporations (Cooper et al., 2016, Figure 3B); 73% of the income paid to S-corporations was ordinary business income (Cooper et al., 2016, Figure 8B); hence 2.5% of the \$895 billion in income distributed by partnerships (a total which includes interest, dividends, etc.) was ordinary business income paid to S-corporations. This represents \$22 billion, or 9% of the total amount of ordinary business income distributed by partnerships that year.

<sup>11</sup>This intermediate scenario is motivated by the fact that in Cooper et al. (2016), 13% of partnership business income goes to S-corporations and trusts, and thus ultimately to individual partners. A high-end scenario would allocate 15% of untaxed partnership income to individual owners of tax haven assets (instead of broad financial wealth), in light of the analysis of FATCA reports in Johannesen et al. (2024) showing that a large amount of tax haven wealth is owned by US individuals, and that this wealth is extremely concentrated. Note that because the share of partnership business income ultimately going to foreigners is likely to be small, and because allocating a portion to foreigners would require offsetting adjustments to keep matching US national income, all scenarios assume that excess depreciation ultimately going to foreigners can be neglected.

That is, when moving from  $y$ -income to  $z$ -income, top 1% incomes—after re-ranking— increase by  $s_s \cdot S$ . In particular,  $s$  income increases concentration—i.e.  $sh(z) > sh(y)$ —if and only if  $s_s > sh(y)$ . We show in appendix D.1 that  $s_y < s_s < s_z$ .

This section uses the publicly available AS Excel files to compute  $s_s$  for the main categories of untaxed income, confront the results to existing evidence, compare them to the corresponding  $s_s$  in the PSZ methodology, and clarify the methodological choices that lie behind the difference. The discussion is organized around the three main sources of untaxed income: (i) untaxed business income; (ii) untaxed capital income; and (iii) non-cash, notional income.<sup>12</sup>

### 3.1 Untaxed Business Income

**Nature and size.** Consider first business income, defined as the income of pass-through businesses: partnerships, sole proprietorships, and S-corporations. There is a large gap between the amount of business income reported in tax returns and the economic income of these businesses as recorded in the national accounts. As shown by Figure 3, untaxed business income amounts to close to 7% of national income in 2019. About half of this untaxed income corresponds to legally-exempt income, which in turn is almost entirely due to excess depreciation. The other half corresponds to tax evasion.

Taxed business income is highly concentrated, and its concentration has sharply increased since the 1960s. In contrast, AS assume that untaxed business income is very equally distributed, with little trend (Figure 4). The observable income of car dealerships, plumbers and painters, doctors and dentists, retail chains, real estate firms, oil and gas partnerships, law firms, etc., is highly and increasingly concentrated—but their untaxed income is assumed by AS to be much more equally distributed with almost no trend. This flat concentration comes primarily from AS’s treatment of legally-exempt income.

**Distribution of legally-exempt income.** As we have seen, AS allocate the excess depreciation of partnerships not to owners of partnerships but to owners of sole proprietorships. A similar issue arises in their allocation of the legally-exempt income of S-corporations. This untaxed income is allocated by AS not to owners of S-corporations, but to owners of C-corporations, who

---

<sup>12</sup>This fleshes out the argument made in Piketty, Saez, and Zucman (2019) that the (earlier) AS results (Auten and Splinter, 2019) can only be explained by unrealistic assumptions on untaxed income. Relative to this earlier work, the main contribution of this section is to conduct a rigorous comparison of the distribution of untaxed income component by component, to trace out the unrealistic nature of AS’s assumptions to specific methodological choices, and to take stock of the updates made by AS relative to Auten and Splinter (2019). Our comparison with PSZ also uses the updated PSZ methodology, revised in Saez and Zucman (2020).

are less rich due to the ownership of C-corporations by pension funds.<sup>13</sup>

Ideally, one would match all S-corporations to their owners, identify untaxed business income in S-corporation tax returns, and apportion it to the corresponding shareholders. In practice this task is made difficult by the fact that key forms of untaxed income cannot be identified in S-corporation tax returns, such as certain differences between fiscal and economic depreciation. PSZ use a simplified methodology that allocates untaxed S-corporation income first to erase reported S-corporation losses, then proportionally to S-corporation profits. This is the same approach as the one used for partnerships, with the added advantage that S-corporations are all owned by individuals.

Overall, a fraction  $s_s = 62\%$  of untaxed partnership and S-corporation income goes to the top 1% in the PSZ methodology in 2019, as opposed to  $s_s = 16\%$  in AS. Because the legally-exempt income of partnerships and S-corporations adds up to 3.5% of national income in 2019, the AS approach underestimates the top 1% income share by 1.6 point relative to that benchmark.<sup>14</sup>

The bias in AS is not only in level but also in trend: it is maximal in 2019 and negligible before the 1980s, due to the combination of two factors. First, exempt partnership and S-corporation income was small before the 1980s and has grown regularly since then. Second, in contrast to passthroughs, the untaxed income of C-corporations is—like in PSZ—allocated by AS to the owners of C-corporations, proxied in various ways. This illustrates a methodological problem at the heart of the controversy on the evolution of US inequality. To obtain consistent measures of inequality, private businesses income (a major source of income for the rich as shown by Smith et al., 2019) should be treated consistently over time. Inequality should not change simply because a business chooses to file a different tax form. Yet this is what happens in the AS methodology. When a private business files as a C-corporation (as was the norm until the mid-1980s), untaxed income—unreported or legally exempt—is allocated primarily to the top of the distribution, proportionally to reported positive income (proxied by dividends and capital gains). When the same business files as a pass-through entity (which is increasingly the case since the 1980s), untaxed income is allocated by AS primarily to the bottom. Inequality falls, even though nothing real has changed in the economy.<sup>15</sup>

---

<sup>13</sup>AS (Online Appendix, footnote 39 p. 21) acknowledge this issue for S-corporations, do not take it into account in their methodology, and claim that it is likely small.

<sup>14</sup>The PSZ methodology, if anything, may be too conservative. According to publicly available SOI tabulations of S-corporations tax returns, depreciation claimed by S-corporations is more concentrated than S-corporation income: in 2019, 50% of depreciation deductions were claimed by S-corporations with more than \$10 million in assets, which earned 32% of ordinary business incomes.

<sup>15</sup>In PSZ, by contrast, the treatment of private businesses is consistent. No matter the tax form filed by these business, losses are first set to zero and the remaining untaxed income (whether it is legally-exempt income or

**Distribution of tax evasion.** To measure national income, BEA makes an allowance for underreported business income, based on IRS random audit studies. A methodological advance claimed by AS involves the use of these IRS studies to allocate underreported income.

AS do not publish their distribution of underreported income, but through communications with them we were able to obtain it. Only 16% of underreported income is allocated by AS to the top 1% tax units (ranked by corrected adjusted gross income) in 2019. Using the same IRS audit studies, the canonical study of the distribution of tax evasion in the United States finds that the top 1% tax units (also ranked by corrected AGI) earned 27% of underreported income in 2001 (Johns and Slemrod, 2010, Table 5), vs. 19% in AS that same year. This difference is obscured in AS, who write (p. 2199) that their "... method produces results similar to NRP-based estimates of the distribution of underreporting in Johns and Slemrod (2010)...".

Why do the two studies, using the exact same data, differ? The IRS estimates underreported income in two steps. Some evasion is first detected in random audits, which, after being scaled to population, is then multiplied by a factor of about 3 to account for undetected evasion. Johns and Slemrod (2010) use the IRS's own methodology to distribute undetected evasion. Auten and Splinter discard the IRS methodology, to which they prefer a methodology designed by Auten and Splinter (2021). In that approach, a larger share of undetected evasion is allocated to the bottom of the distribution.<sup>16</sup>

There are two main reasons why some evasion fails to be detected in random audits. First, some unreported income is genuinely difficult to detect, such as income earned in cash, income earned offshore, or income concealed through sophisticated schemes. Second, some categories of income are not comprehensively examined in the context of IRS random audits. Crucially, income from mid- or large-size S-corporations and partnerships is essentially not examined, because examining these businesses (which can operate in multiple states or countries) would require much more resources than available to the IRS in the context of its random audit program. Income earned by relatively low-income individuals is comprehensively examined, but a large and growing fraction of the taxable income of top earners is not (Guyton et al., 2023).

Ideally, one would use direct information on undetected evasion to allocate it to individuals. Guyton et al. (2023) marshal the available evidence on this issue, including information generated by IRS enforcement activities and a pilot random audit program of S-corporations. Iselin and Reck (2024) discuss the implications of this evidence for the AS vs. PSZ controversy.

---

tax evasion) is allocated proportionally to reported positive income.

<sup>16</sup>Auten and Splinter (2019) used to rely on Johns and Slemrod (2010) to allocate unreported income but switched to their new method in AS.

Arguably, the distribution of undetected tax evasion is inherently uncertain and more research is needed on this issue. In the meantime, the literature suggests allocating unreported income in a neutral manner, i.e., proportionally to reported income component by component. This is the pattern obtained by Johns and Slemrod (2010) using the standard IRS methodology, by Gale et al. (2023) using the Survey of Consumer Finances, and the approach favored by Iselin and Reck (2024).<sup>17</sup> It is also the one used by PSZ.<sup>18</sup> Relative to this neutral allocation, AS’s methodology depresses the rise of the top 1% income share by about 0.4 percentage points over the 1979–2019 period.

## 3.2 Untaxed Capital Income

The second main source of untaxed income is capital income. We define capital income to include all income deriving from the ownership of assets, excluding passthrough business income (already discussed above). Taxed capital income includes taxable interest, dividends, rents, and trust and estate income reported in individual income tax returns. Untaxed capital income includes corporate retained earnings, investment income earned in tax-exempt pension accounts, untaxed rents, tax-exempt interest, and income retained in trusts. The bulk of capital income is untaxed: about 70%–75% in the 1960s–1970s, rising to 85% in the 2010s.

Taxed capital income is highly concentrated, and its concentration has increased dramatically since the 1980s. The 1% adult individuals at the top of the fiscal income distribution earn 45% of taxed capital income in 2019 vs. 22% in 1979. According to AS, however, there has been an equalization of untaxed capital income: the top 1% earns only  $s_s = 16\%$  of untaxed capital income in 2019 vs. 21% in 1979 (Appendix Figure A2). Because the bulk of capital income is untaxed, and because AS assume that untaxed capital income is increasingly equally distributed, there has been, according to AS, a significant equalization of capital income since the 1960s. The top 1% earns only about 20% of total capital income in 2019 vs. close to 30% in the 1960s (Appendix Figure A3). The United States has achieved a remarkable degree of capital equality in an international and historical perspective.<sup>19</sup>

---

<sup>17</sup>Johns and Slemrod (2010, Table 4, col. 4 and 5) show that the ratio of unreported to true business income is constant across the income distribution, component by component. Gale, Sabelhaus and Thorpe (2023) note that a proportional adjustment brings SCF business incomes into better alignment with IRS data. Iselin and Reck (2024) favor a macro approach with unreported income allocated proportionally to reported positive income, component by component.

<sup>18</sup>In PSZ, unreported income is allocated at the micro level proportionally to reported income, first to offset losses and then proportionally to reported positive income (see Appendix C.1). Relative to the macro approach favored by Iselin and Reck (2024) this micro approach has a level effect but only a very small effect on trends (Iselin and Reck, 2024, Figure 2).

<sup>19</sup>As shown by Appendix Figure A3, this pattern is at odds with the sharp increase in the concentration of

This surprising result can be traced to specific assumptions made by AS about investment income earned in retirement accounts and corporate retained earnings, detailed in Appendix E.

First, AS are likely to under-estimate the share of pension income earned by the top 1% in 2019 and its rise, because investment income earned in retirement accounts is allocated by AS proportionally to funded and *unfunded* pension wealth. Unfunded pensions, however, by definition have no assets—they are simply promises of future pension benefits. The beneficiaries of these unfunded promises are almost entirely state and local government workers, who are in the bottom 99% of the income distribution. By contrast, PSZ allocate investment income earned in retirement accounts to owners of funded pension wealth only.

Second, for equities directly held, AS allocate three-quarters of retained earnings proportionally to dividends and only one-quarter proportionally to realized capital gains. This assumption is logically inconsistent, since owners of firms with relatively high retained earnings receive relatively little dividends. It also appears to have no particular empirical basis.

Ideally, one would allocate retained earnings by linking C-corporations to their shareholders. This is generally not possible in the United States, however, even with internal administrative data. The next-best approach involves using the available evidence on the distribution of equity wealth. A body of work documents the evolution and composition of top wealth shares, using multiple sources (household surveys, estate tax returns, named lists of wealthy individuals). PSZ base their allocation of retained earnings on equity wealth series reconciled with these sources, while AS impute retained earnings without reference to wealth.<sup>20</sup>

### 3.3 Non-Cash Notional Income

National income conventionally includes a number of non-cash, notional components, which AS allocate in a way that reduces inequality and its rise, mostly due to conceptual issues.

**Consumption taxes: Factor-price vs. market-price national income.** Market-price national income (or national income in brief) is the sum of factor-price national income (income

---

wealth seen in all available data sources.

<sup>20</sup>In PSZ, equity wealth is first estimated using income tax data (50% based on dividends and 50% based on a smoothed measure of realized capital gains), and then cross-checked against and reconciled with external sources. Specifically, the equity wealth of the top 400 richest individuals, which cannot be captured accurately using tax data only (due to relatively low dividend yields at the very top and limited capital gains realization, see Saez and Zucman, 2022) is upgraded to match data from the Forbes 400 ranking (based, e.g., on mandatory disclosures to the Security and Exchange Commission). Retained earnings are then allocated proportionally to reconciled equity wealth. This makes it possible to allocate a meaningful amount of retained earnings to large owners of non-dividend paying firms (such as Amazon’s Jeff Bezos, Facebook’s Mark Zuckerberg, Berkshire Hathaway’s Warren Buffett, Alphabet’s Sergey Brin and Larry Page in 2019) who are otherwise assigned too little income.

paid to workers and capital owners) and taxes on products (mostly sales and excise taxes). Factor-price national income measures income at pre-tax prices (i.e., prices before consumption taxes), while national income measures income at post-tax prices (inclusive of consumption taxes). PSZ distribute factor-price national income and scale incomes up uniformly to get to pre-tax national income: consumption taxes are neutral on a pre-tax basis. AS instead add consumption taxes to the corresponding consumers when calculating pre-tax national income. As consumption taxes are regressive, the AS allocation of product taxes reduces the level of the top 1% pre-tax income share (by 0.8 percentage point in 2019) and its rise (by 0.5 percentage point over the 1979–2019 period).<sup>21</sup>

To understand the conceptual issue here, consider a necessity such as bread that absorbs a higher share of income for the poor than for the rich. Factor-price national income does not change when a tax on bread is introduced. But because the bread price increase caused by the tax pushes up the overall price index, market-price national income increases. In AS, the pre-tax income of the poor is inflated by the amount of the bread tax they pay. The bread tax “enriches” the poor, even if they do not have any pre-tax income to start with. In PSZ, the bread tax does not affect the distribution of pre-tax income, consistent with the literature.<sup>22</sup>

When computing post-tax inequality, AS subtract the imputed bread tax. Since what is subtracted is what they added to compute pre-tax income, whether the tax on bread is high or low makes no difference to the post-tax income of the poor. By contrast, PSZ start from factor-price national income, add transfers, and subtract all taxes paid—including consumption taxes—so that a regressive bread tax worsens post-tax inequality.<sup>23</sup>

**Government deficit.** Post-tax national income also includes the government deficit as negative income, even though nobody pays for this deficit out of their current income. In AS the government deficit is allocated with a relatively high weight on the rich, proportionally to federal income tax and payroll tax payments. This shaves off 0.6 percentage points in the rise of the top 1% post-tax income share since 1960 (AS Table 2), because the government deficit is much higher in 2019 than in 1960 or 1979.

In reality, only the future will tell whether government debt created by the deficit will be paid through inflation, reduced government spending, or increased taxes on the poor vs. the

---

<sup>21</sup>This issue was pointed in Saez and Zucman (2020, pp. 30-31) but is ignored by AS. It biases the distribution of both pre-tax and post-tax national income.

<sup>22</sup>For instance, in official Congressional Budget Office (2024) estimates, indirect taxes (i.e., federal excise taxes in the context of CBO’s analysis which focuses on federal taxes) do not affect the distribution of pre-tax income, but increase the concentration of post-tax income (as in PSZ).

<sup>23</sup>For a formal, detailed discussion of how to treat product taxes, see Saez and Zucman (2023, Appendix A.4).

rich—affecting the distribution of post-tax income at that future time. In the meantime the deficit itself does not affect the distribution of current consumption and current saving, which is why PSZ treat it neutrally.

**Government consumption.** The US government spends around 18% of total national income in collective consumption of public goods—defense, police and prison, infrastructure, and education—with no trend. In PSZ, public goods consumption is left out of distributional considerations, i.e., it is assigned proportionally to post-tax income. In AS, half of this spending, about 9% of national income, is allocated as a lump sum per capita, like a big “universal basic income.” This UBI is equivalent to \$4,500 per person in 2019—\$9,000 for a married couple and \$18,000 for a family of four. The other half is allocated proportionally to AS’s after-tax income. AS’s big UBI essentially erases poverty and dramatically changes the picture of inequality at the bottom of the distribution relative to the large body of existing work which, as PSZ, leaves public goods out of the picture. It also reduces the level of the top 1% post-tax income share, more so (in percentage points) when inequality is relatively high (in 2019) than when it is low (in 1979).

Out of government consumption, only spending on education (30% of the total, with no trend since 1979) could in principle be allocated across individuals and legitimately be viewed as reducing post-tax inequality.<sup>24</sup>

### 3.4 Putting It all Together

In AS, the top 1% pre-tax income share rises by 4.4 points between 1979 and 2019. Adjusting for each of the points raised in this comment, and as summarized in Table 2, it rises by  $4.4+3.1 = 7.4$  points, close to the rise of 8.3 points observed in the Piketty, Saez and Zucman (2018, updated) series. The AS series becomes similar in level and trend to PSZ over the entire period 1979–2019 (top panel of Figure 5).<sup>25</sup> The bulk of the adjustment to AS comes from addressing the empirical issues with the allocation of legally-exempt business income and allocating product taxes neutrally.

---

<sup>24</sup>PSZ provide sensitivity analysis in which education spending is distributed as a lump sum per child. AS similarly consider allocating 25% of government consumption (i.e., roughly the share corresponding to education) as a lump sum per individual and the rest proportionally to after-tax income. But because AS’s after-tax income concentration hardly increases (due to issues with pretax income, see Table 2 below), reducing the lump-sum portion increases the level of inequality without affecting the flat AS trend.

<sup>25</sup>A small level difference remains, which can be explained by differences in the unit of observation and in the treatment of the corporate tax (partly allocated to workers in AS, thus reducing top pre-tax income shares throughout but with minimal effects on 1979–2019 trends and no effect on post-tax shares). These issues are discussed in Saez and Zucman (2019, pp. 22-23) and Saez and Zucman (2023), respectively.



Similarly, in AS the top 1% post-tax income share rises by 1.4 point between 1979 and 2019. After our reconciliation, it rises by  $1.4 + 4.0 = 5.4$  points, close to the 6.4 points in the PSZ series (bottom panel of Figure 5). The adjustment mostly comes from changes to pretax income.

AS (Table 4) also provide a comparison of their top 1% income share with PSZ. AS’s Table 4, however, lumps together the treatment of legally exempt business income and tax evasion—an artifact of their older methodology that conflated both (Auten and Splinter, 2019). Over the 1979–2019 period, as shown here, it is legally exempt business income that is the key source of divergence between AS and PSZ.<sup>26</sup>

In Appendix Figure A4 we provide a similar comparison for the top 0.1% and top 0.01% income shares. Piketty and Saez (2003) showed that the growth in top fiscal income shares was larger and larger as one moves up the distribution. This “fractal” result remains true in both PSZ and AS—even though in AS the very top income shares exhibit a less significant rise. After implementing the same adjustments as those we applied to the top 1%, AS’s top 0.1% and top 0.01% income shares become very close to PSZ on a pre-tax basis, and nearly identical on a post-tax basis.

## 4 Conclusion

According to all available sources—income reported in individual tax returns, wages and salaries from Social Security earnings, CEO pay, household wealth surveys, and rich lists such as the *Forbes* 400—observable income and wealth have become massively more concentrated in the United States since the 1980s.

To offset the rise in the top 1% income share, it must be that unobservable income has become much more equally distributed. Most labor income in the economy is taxed, but most capital and business income is untaxed. Thus, by carefully choosing assumptions about the distribution of untaxed business and capital income, one can obtain many different possible distributions of these forms of income, which play a key role at the top of the distribution. AS make assumptions, clarified in this comment, which lead to erasing the rise of business and capital income inequality.

These assumptions, once carefully examined, are found to be empirically biased or conceptually unsound. Once these issues are addressed, the AS estimates turn out to be similar in level and trend to those of Piketty, Saez and Zucman (2018). In the future, additional refinements

---

<sup>26</sup> AS’s Table 4 also uses the original PSZ series which ended in 2014, while Table 2 uses the current PSZ series (October 2022 vintage), allowing for a comparison of the two methodologies as currently implemented over the full 1979–2019 period.

should be possible, e.g., should improved administrative data become available—particularly data linking US businesses, corporations and passthroughs, to their ultimate owners (National Academies of Sciences, Engineering, and Medicine, 2024).

## References

- Auten, Gerald, and David Splinter** (2019), “Income Inequality in the United States: Using Tax Data to Measure Long-term Trends,” unpublished draft, December 20, 2019 available at [https://davidsplinter.com/AutenSplinter-Tax\\_Data\\_and\\_Inequality2019.pdf](https://davidsplinter.com/AutenSplinter-Tax_Data_and_Inequality2019.pdf)
- Auten, Gerald, and David Splinter** (2021), “Comment: Tax Evasion at the Top of the Income Distribution: Theory and Evidence.” Working paper.
- Auten, Gerald, and David Splinter** (2024), “Income Inequality in the United States: Using Tax Data to Measure Long-term Trends,” *Journal of Political Economy* 132(7), 2179-2227.
- Brady, Peter J. and Steven Bass.** (2020), “Reconciling Form 1040 and Form 1099-R Data”, working paper.
- Bureau of Economic Analysis** (2023), “NIPA Handbook Chapter 11: Nonfarm Proprietors’ Income,” available at <https://www.bea.gov/resources/methodologies/nipa-handbook/pdf/chapter-11.pdf>
- Bureau of Economic Analysis** (2024), “Prototype NIPA Estimates of Profits for S Corporations—Table Updates” available at <https://www.bea.gov/system/files/2022-02/prototype-nipa-estimates-pdf>.
- Campbell, Cole and Jacob Robbins.** (2023), “The Value of Private Business in the United States”, working paper.
- Congressional Budget Office.** (2024), “The Distribution of Household Income in 2021”.
- Cooper, Michael, J. McClelland, J. Pearce, R. Prisinzano, J. Sullivan, D. Yagan, O. Zidar, and E. Zwick** (2016), “Business in the United States: Who Owns It and How Much Tax Do They Pay?”, *Tax Policy and the Economy*, 30 pp. 91-128.
- Gale, William G., John Sabelhaus, and Samuel I. Thorpe** (2023), “Measuring income inequality: A primer on the debate”, Brookings Institutions.
- Guyton, John, Patrick Langetieg, Daniel Reck, Max Risch, and Gabriel Zucman** (2023), “Tax Evasion at the Top of the Income Distribution: Theory and Evidence,” NBER working paper #28542.
- Internal Revenue Service.** (2022), “Federal Tax Compliance Research: Estimates for Tax Years 2014–2016”, available at <https://www.irs.gov/pub/irs-pdf/p1415.pdf>
- Iselin, John and Daniel Reck** (2024), “Comment on ‘Income Inequality in the United States: Using Tax Data to Measure Long-Term Trends’ by Auten and Splinter”, July 9, 2024 version.
- Johannesen, Niels, Daniel Reck, Max Risch, Joel Slemrod, John Guyton, and Patrick Langetieg.** 2024. “The Offshore World According to FATCA.” *Tax Policy and the Economy*, 38(1): 61–99.
- Johns, Andrew and Joel Slemrod** (2010), “The Distribution of Income Tax Noncompliance,” *National Tax Journal*, 63 (3), 397–418.
- Love, Michael** (2021), “Where in the World Does Partnership Income Go? Evidence of a Growing Use of Tax Havens”, working paper.
- National Academies of Sciences, Engineering, and Medicine** (2024), “Creating an Integrated System of Data and Statistics on Household Income, Consumption, and Wealth: Time to Build.” Washington, DC: The National Academies Press, <https://doi.org/10.17226/27333>.
- Piketty, Thomas and Emmanuel Saez** (2003), “Income Inequality in the United States,

1913-1998”, Quarterly Journal of Economics, 118(1), 1-39 (Tables and Figures Updated to 2021 in Excel format, February 2023)

**Piketty, Thomas, Emmanuel Saez and Gabriel Zucman** (2018), “Distributional National Accounts: Methods and Estimates for the United States,” Quarterly Journal of Economics, 133(2), 553-609. Updated series available at: <https://gabriel-zucman.eu/usdina/>

**Piketty, Thomas, Emmanuel Saez and Gabriel Zucman** (2019), “Simplified Distributional National Accounts”, AEA Papers and Proceedings, 109, 289-295.

**Piketty, Thomas, Emmanuel Saez and Gabriel Zucman** (2022), “Twenty Years and Counting: Thoughts about Measuring the Upper Tail,” Journal of Economic Inequality 20: 255-264.

**Saez, Emmanuel and Gabriel Zucman** (2016), “Wealth Inequality in the United States Since 1913: Evidence from Capitalized Income Tax Data,” Quarterly Journal of Economics, 131(2): 519-578.

**Saez, Emmanuel and Gabriel Zucman** (2019), “Progressive Wealth Taxation”, Brookings Papers on Economic Activity, Fall 2019, 437-511.

**Saez, Emmanuel and Gabriel Zucman** (2020), “Trends in US Income and Wealth Inequality: Revising After the Revisionists”, NBER working paper #27921.

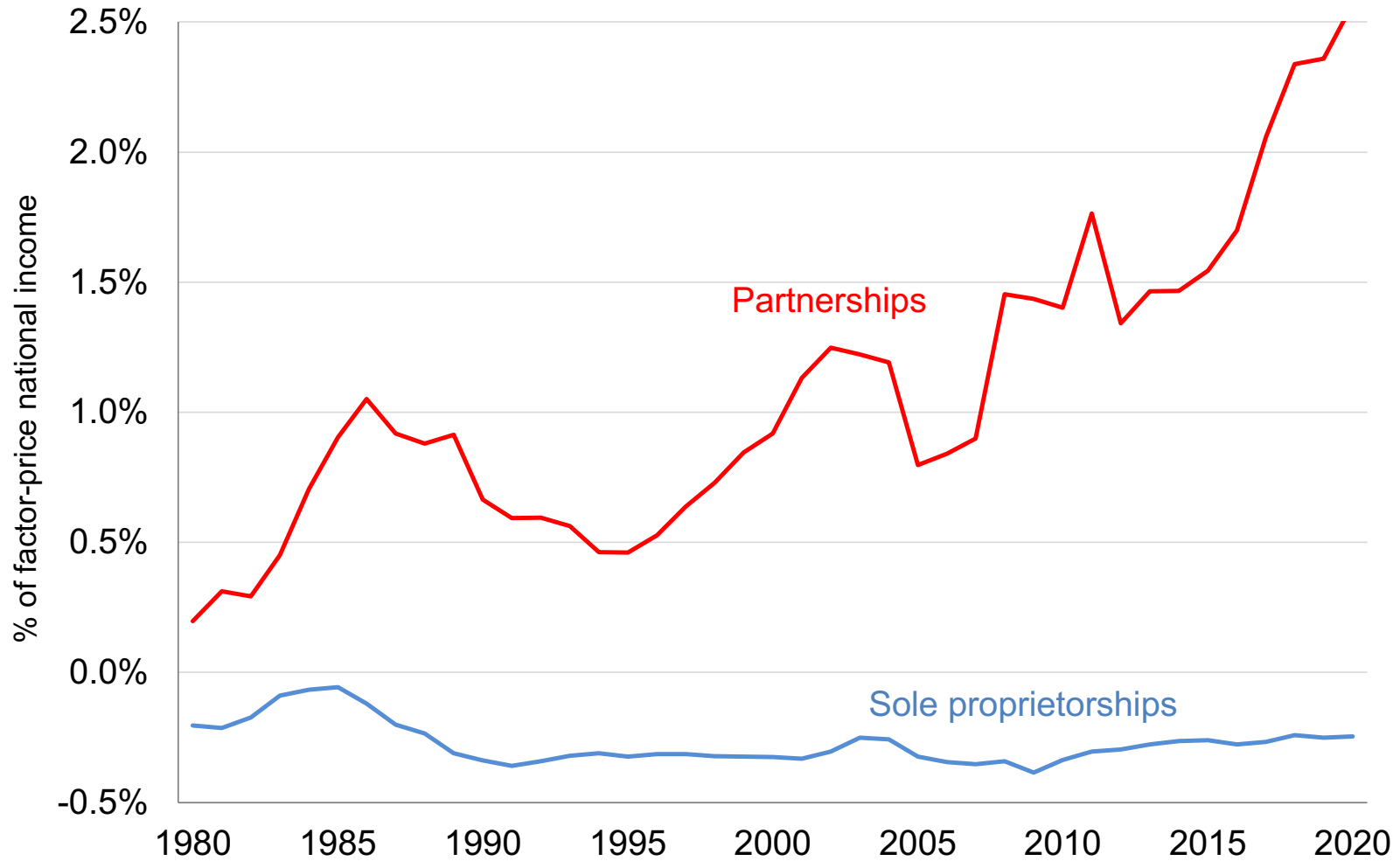
**Saez, Emmanuel and Gabriel Zucman** (2022), “Top Wealth in America: A Reexamination”, NBER working paper #30396.

**Saez, Emmanuel and Gabriel Zucman** (2023), “Distributional Tax Analysis in Theory and Practice: Harberger Meets Diamond-Mirrlees”, NBER working paper #31912.

**Smith, Matthew, Owen Zidar, Danny Yagan, and Eric Zwick** (2019). “Capitalists in the Twenty-First Century.” Quarterly Journal of Economics 134(4): 1675-1745.

**Smith, Matthew, Owen Zidar and Eric Zwick** (2023), “Top Wealth in America: New Estimates Under Heterogenous Returns”, Quarterly Journal of Economics, 138(1): 515-573.

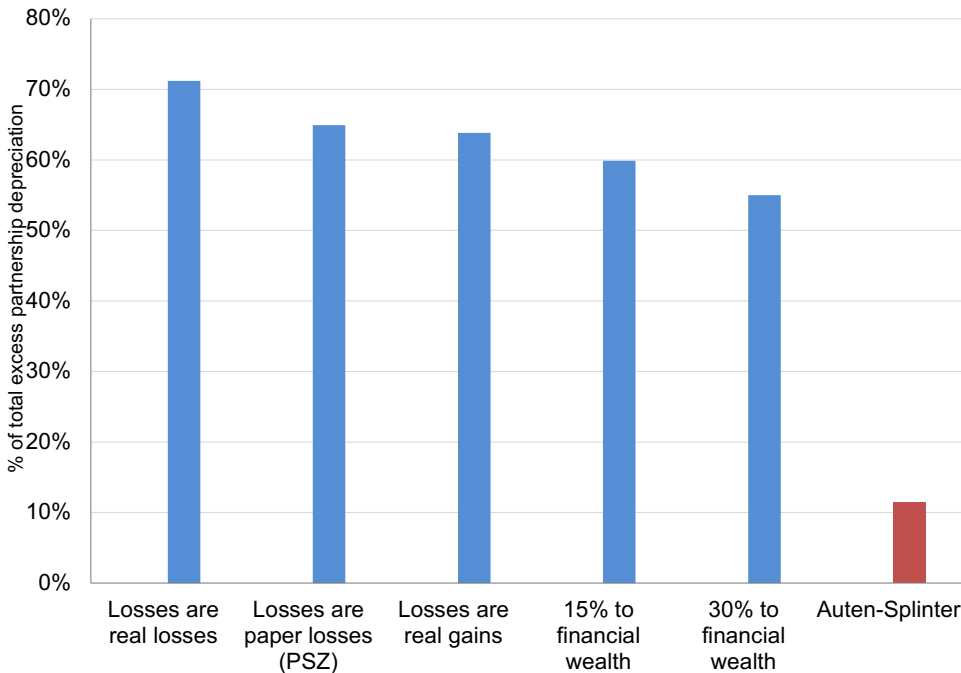
# Figure 1: Gap Between Fiscal Depreciation and Economic Depreciation



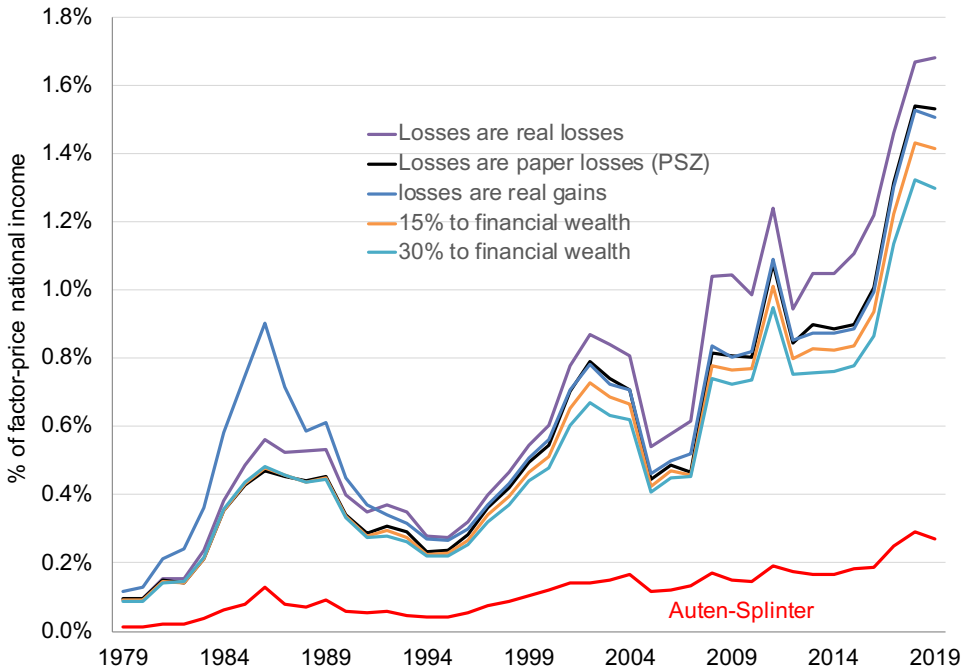
Notes: This figure reports the excess of fiscal depreciation (as reported by businesses in their tax returns) over economic depreciation (as estimated by the Bureau of Economic Analysis for the computation of national income) for non-farm sole proprietorships and partnerships separately, expressed as a fraction of factor-price national income from 1980 to 2020. The gap is positive and growing for partnerships because of the rise of partnerships as a type of business entity and the introduction of accelerated depreciation rules for investment. The gap is slightly negative for sole proprietorships because of limitations to the tax deductibility of depreciation on residential real estate used by sole proprietorships (e.g., home offices). Sources: see Appendix A.

# Figure 2: Allocation of Excess Partnership Depreciation

(a) Share of Excess Depreciation Going to Top 1% (2019)

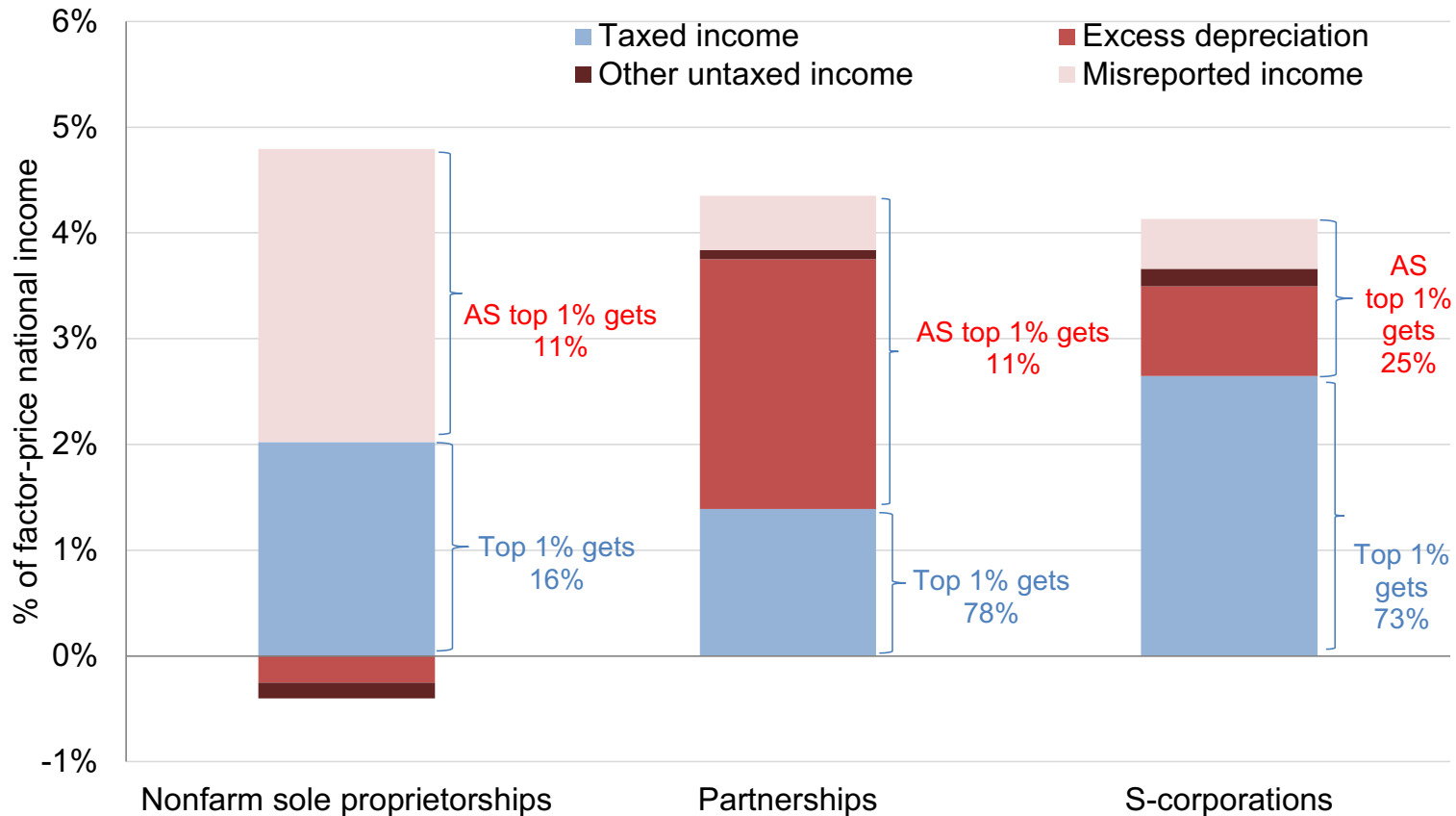


(b) Excess Depreciation Going to Top 1% (% of National Income)



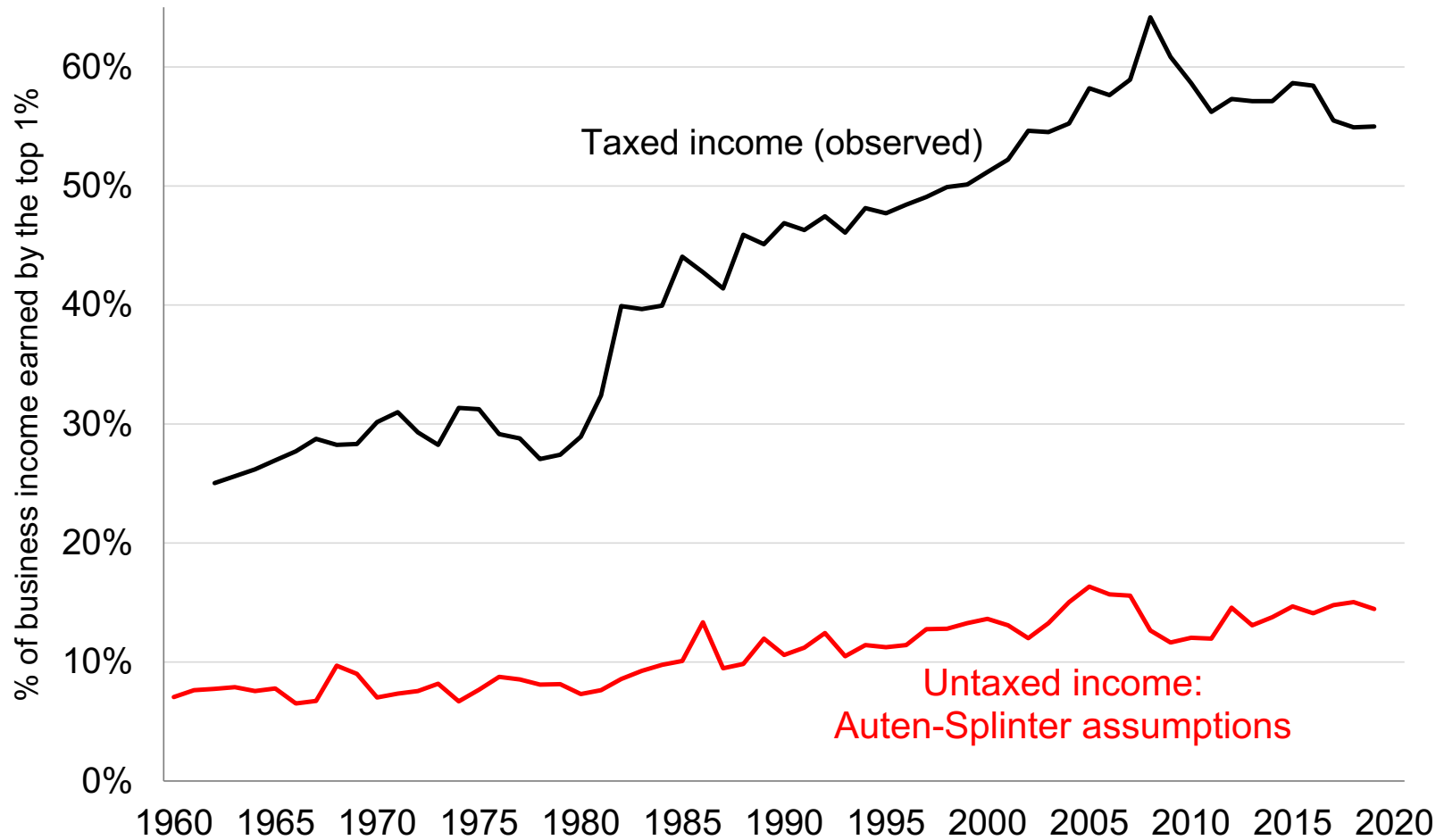
Notes: The top panel shows the fraction of excess partnership depreciation going to the top 1% in AS—who allocate it to sole proprietorship owners—vs. different scenarios that allocate it to partnership owners. Partnership scenarios differ regarding the treatment of fiscal losses (fiscal losses are real losses; fiscal losses are only paper losses as in PSZ benchmark; fiscal losses are actually real profits) and fraction of excess depreciation going to non-individual partners (using the PSZ benchmark for losses). See text for complete details. The bottom panel shows the excess depreciation going to the top 1% expressed as a fraction of factor-price national income overtime for the same scenarios. Source: AS (see Appendix D.2) and authors’ computations (see text).

**Figure 3: Business Income: Taxed vs. Untaxed (2019)**



Notes: The bars on the figure decomposes the macro-economic income of sole proprietorships, partnerships, and S-corporations in 2019. Taxed income is the net amount reported in individual income tax returns. Excess fiscal depreciation is computed in Appendix A for sole proprietorships and partnerships, and in BEA (2024) for S-corporations. Misreported income and other untaxed income are computed following NIPA methodology (BEA 2023). Total NIPA misreported nonfarm proprietors' income is broken down into sole proprietorships and partnerships to match the misreporting rate of 57% for nonfarm sole proprietorships in 2014–16 reported in the IRS tax gap study for these years (IRS, 2022). Other untaxed income includes, for sole proprietorships: non-deductible meals and entertainment and a small amount of misclassified wages; for partnerships: the residual amount of other untaxed income included in NIPA nonfarm proprietors' income; for S-corporations: other untaxed income in BEA (2024). The figure also reports on the side of the bars the share of each income component going to the top 1%. For taxed income, it is computed using publicly-available individual income tax data, ranking individuals (with income equally split between married spouses) by fiscal income excluding capital gains. The share of untaxed income going to the top 1% is computed using the AS publicly available Excel files, as detailed in Appendix Section D.2.

**Figure 4: Top 1% Share of Taxed vs. Untaxed Business Income**

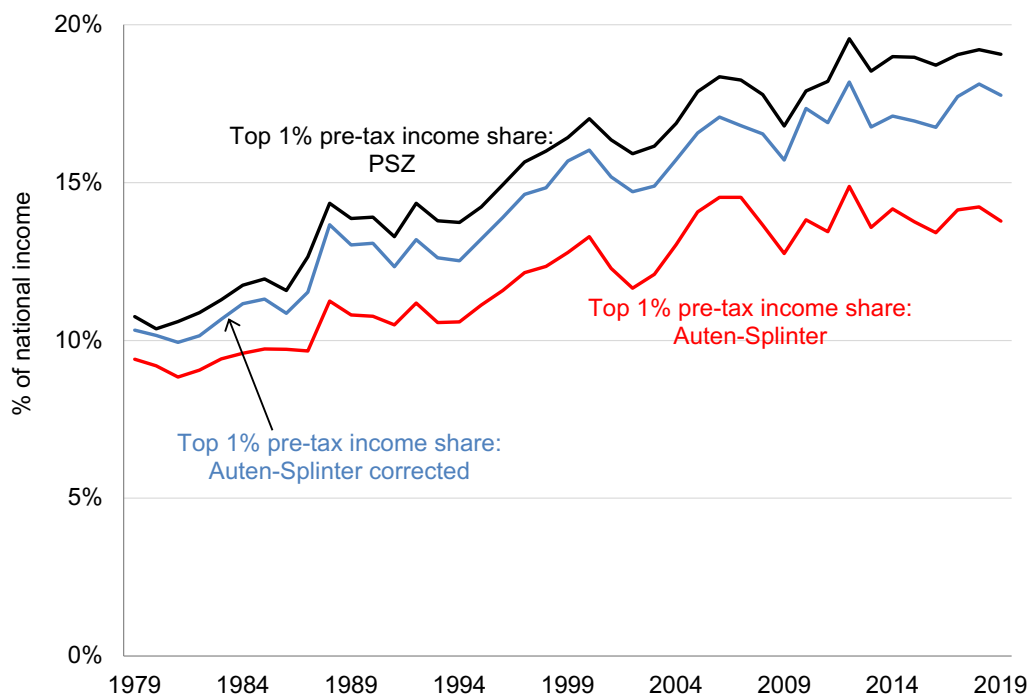


Notes: The black line shows the share of taxable sole proprietorships, partnership, and S-corporation net income earned by the top 1% individuals with the highest fiscal income, where fiscal income is taxable market income excluding capital gains, and the unit of observation is the adult individual with income equally split between married spouses. The computation is done using publicly-available individual income tax data. The red line shows the share of untaxed sole proprietorships, partnership, and S-corporation income earned by the top 1% in AS, computed using the AS publicly available Excel files, as detailed in Appendix Section D.2.

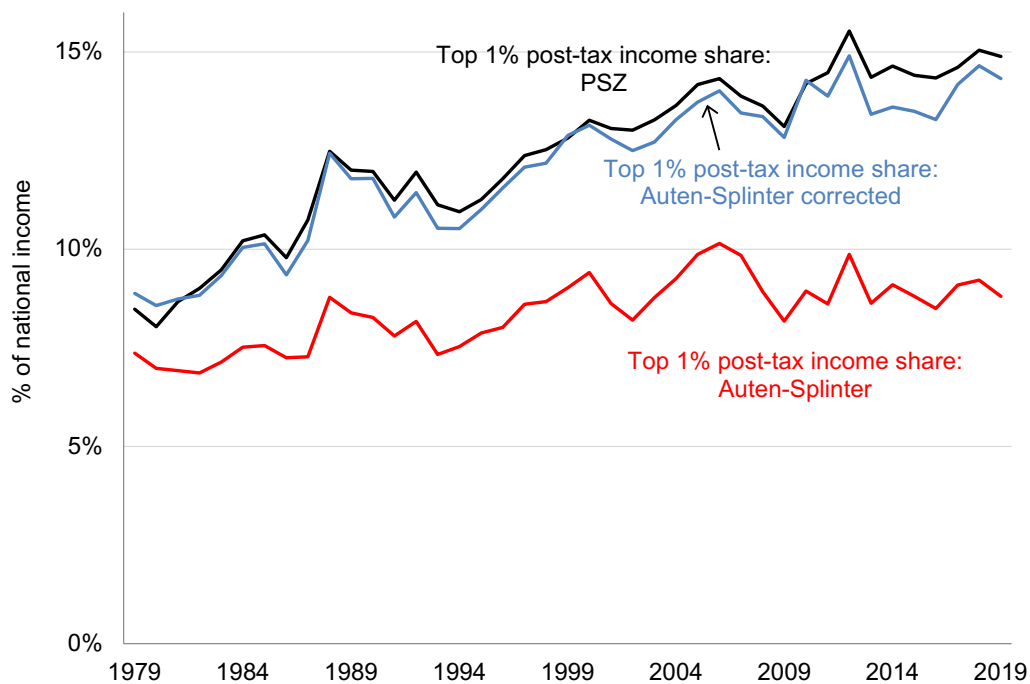


# Figure 5: Top 1% Income Share: AS vs. Corrected AS

## (a) Pre-Tax Income



## (b) Post-Tax Income



Notes: The red line shows the top 1% income share in AS. The black line shows the top 1% share in Piketty, Saez and Zucman (2018, updated). The blue line shows the top 1% income share in AS after implementing the corrections listed in Table 2 each year from 1979 to 2019. See notes to Table 2.

## Table 1: Excess Fiscal Depreciation for Partnerships vs. Sole Proprietorships

	Source	2019 value (\$B)
<b>Panel A: Non-farm sole proprietorships and partnerships</b>		
Depreciation and amortization, IRS ("fiscal depreciation")	BEA NIPA Table 7.13 line 14	641.7
Minus: Consumption of fixed capital, NIPAs ("economic depreciation")	BEA NIPA Table 7.13 line 25	277.9
Equal: Excess fiscal depreciation		363.8
<b>Panel B: Partnerships</b>		
Fiscal depreciation	SOI line items totals of 1065 tax returns	589.2
Of which: Depreciation claimed by partnerships	SOI total of line 22 of form 4562	504.8
Of which: Amortization claimed by partnerships	SOI total of line 44 of form 4562	84.4
Minus: Economic depreciation	BEA Fixed Assets Table 6.4 line 7	178.1
Equal: Excess fiscal depreciation		411.1
<b>Panel C: Non-farm sole proprietorships</b>		
Fiscal depreciation	SOI line item totals of 1040 tax returns	56.6
Of which: Depreciation claimed by non-farm sole proprietorships	SOI total of line 13 of Schedule C	52.0
Of which: Depreciation for business use of home	SOI total of line 42 of form 8829	1.2
Of which: Amortization claimed by non-farm sole proprietorships	SOI total of line 44 of form 4562	3.4
Minus: Economic depreciation	BEA Fixed Assets Table 6.4 line 6, minus BEA NIPA Table 7.5 line 9	100.2
Equal: Excess fiscal depreciation		-43.6
<b>Panel D: Residual (Panel A minus Panels B+C)</b>		
Fiscal depreciation		-4.1
Minus: economic depreciation		-0.4
Equal: excess fiscal depreciation		-3.7

Notes: This table decomposes the fiscal and economic depreciation of non-farm non-corporate businesses into non-farm sole proprietorships vs. partnerships. Panel A reports estimates for non-farm sole proprietorships and partnerships combined, as published by the Bureau of Economic Analysis in NIPA Table 7.13. Panels B and C uses publicly available SOI totals for specific line items in partnership and individual tax returns to compute fiscal depreciation separately for non-farm sole proprietorships vs. partnerships. Panel D reports the residual between Panel A and Panels B+C, which is due to the small amount of depreciation attributable to farm partnerships (which cannot be separately identified with public data). Sources and additional discussions: see Appendix A.

## Table 2: Sources of Bias in AS’s Methodology: Summary

Type of untaxed income	AS methodology	Nature of bias in AS methodology	Piketty, Saez and Zucman (2018, updated) methodology	Difference in top 1% income share increase 1979-2019
Excess depreciation of partnerships	Allocated to owners of sole proprietorships	Empirical issue	Allocated to owners of partnerships	1.2
Tax-exempt income of S-corporations	Allocated to owners of C-corporations	Empirical issue	Allocated to owners of S-corporations	0.3
Undetected tax evasion	Assumed to reduce inequality and its rise	Questionable assumption	Allocated proportionally to reported income, component by component	0.4
Tax-exempt capital income generated by funded pension plans	Allocated proportionally to funded <i>and unfunded</i> pension wealth	Conceptual issue	Allocated proportionally to funded pension wealth	0.3
Corporate retained earnings for directly-held equities	Allocated without using wealth data	Questionable assumption	Allocated proportionally to directly-held equity wealth	0.4
Consumption taxes: moving from factor-price to market-price national income	Assumed to reduce inequality and its rise	Conceptual issue	Distributionally neutral	0.5
<b>Pre-tax income total</b>				<b>3.1</b>
Memo: difference PSZ vs. AS				3.9
Collective consumption expenditures	Assumed to reduce inequality and its rise	Questionable assumption	Distributionally neutral	0.8
Government deficit	Assumed to reduce inequality and its rise	Conceptual issue	Distributionally neutral	0.2
<b>Post-tax income total</b>				<b>4.0</b>
Memo: difference PSZ vs. AS				5.0

Notes: The difference in the top 1% income share rise over the 1979–2019 period is computed in percentage points as follows. For each category of untaxed income  $S$  listed in the first column, we compute the share  $s_s^{AS}$  going to the top 1% using the AS publicly available Excel file, following the theory described in Appendix Section D.1. That is, when adding  $S$ , top 1% incomes (after re-ranking) increase by  $s_s \cdot |S|$  where  $|S|$  is the macroeconomic aggregate of  $S$ . We then compute  $s_s^{PSZ}$  using the PSZ methodology described in col. 4, and apply the  $s_s^{PSZ} - s_s^{AS}$  difference to the amount of untaxed income  $S$ ; cf. online Excel files for complete details. The differences listed in this table explain most of the discrepancies between AS and Piketty, Saez and Zucman (2018, updated), and hence the many other differences in methodology which are not covered in this table net out to a small residual over the 1979-2019 period (as well as each year, see Figure 5).

## Appendix (for Online Publication)

### A Economic Depreciation for Partnerships vs. Sole Proprietorships

#### A.1 BEA Methodology

To convert the fiscal depreciation reported by proprietorships and partnerships into economic depreciation, BEA uses a holistic approach, where all fiscal depreciation is discarded and replaced by economic depreciation. This is done in three steps.

**Step 1. IRS depreciation total.** As indicated in NIPA Table 7.13, BEA starts with total depreciation and amortization in tax data (NIPA Table 7.13 line 14), which can be reconstructed using publicly available SOI line item totals<sup>27</sup> as the sum of:

- Depreciation of partnerships: Line 22 of form 4562 filed by partnerships (\$505 billion in 2019)
- Amortization of partnerships: Line 44 of form 4562 filed by partnerships (\$84 billion in 2019)
- Depreciation of non-farm sole proprietorships: Line 13 of Schedule C filed by individuals (\$52 billion in 2019)
- Depreciation for business use of home: Line 42 of form 8829 filed by individuals (\$1.2 billion in 2019)
- Amortization of sole proprietorships: Line 44 of form 4562 filed by individuals (\$3.4 billion in 2019)

The total fiscal depreciation reported in NIPA Table 7.13 line 14 (\$642 billion in 2020) differs very slightly from the sum of the five items listed above (\$646 billion), with an absolute value of the difference of less than 1%, because BEA removes an estimate of partnership farm depreciation which cannot be computed with publicly available data.

**Step 2. Adjustments to IRS depreciation.** BEA then applies a number of adjustments to reported fiscal depreciation to capture a comprehensive tax-based measure of depreciation, which is called “capital consumption allowances, NIPAs” (reported in NIPA Table 7.13 line 23, \$654 billion in 2019). The net effect of these adjustments (i.e., the difference between NIPA 7.13 line 23 and line 14) is small, \$12 billion in 2019.

---

<sup>27</sup>Available at <https://www.irs.gov/pub/irs-prior/p5035--2021.pdf> for partnerships and <https://www.irs.gov/pub/irs-prior/p4801--2021.pdf> for individuals

**Step 3. Capital consumption adjustment.** Last the all-important “Capital consumption adjustment” is implemented, which replaces the comprehensive tax-based measure of depreciation by the economic measure.

To compute the economic measure of depreciation, called “consumption of fixed capital” in the national accounts, BEA starts from its estimates of businesses’ capital stock by type of business and type of asset (equipment, structure, etc.), as reported in its fixed assets statistics. It then applies economic depreciation schedules by asset type. This methodology results in an estimated consumption of fixed capital of \$278 billion for non-farm sole proprietorships and partnerships combined in 2019 (as reported in NIPA Table 7.5 line 10).

The Capital consumption adjustment (reported in NIPA Table 7.13 line 24) is computed as the difference between the comprehensive tax-based measure of depreciation (\$642 billion from step 1 + \$12 billion from step 2) and the consumption of fixed capital (\$278 billion). It is equal to \$376 billion in 2019.

Excess fiscal depreciation is the sum of the adjustments to IRS depreciation (step 2) and the Capital consumption adjustment (step 3). It is also equal to the difference between fiscal depreciation and consumption of fixed capital. Excess fiscal depreciation is equal to \$364 billion for nonfarm sole proprietorships and partnerships combined in 2019, versus \$0 billion in 1980.

## A.2 Breaking Down the BEA Aggregate

To decompose this BEA aggregate into partnerships vs. sole proprietorships separately, we follow the BEA methodology using publicly available SOI tabulated data for each type of business separately.

**Partnerships.** The excess fiscal depreciation of partnerships is computed as:

Fiscal depreciation of partnerships (SOI total of line 22 of form 4562 filed by partnerships)

*Plus* Fiscal amortization of partnerships (SOI total of line 44 of form 4562 filed by partnerships)

*Minus* Consumption of fixed capital of partnerships (BEA Fixed Assets Table 6.4 line 7).

**Nonfarm sole proprietorships.** The excess fiscal depreciation of nonfarm sole proprietorships is computed as:

Fiscal depreciation of non-farm sole proprietorships (SOI total of line 13 of Schedule C filed by individuals)

*Plus* Fiscal depreciation for business use of home (SOI total of line 42 of form 8829 filed by individuals)

*Plus* Fiscal amortization of sole proprietorships (SOI total of line 44 of form 4562 filed by individuals)

*Minus* Consumption of fixed capital of nonfarm sole proprietorships (BEA Fixed Assets Table 6.4 line 6, minus NIPA Table 7.5 line 9).<sup>28</sup>

---

<sup>28</sup>Fixed Assets Table 6.5 line 6 is the CFC of sole proprietorships, and NIPA Table 7.5 line 9 is the CFC of noncorporate farms. Thus this computation treats all noncorporate farms as sole proprietorships (while some can file as partnerships). Alternatively, one could estimate the excess fiscal depreciation of all (farm plus nonfarm) sole proprietorships by adding the Fiscal depreciation of farm sole proprietorships (Line 14 of Schedule F filed

**Reconciliation with BEA aggregate.** The excess fiscal depreciation of partnerships (\$411 billion in 2019) and nonfarm sole proprietorships (-\$44 billion in 2019) adds up each year to the official BEA excess fiscal depreciation of nonfarm sole proprietorships and partnerships combined (\$364 billion in 2019), modulo a residual of about 1%.<sup>29</sup>

## B Sources of Partnership Depreciation

### B.1 Partnership Depreciation in Tax Data

In 2019, according to SOI tabulations of partnership tax returns, partnerships deducted \$589.2 billion in depreciation and amortization, which can be decomposed as follows:

- Expensed investment: \$254.8 billion (Form 4562 line 14). This primarily includes tangible property with a recovery period of less than 20 years (e.g., equipment, airplanes, land improvement, pipelines, machines, etc.), which could be fully expensed in 2019.
- Rental real estate depreciation: \$173.8 billion (Form 8825 line 14). Out of this roughly 40% was for residential real estate and half for non-residential real estate.<sup>30</sup>
- Depreciation of other assets: \$76.2 billion (Form 4562 line 22 minus Form 4562 line 14 minus Form 8825 line 14)
- Amortization: \$84.4 billion (Form 4562 line 44).

According to the BEA Fixed Accounts statistics, partnerships had \$178.1 billion in economic depreciation and amortization, so there was \$411.1 billion in excess fiscal depreciation. The main sources of excess depreciation were expensed investment (accounting for about 50%–55% of total excess depreciation), residential real estate (about 10%–15%),<sup>31</sup> intangibles (about 10%), and other gaps between economic and fiscal depreciation, such as faster depreciation patterns in the tax code (about 20%–30%).<sup>32</sup>

---

by individuals) and subtracting the CFC of all sole proprietorships (Fixed Assets Table 6.5 Line 6) instead of only the estimated CFC of nonfarm sole proprietorships. The results are nearly identical (e.g., -\$42 billion in excess fiscal depreciation for all sole proprietorships in 2019 vs. -\$44 for nonfarm sole proprietorships).

<sup>29</sup>This residual (of \$3.7 billion in 2019) is due to the excess fiscal depreciation of farm partnerships (and other potential residual discrepancies that cannot be readily addressed with public data).

<sup>30</sup>35% of real estate placed in service by partnerships in 2019 was residential (\$93.3 billion, Form 4562 line 19h) and 65% was non-residential (\$173.6 billion, Form 4562 line 19i). In earlier years a slightly higher fraction (around 40%) was residential.

<sup>31</sup>Office buildings are depreciated over 39 years in the tax code and 34 to 40 years in the national accounts (BEA, 2003) and thus do not appear to be a major source of excess depreciation, in contrast to rental residential real estate which are depreciated faster in the tax code, 27.5 years vs. 65 to 80 years in the national accounts (see case study below).

<sup>32</sup>Specifically, assuming that 85% of expensed investment is in excess of normal economic depreciation, then expensing accounts for  $0.85 \times \$255B / \$411B = 53\%$  of total excess depreciation. Assuming that 40% of fiscal real-estate depreciation is for residential real estate and 65% of that is in excess of economic depreciation, then residential real estate accounts for  $\$174B \times 0.4 \times 0.65 / \$411B = 11\%$  of total excess depreciation. Economic amortization by partnership is estimated by BEA to be \$57.1B (BEA Fixed Assets 4.4 line 64), hence excess fiscal amortization is \$27.3 billion, i.e., 7% of total excess fiscal depreciation.

## B.2 Case Studies

**Pipeline transportation.** According to SOI tabulations of partnership tax returns, pipeline transportation is the industry with the highest amount of (non-real-estate related) depreciation.<sup>33</sup> Pipelines can be depreciated over 15 years in the tax code, while they have a service life of 40 years in the national accounts (BEA, 2003), thus generating excess fiscal depreciation. Full expensing provisions magnify this gap between economic income and taxable income, as new pipelines can be fully depreciated in just one year.

A number of pipeline partnerships are publicly traded, and known to generate high-cash flows while simultaneously allowing their partners to claim ordinary business losses.<sup>34</sup> Our methodology that allocates excess depreciation proportionally first to ordinary business losses (and then to ordinary business profits if some untaxed income remains to be allocated) naturally captures the distribution of such excess fiscal depreciation.

**Sports club owners.** In 2014, Steve Ballmer bought the Los Angeles Clippers for \$2 billion. Since the American Jobs Creation Act of 2004, sports teams are allowed to amortize nearly all their intangible assets over 15 years, including TV and radio contracts, player contracts, goodwill (the Clippers brand), etc. This amortization is not recognized in the national accounts, thus contributing to excess fiscal depreciation. According to public information, Ballmer reported a total of \$700 million in losses from his amortization of the Clippers over the 2014–2018 period, allowing him to offset taxes on dividend income and capital gains.<sup>35</sup> Our methodology that allocates excess depreciation proportionally first to ordinary business losses captures the distribution of such excess fiscal depreciation.

**Real estate partnerships.** Donald Bren is the owner of Irvine Company, a firm that owns 65,000 housing units spread in Orange County, San Diego, Los Angeles, and Silicon Valley.<sup>36</sup> In 2019 *Forbes* estimated his net worth at \$16.4 billion. We do not know whether Irvine Company files as a partnership, but partnerships are known to be the preferred form of business organization in the real estate sector, because they allow their owners to take full depreciation deductions even if the properties are debt-financed, in contrast to corporations.<sup>37</sup>

---

<sup>33</sup>In 2019, “transportation and warehousing” accounted for 16.6% of all (non-rental-real estate) depreciation, cf. Appendix Figure A1. In 2014, SOI tabulations are broken down at a more granular level and show that more than 80% of “transportation and warehousing” depreciation comes from pipeline transportation.

<sup>34</sup>See, e.g., <https://www.investopedia.com/articles/personal-finance/062515/mlps-how-they-are-taxed.asp> for a practitioners’ view. When units are sold the depreciation is “recaptured” and subject to taxation, but this tax itself can be avoided, e.g., by bequeathing assets, generating a step up in basis.

<sup>35</sup>See <https://www.propublica.org/article/the-billionaire-playbook-how-sports-owners-use-their-teams-to-> In principle passive losses can only be offset against passive gains, but losses can be classified as non-passive if the owner is involved in the management of the business.

<sup>36</sup><https://www.irvinecompany.com/portfolio/>.

<sup>37</sup>Consider two partners A and B, who contribute \$10 each. The partnership borrows \$80. The debt is allocated \$40 each to A and B, thus A and B each have \$50 of outside basis in the partnership. If the partnership buys depreciable property for \$100, and depreciates it all, each partner can take \$50 of depreciation deductions. In an S-corporation, each owner would be allowed to take only \$10 of depreciation deduction, corresponding to their actual capital contribution. The remaining \$40 in loss would be sus-

Residential rental properties can be depreciated over 27.5 years in the tax code, while they have a service life of 65 years (for 5-or-more units structures) to 80 years (for 1-4 units structures) in the national accounts (BEA, 2003). When a property is fully depreciated after 27.5 years and changes hand, its basis is stepped up, allowing its new owner to depreciate it again for tax purposes and thus generating excess fiscal depreciation economy-wide.<sup>38</sup>

Ideally this excess depreciation would be allocated by matching real-estate partnerships to their owners, a task difficult in practice due to the widespread use of holding chains in the real estate sector. As detailed above, available evidence suggests that excess real-estate depreciation accounts for only about 10%–15% of total excess partnership depreciation.

## C Treatment of Business Losses

### C.1 Relaxing the PSZ Assumptions: Sensitivity Analysis

PSZ assume that a \$1 net loss in passthrough business profit reported in individual tax returns corresponds to \$0 real income. In other words, fiscal business losses are not real business losses but rather paper losses due to generous tax deductions (e.g., for depreciation) or tax evasion. Even discarding fiscal losses, positive fiscal profits are typically substantially smaller than total (net) profits from the NIPAs. PSZ assign this discrepancy proportionally to positive fiscal profits.

It is easy, however, to modify the PSZ treatment of losses and to explore the impact of different assumptions on income concentration. Let us assume that \$1 of net loss reflects \$ $a$  of real losses (and \$ $1 - a$  of paper losses). In PSZ,  $a$  is assumed to be 0, i.e., all fiscal losses are paper losses, not real losses.

If  $a = 1$ , all fiscal losses are actually real losses, in which case the discrepancy between fiscal income and NIPA income is larger and requires multiplying positive profits by a larger number to match NIPA profits.<sup>39</sup> In this case, income concentration would be even higher than in PSZ (see below).

One can also assume that a fiscal loss corresponds to a real positive profit. For example with  $a = -1$ , a \$1 loss represents \$1 in true profit (that is, a loss is not only a paper loss but also reflects actual real profits). In this case, income concentration would decrease very slightly relative to PSZ. The effect is muted, because treating losses as disguised profits reduces the multiplier that needs to be applied to match NIPA profits (which lowers concentration), but it also makes large losses become large positives (which adds to concentration).<sup>40</sup>

The bottom line is that the PSZ treatment of ignoring losses can be seen as a middle-ground

---

suspended until A and B have more basis to take the deductions (e.g., by contributing more capital), cf. loss suspension rules for S-corporations: <https://www.irs.gov/businesses/small-businesses-self-employed/s-corporation-stock-and-debt-basis>. We thank Michael Love for these explanations.

<sup>38</sup>In certain transactions, this basis shifting can take place within related parties, thus allowing the same owner to depreciate the same property multiple times over. See <https://home.treasury.gov/news/press-releases/jy2408>

<sup>39</sup>Only positive profits must be adjusted, since by definition with  $a = 1$  all fiscal losses are real (they are not due to tax evasion or excess depreciation).

<sup>40</sup>Intermediate cases such as  $a = -.5$  or  $a = .5$  can also be considered and lead to smaller adjustments.



scenario, if anything conservative. Taking losses at face value would produce more concentration. Taking losses as disguised gains would produce only slightly less concentration. The common intuition that disregarding fiscal losses must bias top income shares upwards is generally not correct.

This can be illustrated simply using 2019 individual income tax data. In Adjusted Gross Income (fiscal income reported in individual income tax returns), S-corporation profits are \$530.4B (positive profits) minus \$69.5B (losses) and partnership profits are \$348.8B (positive profits) minus \$132.5B (losses).<sup>41</sup> In the national accounts, S-corporation net profits are \$716B and partnership net profits are \$852B.<sup>42</sup>

The top 1% of tax filers have 20.43% of total AGI. We can recompute the top 1% income share by making various assumptions on  $a$ , and allocating the remaining gap between corrected fiscal profits and national account profits proportionally to corrected fiscal profits as in PSZ.

- If  $a = 1$  (fiscal losses are real losses), the top 1% income share grows to 24.10%.
- If  $a = .5$  (fiscal losses are 50% real): the top 1% income share grows to 23.80%
- If  $a = 0$  (fiscal losses are all paper losses, PSZ benchmark): the top 1% income share grows to 23.58%.
- If  $a = -.5$  (fiscal losses are 50% profit): the top 1% income share grows to 23.45%
- If  $a = -1$  (fiscal losses are in reality disguised profit): the top 1% income share grows to 23.38%.

The bottom line is that the treatment of losses has only a second-order effect relative to the first-order effect of blowing up fiscal profits to match NIPA profits, which is necessary to account for the large amount of excess fiscal depreciation, other legally exempt income, and tax evasion.

## C.2 What Fraction of Partnership Profits and Losses Can be Seen in Individual Income Tax Returns?

As noted in the main text, about 70% of both total partnership profit and total partnership losses are directly observable in individual income tax returns. We detail this computation here for the year 2019.

According to publicly available SOI tabulations of partnership tax returns (form 1065), partnerships overall made \$557 billion in ordinary business profit. Total profits (and total losses) made by partnerships can be computed using public SOI tabulated data because partnerships must separately report profits and losses flowing from other partnerships, making it possible to avoid double counting. Specifically,

---

<sup>41</sup>These numbers are obtained when aggregating profits and losses within each tax return for the partnerships category and the S-corporation category respectively.

<sup>42</sup>These numbers are taken from the PSZ breakdowns of NIPA profits into S vs. C corporation profits and NIPA proprietors' income into partnership vs. sole proprietorship income used for the 2022 update of PSZ.

- Partnerships in total reported \$732.7 billion in positive ordinary income
- Partnerships in total received \$175.6 billion in “Ordinary income from other partnerships and fiduciaries”
- Hence they made  $\$732.7 - \$175.6 = \$557.1$  billion in positive profit, net of double counting.<sup>43</sup>

According to SOI line items totals for Form 1040, individuals reported \$407 billion in positive partnership profit, i.e., 73% of the \$557B in total positive partnership profit.

A similarly high fraction of total partnership losses went to individuals after accounting for loss limitation rules. Specifically, partnerships in total made \$306 billion in losses (net of double counting). Individuals had \$185 billion in allowed partnership losses and more than \$25 billion in disallowed losses due to passive loss limitation rules, hence at least 69% of partnership losses flew to individuals.<sup>44</sup>

## D Allocating Untaxed Income

### D.1 Theory

Suppose that  $y$  is fiscal income and  $z = y + s$  is a broader definition of income, with  $s$  being income not included in fiscal income ( $s$  could for instance be unreported income, or untaxed income such as excess depreciation in fiscal profits). How does adding  $s$  affect the top 1% income share?

Let  $Z, Y, S$  be the macroeconomic aggregates of  $z, y, s$  with of course  $Z = Y + S > Y$ . Let  $sh(y)$  be the share of  $y$  going to the top 1%  $y$ -income earners and  $sh(z)$  be the share of  $z$  going to the top 1%  $z$ -income earners. Let  $s_y$  be the share of  $s$  income going to the top 1%  $y$ -income earners, and  $s_z$  be the share of  $s$  income going to the top 1%  $z$ -income earners. We have the following inequalities:

$$sh(y) \cdot (1 - S/Z) + s_y \cdot S/Z \leq sh(z) \leq sh(y) \cdot (1 - S/Z) + s_z \cdot S/Z$$

The first inequality is because the top 1% in  $z$  must have at least the income of the top 1% in  $y$  plus the  $s$  income going to the top 1% in  $y$ , so that  $sh(z) \cdot Z$  is at least  $sh(y) \cdot Y + s_y \cdot S$ . The second inequality is because the top 1% in  $z$  has less  $y$  income than the top 1% in  $y$  and hence their total income  $sh(z) \cdot Z$  cannot exceed  $sh(y) \cdot Y$  plus their  $s$  income  $s_z \cdot S$ . In both cases, there is equality if and only if the top 1% in  $y$  and the top 1% in  $z$  are the same group

---

<sup>43</sup>Profit received from fiduciaries is neglected.

<sup>44</sup>Losses and deductions made by a partnership that can be claimed by individual partners are limited by basis rules (losses cannot be deducted if a partner has no basis), at-risk rules (partners cannot deduct losses in excess of the amounts of money they have “at risk” in the business), and passive loss rules (passive losses can only be offset against passive gains). Disallowed passive losses can be estimated as follows: \$70 billion in passive losses from non-rental activities were reported on line 3b of Form 8582, but only \$45 billion in passive losses were allowed on Schedule E, hence about \$25 billion in losses were disallowed. Disallowed losses from basis and at-risk rules cannot be identified with public data.

of people (also equivalent to  $s_z = s_y$ ). It also follows from the inequalities that  $s_z \geq s_y$ : top  $z$ -earners must have more  $s$ -income than top  $y$ -earners.

There is often a debate on whether  $s_z$  or  $s_y$  is the most meaningful statistic for understanding how  $s$  affects the concentration of income. It turns out that neither is. The relevant statistics is  $s_s$  which we can define as:

$$sh(z) = sh(y) \cdot (1 - S/Z) + s_s \cdot S/Z$$

In words, when moving from  $y$ -income to the broader  $z$ -income measure, top 1% incomes increase by  $s_s \cdot S$ , so  $s_s$  is effectively the share of the extra income  $S$  that goes to the top 1%. Importantly, it is not the same top 1% people (if there is re-ranking when moving from  $y$  to  $z$ ) but it is the relevant concept for our purposes. Note that  $s$  income increases concentration—i.e.  $sh(z) > sh(y)$ —if and only if  $s_s > sh(y)$ .<sup>45</sup> The parameter  $s_s$  is theoretically in between  $s_y$  and  $s_z$ , and empirically is often about midway so that  $(s_y + s_z)/2$  is often a good approximation to  $s_s$  effectively adjudicating half-way the debate on the merits of  $s_y$  vs.  $s_z$ .

## D.2 Recovering the Distribution of Untaxed Income in AS

Using this conceptual framework, we can use the AS online Excel files to clarify the assumptions made by AS about the distribution of untaxed income.<sup>46</sup> Using their Table C1, one can compute the fraction of untaxed income assigned to the top 1% (the share  $s_s$  discussed above) for the various components of untaxed income  $S$ .<sup>47</sup>

**Distribution of untaxed business income.** Untaxed business income is the sum of untaxed noncorporate business income (sole proprietorships plus partnerships) and untaxed S-corporation income.

The distribution of untaxed noncorporate business income is inferred from AS’s Table C1, cols. EB to ET. In a first step one can compute the total of what AS call “underreported income,” as col. EL minus col. EB (\$1,084 billion in 2019). This total includes both legally-exempt income (e.g., excess fiscal depreciation) and tax evasion (unreported taxable income). This total also includes unreported taxable wage income, which is lumped with unreported business income and distributed identically by AS. The top 1% gets \$124 billion of AS’s total “underreported income” in 2019 (col. EQ minus col. EG), i.e., a share  $s_s^{nc} = 11\%$  of this additional income goes to the top 1%, the number reported in Figure 3 for sole proprietorships and partnerships. By applying this share to the total amount of untaxed noncorporate business income (\$1,084 billion in 2019 minus \$159 billion in unreported wage income), we obtain that the top 1% is assigned \$106 billion (in 2019) of untaxed noncorporate business income by AS.

The distribution of untaxed S-corporation income is also inferred from AS’s Table C1. First, tax evasion on S-corporation income is included in AS’s “underreported income” aggregate.

<sup>45</sup>The  $s_s$  concept has been used to distribute growth of income to percentiles where  $y$  is income in some year and  $z = y + s$  is income in a later year (where  $s$  denotes income growth).

<sup>46</sup><https://davidsplinter.com/AutenSplinter-IncomeIneq.xlsx> downloaded on December 1st, 2023.

<sup>47</sup>When there are various income components, the order could in principle matter. Table C1 from AS is the only source we can use for such computations so we have to follow their specific ordering. Computations based on public micro-data suggests that re-ordering effects are small.

Thus a fraction  $s_s^{nc}$  (11% in 2019) of unreported S-corporation income (\$54 billion in total in AS in 2019) is assigned to the top 1%; this amount is already included in untaxed noncorporate business income above. Second, legally-exempt S-corporation income (\$205 billion in 2019 according to BEA data<sup>48</sup>) is distributed by AS as C-corporation retained earnings. The distribution of C-corporation retained earnings is computed using AS’s Table C1 cols. CN to CX, e.g., the top 1% gets a share  $s_s^{ret} = 28\%$  of total retained earnings (and hence of S-corporation legally-exempt income) in 2019. Overall, the top 1% is assigned 25% of untaxed S-corporation income in 2019 (as reported in Figure 3) and 14% of all untaxed business income (\$163 billion out of \$1,130 billion) in 2019, as reported in Figure 4.

**Distribution of untaxed capital income.** Untaxed capital income is the sum of corporate retained earnings, investment income earned on tax-exempt pension accounts, untaxed rents, tax-exempt interest, and income retained in trusts. We compute the distribution of untaxed capital income using AS’s Table C1 using the same method as done above for business income. For each component of untaxed capital we can compute the share  $s_s$  of untaxed income assigned by the AS to the top 1%. This share for all untaxed capital income components taken together is reported in Appendix Figure A2.<sup>49</sup>

## E Distribution of Untaxed Capital Income

Assumptions made by AS about the allocation of investment income earned in retirement accounts and corporate retained earnings lead to a likely bias in the rise of the top 1% income share.

### E.1 Pensions

First, AS under-estimate the share of pension income earned by the top 1% in 2019 and its rise since the 1980s by about 0.3 points, because investment income earned in retirement accounts is allocated by AS proportionally to funded and *unfunded* pension wealth.

Unfunded pensions are promises (mostly to state and local government employees) of future retirement benefits that are not backed by actual wealth. AS’s methodology allocates dividends, interest, a portion of corporate retained earnings, business property taxes, etc., to the beneficiaries of these unfunded pensions—even though these pensions have no assets attached to them. Concretely the public school teachers of Illinois get allocated a fraction of Alphabet’s, Amazon’s etc. profit even if the Illinois state pension system does not own any equity wealth.

AS note that their allocation of pension wealth allows them to match the DFA distribution of “pension entitlements.” Because the DFA (and the underlying Survey of Consumer Finances) is the only comprehensive source on the distribution of pension wealth in the United States,

---

<sup>48</sup>In 2019, S-corporations had \$720 billion in pre-tax income (BEA, 2024). Out of this, \$461 billion was taxed in individual income tax returns; AS make an allowance for \$54 billion in evasion, hence  $720 - 461 - 54 = \$205$  billion remain to be allocated.

<sup>49</sup>AS lump untaxed rents (other than imputed rents for owner-occupied housing) along with tax evasion and legally-exempt income, so we allocate these untaxed rents following the distribution of this aggregate.

matching this source is key. However, because “pension entitlements” in the DFA includes unfunded defined benefit pensions, it is not the correct aggregate to target.<sup>50</sup> After subtracting unfunded pensions, the top 1% by income owns 7.0% of funded pension wealth in the DFA in 1989 and 8.3% in 2019. In AS, the top 1% is assigned 7.0% of retirement account income in 1989 but only 6.3% in 2019. There is a trend bias in AS’s allocation of tax-exempt retirement income.

Saez and Zucman (2020) noted that Auten and Splinter (2019)’s tax-exempt retirement income distribution were not consistent with existing evidence. In response, AS improved their allocation by using administrative data on the distribution of individual retirement accounts. This, however, did not address the problem, as most pension and insurance assets are not in IRAs. The issue pointed here—that investment income is allocated to beneficiaries of unfunded pensions—had not been noted before.

## E.2 Retained Earnings

AS also underestimate the rise in the concentration of retained earnings, due to two issues.

First, for equities directly held, AS allocate three-quarters of retained earnings proportionally to dividends and only one quarter proportionally to realized capital gains. This assumption is logically inconsistent: owners of firms with relatively high retained earnings receive relatively little dividends—the opposite of what AS assume. Because the concentration of dividends has increased less than that of capital gains, the AS assumptions is likely to lead to biased trends.<sup>51</sup> AS do not justify their approach, which is at odds with the literature and does not appear to have a particular empirical basis. They simply note (p. 2197): “We favor using dividends received as the primary indicator of corporate ownership (Smith et al., 2023).” This, however, reflects a confusion between the distribution of corporate profits and the distribution of retained earnings.<sup>52</sup> This issue had not been noted before: in Auten and Splinter (2019), half of retained earnings were allocated proportionally to dividends.

Second, for equities held through pension funds, AS allocate a portion of retained earnings to beneficiaries of unfunded pension plans, which by definition have no assets (see above).

Altogether, these two issues reduce the AS rise in the top 1% pre-tax income by 0.4 points over the 1979–2019 period.

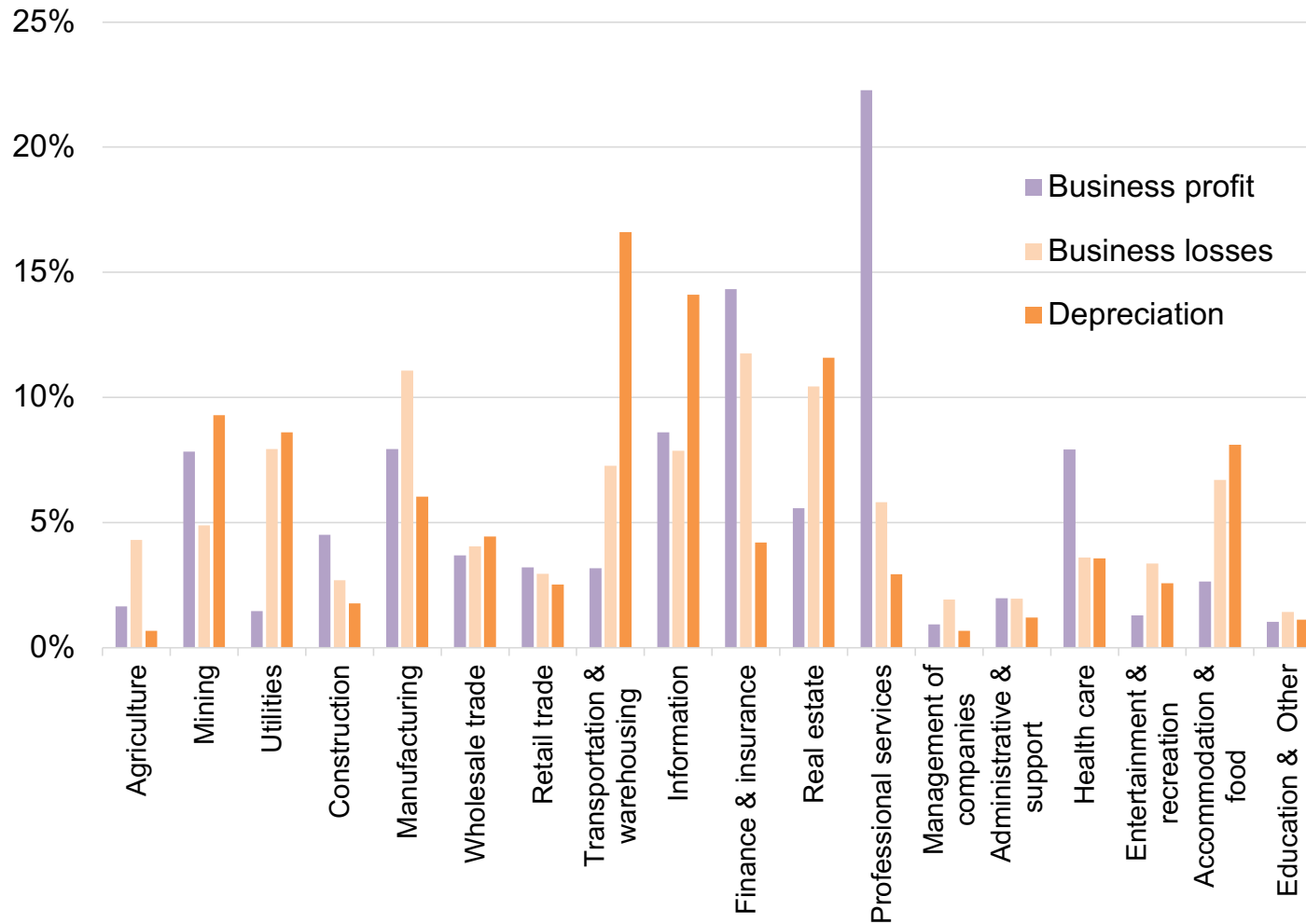
---

<sup>50</sup>Moreover, “pension entitlements” excludes individual retirement accounts, which are slightly more concentrated than funded DB plus DC pensions.

<sup>51</sup>The share of dividends earned by the top 1% tax units (ranked by fiscal income excluding capital gains) is about the same in 2019 and 1962 (45%–46%) but the share of capital gains is much higher in 2019 (46%) than in 1962 (33%), even though the rich had incentives in the 1960s to report income as capital gains to avoid the high dividend tax rates. The relatively low concentration of capital gains in the 1960s is consistent with other evidence pointing to a relatively low concentration of wealth at the time, such as the 1957 *Fortune* magazine rich list (see, e.g., Piketty et al., 2021, Figure 3) or the low levels of wealth inequality in the 1960s estimated using estate tax returns.

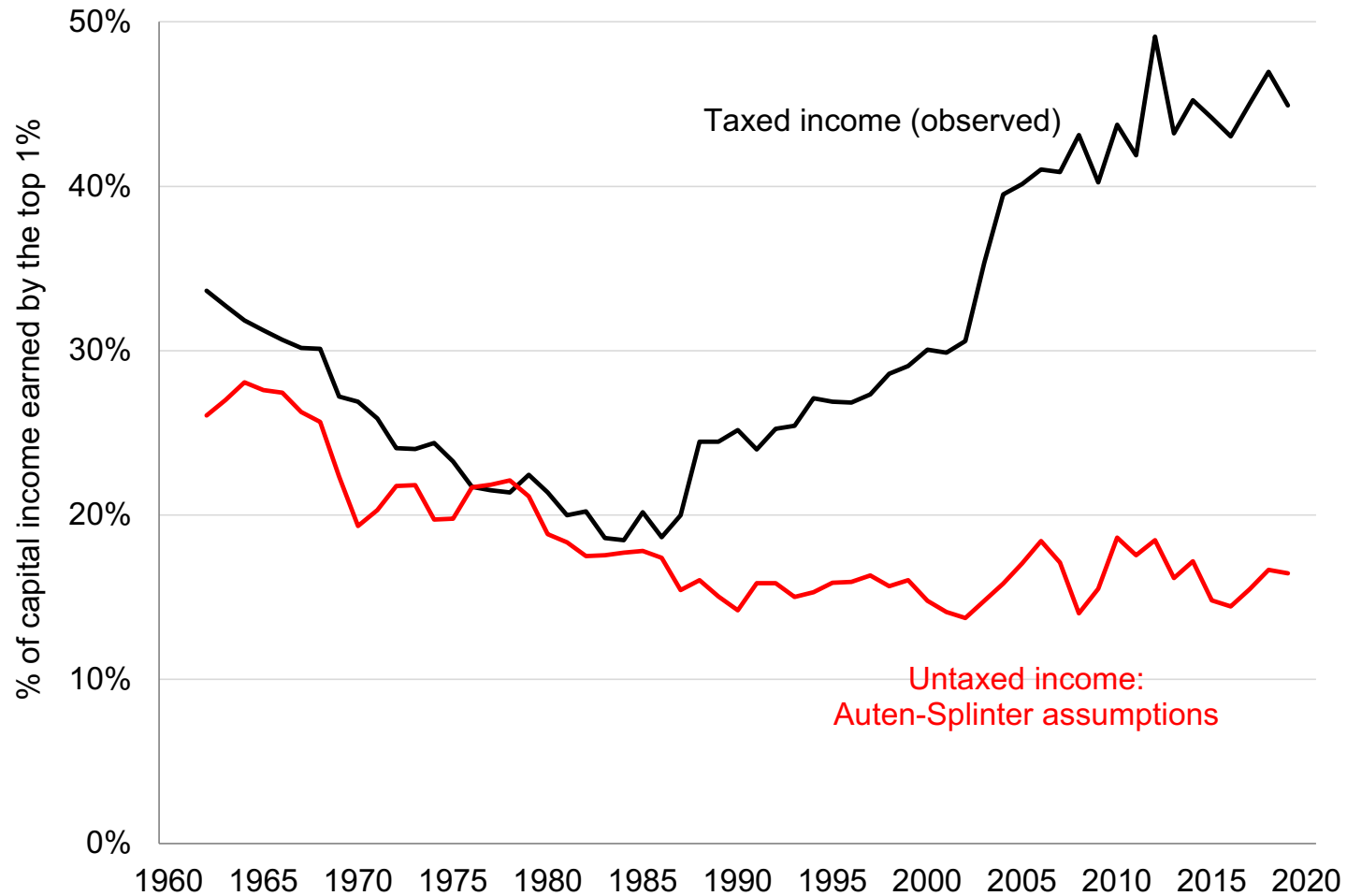
<sup>52</sup>Smith et al. (2023) allocate about 3/4 of directly-held equity wealth in recent years proportionally to dividends, which would call for allocating 3/4 of the corresponding corporate profits proportionally to dividends. But AS allocate much more than 3/4 of directly-held corporate profits to dividends (specifically, 3/4 of retained earnings plus 100% of distributed profits).

Figure A1: Share of Partnership Profit, Loss & Depreciation (% of All Industries)



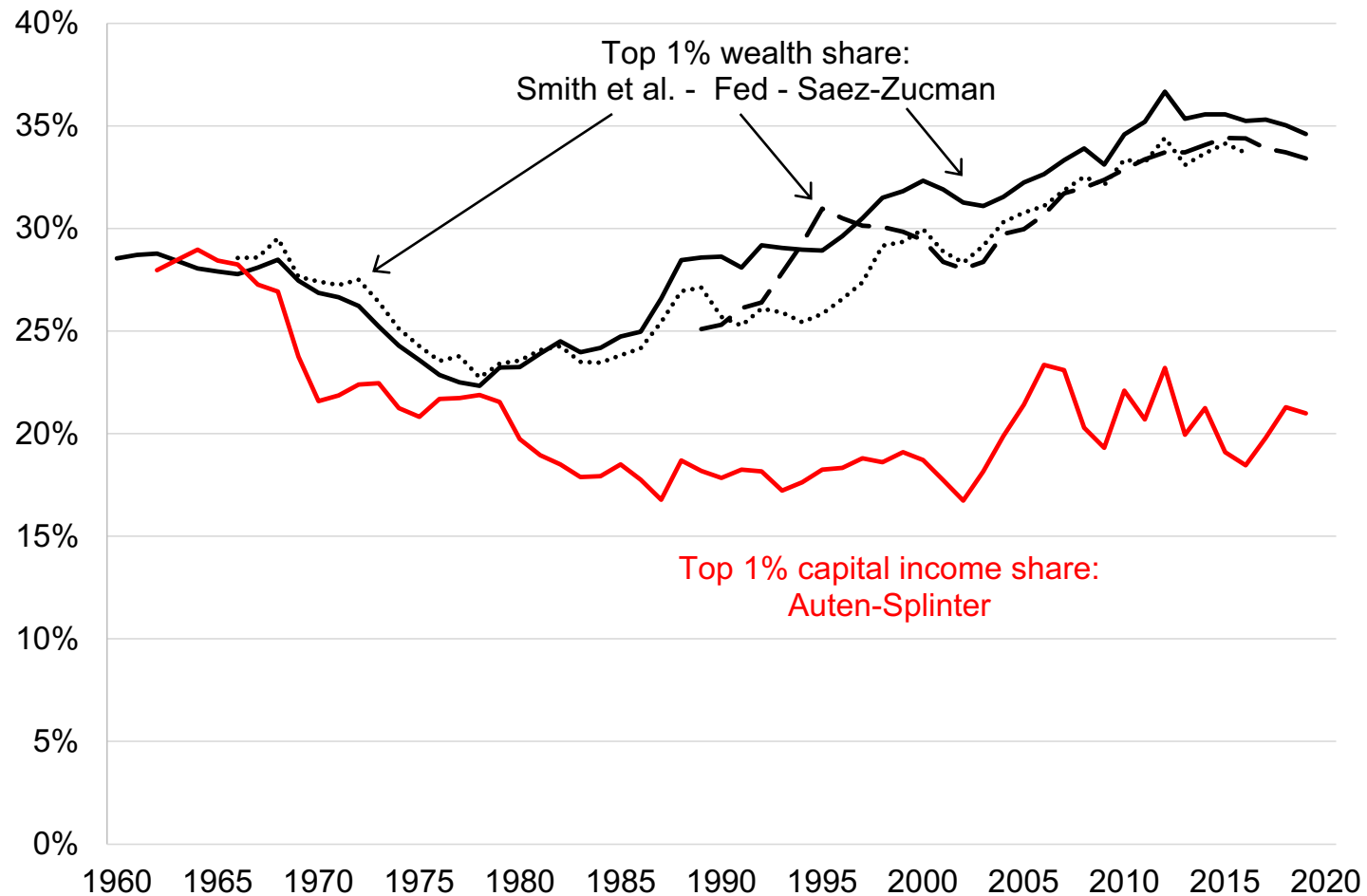
Notes: For each sector, partnership business profit is computed as “Ordinary business income” minus “Ordinary income from other partnerships and fiduciaries” (thus removing any double counting of profit due to holding chains), partnership business losses are computed as “Ordinary business loss” minus “Ordinary loss from other partnerships and fiduciaries” (thus removing any double counting of losses), and depreciation is as reported on the first page of IRS Form 1065. Sources: SOI partnership statistics.

**Figure A2: Top 1% Share of Taxed vs. Untaxed Capital Income**



Notes: The black line shows the share of taxed capital income (the sum of taxable dividends, interest, rents, and estate and trust income) earned by the top 1% individuals with the highest fiscal income, where fiscal income is taxable market income excluding capital gains, and the unit of observation is the adult individual with income equally split between married spouses. The computation is done using publicly-available individual income tax data. The red line shows the share of untaxed capital income (corporate retained earnings, investment income earned on tax-exempt pension accounts, untaxed rents, tax-exempt interest, and income retained in trusts) earned by the top 1% size-adjusted tax units in AS, computed using the AS publicly available Excel files, see Appendix Section D.2.

**Figure A3: Top 1% Share of Wealth vs. Capital Income**

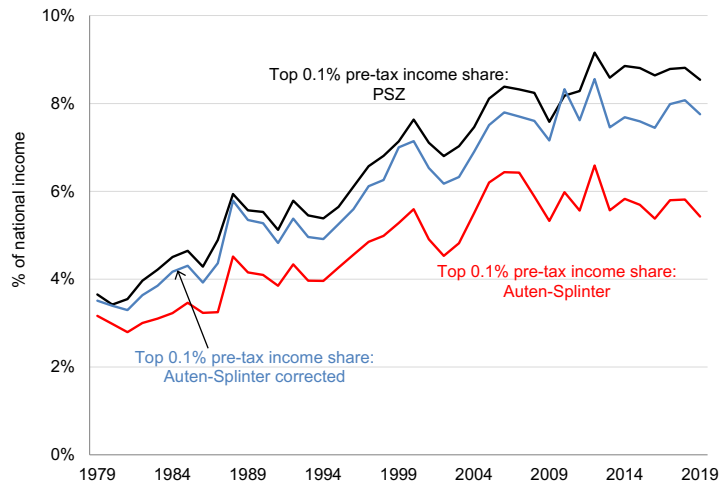


Notes: The red line shows the share of capital income (taxed plus untaxed) earned by the top 1% according to AS. Taxed capital income includes taxable dividends, interest, rents, and estates and trust income; its distribution is computed using publicly-available samples of income tax returns, ranking adult individuals (with income equally split between spouses) by fiscal income excluding capital gains. Untaxed capital income includes corporate retained earnings, investment income earned on tax-exempt pension accounts, untaxed rents, tax-exempt interest, and income retained in trusts; the share going to the top 1% in AS is computed using the AS publicly available Excel files, see Appendix Section D.2. The dark lines show the share of wealth owned by the top 1% wealthiest in Saez and Zucman (2016, updated), Smith et al. (2023) and the Federal Reserve Distributional Financial Accounts. The unit of observation is the adult individual with wealth equally split between spouses in Saez-Zucman and Smith et al., and the household in the DFA. For comparability with the other series, the DFA series excludes consumer durables and unfunded pensions (which are excluded in Smith et al. and Saez and Zucman, and do not generate investment income).

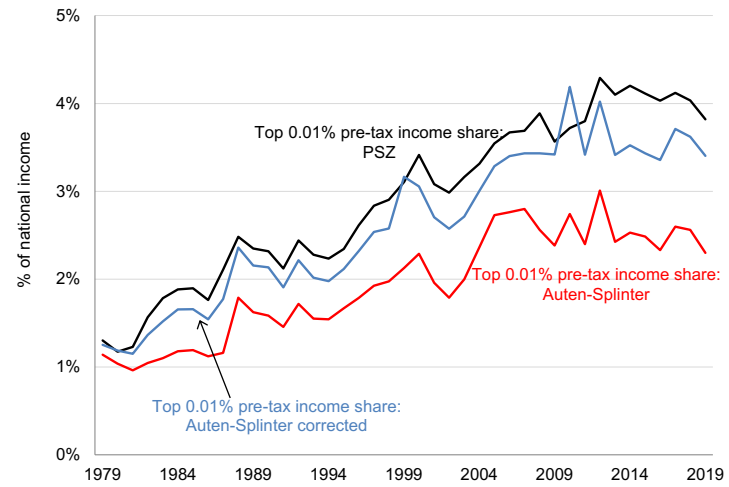


**Figure A4: Top 0.1% and 0.01% Income Shares: AS vs. Corrected AS**

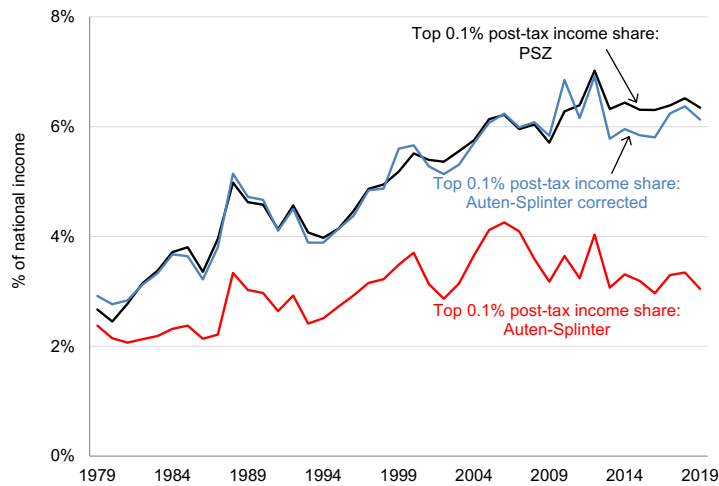
(a) Top 0.1% Pre-Tax



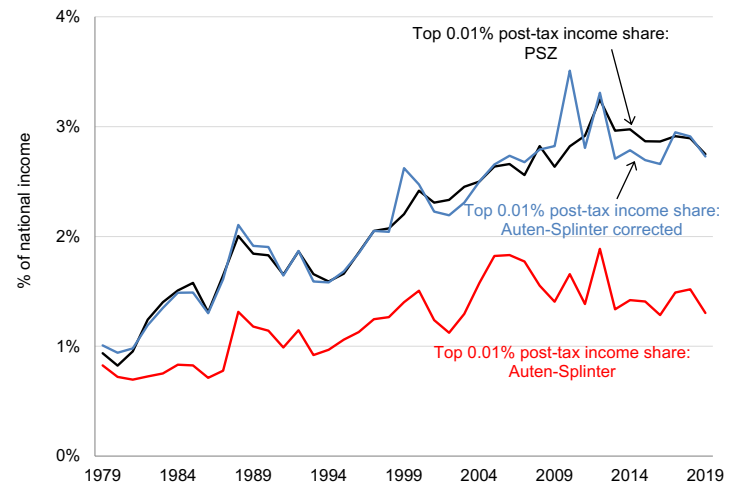
(b) Top 0.01% Pre-Tax



(c) Top 0.1% Post-Tax



(d) Top 0.01% Post-Tax



Notes: The red lines shows the top 0.1% and top 0.01% income shares in AS. The black lines shows the corresponding series in Piketty, Saez and Zucman (2018, updated). The blue line shows the top 0.1% and top 0.01% income shares in AS after implementing the corrections listed in Table 2 each year from 1979 to 2019. See notes to Table 2.