INCOME INEQUALITY IN THE UNITED STATES: A COMMENT

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Income Inequality in the United States:
A Comment*

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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 error 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 with existing evidence, the Auten and Splinter (2024) estimates become similar in level and trend to those of Piketty, Saez and Zucman (2018).

1   Introduction

Auten and Splinter (2024), henceforth AS, provide estimates of income inequality in the United States, starting with income observed in tax returns and making adjustments to account for unobserved income. They conclude that after their adjustments, 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.

This comment uncovers a mistake in AS's allocation of untaxed income. The large and growing amount of partnership income legally exempt from taxation is allocated by AS to owners of sole proprietorships, who are much less rich than owners of partnerships.[1]

Section 2 details this issue. Partnerships are one of the largest type of private business in the United States in 2019, the last year in AS (see, e.g., Campbell and Robbins, 2023). About half of partnership income is legally exempt from taxation due to generous depreciation rules in the tax code. An analysis of AS's code reveals that AS allocate this excess partnership depreciation not to partnership owners, but to owners of sole proprietorships. This depresses the level of the top 1% income share, because sole proprietorships are much more equally distributed than partnerships: the top 1% earns 15% of taxable sole proprietorship income vs. 80% of taxable partnership income. This also leads to a downward trend in the top 1% income share, because the excess depreciation of partnerships was negligible in 1980. This mistake was not present in earlier publicly available versions of AS, explaining why it was not detected prior to publication.

Section 3 quantifies this issue in the context of an examination of the methodology used by AS to distribute untaxed income. We uncover three main issues. First, trends in the distribution of untaxed business income are biased due to (i) the allocation of excess depreciation to relatively low earners, the largest source of bias in AS, and (ii) an assumption that evaded income not detected in IRS random audits is primarily earned by relatively low earners. Second, AS assume that untaxed capital income—and hence total capital income—has become more equally distributed over time, which is inconsistent with the observed rise in wealth inequality. Last, AS allocate non-cash, notional income components—e.g., the government deficit and product taxes—in ways that arbitrarily reduce the level and rise in the top 1% income share. After addressing these issues, AS's estimates are similar to those of Piketty, Saez and Zucman (2018).

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[1]Iselin and Reck (2024), in another recent comment on AS focusing on tax evasion, also mentions this error 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.

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 and amortization reported by businesses in their tax returns by its own estimate of their true economic depreciation.

This adjustment is significant for partnerships, which report a large amount of fiscal depreciation. In 2019, partnerships deducted $589 billion in depreciation and amortization for tax purposes.[2] In the national accounts, depreciation and amortization for partnerships was much smaller: $178 billion.[3] Partnerships had $411 billion in excess fiscal depreciation, the equivalent of 2.4% of national income.[4] This excess fiscal depreciation is primarily due to various rules in the tax code allowing businesses to depreciate assets quickly and broadly, such as the full expensing of certain investments (100% depreciation in year 1), accelerated depreciation rules in the oil and gas industry (where partnerships are over-represented), and generous amortization rules (allowing businesses, e.g., to write off contracts and goodwill). To compute the economic income of sole proprietorships and partnerships (called "proprietors' income" in the National Income and Product Accounts), BEA adds back the excess fiscal depreciation of these businesses to their reported taxable income.

Although BEA does not publish its time series of excess fiscal depreciation for partnerships vs. sole proprietorships separately (but only for these two types of businesses as a whole), it is easy to recover the disaggregated time series by using readily available IRS and BEA data, as we just did for partnerships in 2019. As shown by Figure 1 and detailed in Appendix A, excess fiscal depreciation was negligible for both types of businesses in 1980. It then rose to reach about 2.5% of national income for partnerships in recent years. In contrast, excess fiscal depreciation for sole proprietorships has remained slightly negative throughout the period. For

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[2]Statistics of Income, totals for Forms 4562 filed with partnership income tax returns (available at `https://www.irs.gov/pub/irs-prior/p5035--2021.pdf`), lines 22 plus 44.

[3]Bureau of Economic Analysis Fixed Assets statistics, Table 6.4 line 7.

[4]Unless otherwise noted, in this comment by national income we mean factor-price national income, i.e., national income excluding sales taxes (net of subsidies). In 2019, total national income was $18.3 trillion and factor-price national income was $17.4 trillion.

these businesses, depreciation in tax returns is slightly lower than economic depreciation because depreciation of residential real estate used by sole proprietorships is strictly limited in the tax code.[5]

The rise of excess partnership depreciation reflects both the rise of partnerships as a form of business organization and the increasingly generous rules governing fiscal depreciation. Before the Tax Reform Act of 1986 most large private businesses were organized as C-corporations; partnerships and S-corporations then grew in importance. Meanwhile depreciation became more generous with the gradual transition of the US tax system to full expensing and changes to amortization rules.[6]

2.2   The AS Treatment of Excess Fiscal Depreciation

The ownership of partnerships is highly concentrated. In fact, partnership income is the most concentrated form of income in individual income tax returns. An accurate allocation 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 consider first a specific form of fiscal

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[5]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. In contrast to partnerships, sole proprietorships make little investments in nonresidential fixed assets and thus benefit only marginally from bonus depreciation and full expensing provisions.

[6]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 of 2004 allowed sports teams to amortize their intangible assets.

depreciation, known as Section 179 expensing (`PropExpn`, \$45 billion in total in 2019), which can be directly observed in tax returns.[7] They allocate 85% of this expensing directly to the individuals claiming these expenses, which is a valid approach. The bulk of excess depreciation (\$381 − 0.85 × \$45 = \$343 billion) is then allocated proportionally to depreciation deductions reported by sole proprietorships only (`PropDepr`). This approach is invalid, since this excess depreciation comes from partnership, not sole proprietorships (Figure 1). Concretely, AS add \$343 billion in income in 2019 (and 0 in 1980) to self-employed individuals such as ride share Uber or Lyft drivers, farmers, and other relatively low-income earners, when that income is overwhelmingly earned by top 1% individuals.

This mistake was not present in earlier publicly available versions of AS, explaining why it was not detected prior to publication. Saez and Zucman (2020) examined Auten and Splinter (2019) and highlighted a key 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, which is an improvement. However, as shown above they allocate excess depreciation to sole proprietors, not to partnership owners. Thus in both AS and Auten and Splinter (2019), only about 15% of excess fiscal depreciation ends up being allocated to the top 1%, albeit for completely different reasons, explaining why the bottom line findings are similar in the two versions. AS did not publish an update of Auten and Splinter (2019) with their new methodology before being accepted for publication at *JPE*, making it impossible to catch this new error outside of the review process.[8]

3 Untaxed Income and its Distribution

Excess depreciation is the largest—but not the only—source of bias in AS's methodology. AS assume that untaxed income has become much more equally distributed in the United States, offsetting most of the rise in the concentration of taxed income.[9] This section clarifies the

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[7]Section 179 expensing represents only a small fraction of excess depreciation made by passthrough businesses because it is capped to \$1 million (per tax return and per business) and applies only to businesses that invest less than \$3.5 million in equipment in the year (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.

[8]We were not asked by *JPE* to referee AS, and this error, although quantitatively important, is too much in the weeds for any outside referee to catch.

[9]The share of fiscal income (excluding capital gains) earned by the top 1% has increased from 8.4% in 1960 to 17.6% in 2019 (Piketty and Saez, 2003, updated). When including realized capital gains, the rise in the top 1%

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assumptions made by AS to allocate untaxed income and uncovers key issues. We organize the discussion around the three main sources of untaxed income: (i) untaxed business income; (ii) untaxed capital income; and (iii) notional, non-cash income.[10]

3.1   Untaxed Business Income

Size and nature.   We define business income as the income of partnerships, sole proprietorships, and S-corporations. This income is not subject to the corporate tax, but "passed through" to their owners and subject to the individual income tax. There is nevertheless 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. About half of the amount of business income in the national accounts is not reported in individual income tax returns.

Taxed business income is highly concentrated, and its concentration has sharply increased since the 1960s. The top 1% adult individuals earn about 55% of it according to tax data in 2019. In contrast, AS assume that untaxed business income is very equally distributed. According to their assumptions the top 1% earns only around 15% of it (Figure 2). 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.

As shown by Figure 3, about half of untaxed business income corresponds to legally-exempt income, which in turn is almost entirely due to excess depreciation. The other half corresponds to tax evasion.

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 partnerships. A similar (though smaller) error is done for the 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 are less rich due to the ownership of C-corporations by pension funds.[11]

AS's allocation of exempt business income leads to underestimating the top 1% income share

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share is slightly larger, from 10% in 1960 to 21.1% in 2019. Fiscal income adds up to 60-70% of total national income.

[10]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 trace out the unrealistic nature of AS's assumptions to specific methodological issues, while taking stock of the updates made by AS relative to Auten and Splinter (2019).

[11]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.

by close to 2.0 points in 2019. The legally-exempt income of partnerships and S-corporations adds up to 3.5% of national income in 2019 (Figure 3). All available evidence suggests this untaxed income is highly concentrated, both because the ownership of partnerships and S-corporations itself is highly concentrated, and because excess depreciation is concentrated in large, capital-intensive businesses. According to IRS tabulations of partnership tax returns, 69% of depreciation deductions were claimed by partnerships with more than $100 million in assets in 2019, which earned 50% of ordinary partnership business income. Depreciation claimed by S-corporations is also more concentrated than their ordinary business income. Accordingly, the top 1% conservatively earns 70% of legally-exempt partnership and S-corporation income, the equivalent of 2.4% of national income in 2019—as opposed to 0.5% in AS.

The bias is not only in level but also in trend: it is maximal in 2019 and negligible before the 1980s. This is 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 Piketty, Saez and Zucman (2018)—allocated by AS to the owners of C-corporations, proxied in various ways.

This issue 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 exactly what happens in the AS methodology. When a private business files as a C-corporation (as was the norm until the mid-1980s), losses are disregarded and 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), losses become possible and untaxed income is allocated by AS primarily to the bottom. Inequality falls, even though nothing real has changed in the economy.[12]

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

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[12]In Piketty, Saez and Zucman (2018), by contrast, the treatment of private businesses is consistent. No matter the tax form filed by these business, losses are disregarded and legally-exempt income and tax evasion are allocated proportionally to reported positive income. Appendix C clarifies the different ways that losses can be distributed and why the Piketty, Saez and Zucman (2018) treatment can be viewed as conservative.

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 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.

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).

The comment on AS by Iselin and Reck (2024) zooms in on this issue and concludes that the AS assumptions understate the rise in the top 1% income share by about 0.5 points between 1962 and 2014.

Like excess depreciation, this issue was not present in earlier versions of AS. Auten and Splinter (2019) used to rely on Johns and Slemrod (2010) to allocate unreported income. As pointed out in Saez and Zucman (2020), Auten and Splinter (2019) based their allocation on the wrong column in Johns and Slemrod's (2010) Table 5. In response AS discarded Johns and Slemrod (2010), in favor of their new approach. In both AS and Auten and Splinter (2019), only about 15% of underreported income ends up being allocated to the top 1% in recent years, albeit for different reasons.

3.2 Untaxed Capital Income

Nature and size. 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 16% of untaxed capital income in 2019 vs. 21% in 1979 (Appendix Figure A1).

Comparison with wealth. Figure 4 clarifies AS's assumptions by showing what they imply for the distribution of total capital income, taxed plus untaxed. 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 in the United States since the 1960s.

This goes against a large body of evidence showing that the concentration of wealth has increased sharply. All currently available series—coming from income tax data (Saez and Zucman, 2016; Smith, Zidar and Zwick, 2023), survey data (the Survey of Consumer Finances), surveys anchored to national accounts (the Distributional Financial Accounts of the Federal Reserve), estates tax returns properly weighted to account for the longevity gains of the rich (Saez and Zucman, 2019), and *Forbes* 400 rankings—show that wealth inequality has sharply increased since the 1980s. This remains true when excluding business assets from wealth, and when ranking individuals by income rather than wealth.

To reconcile this evidence with the declining concentration of capital income assumed by AS, one would need to argue that the wealthy have increasingly low rates of returns on their wealth relative to other groups of the population. Smith et al. (2023) find the opposite, however. AS do not attempt to show that their assumptions on the distribution of capital income can be reconciled with existing evidence on the evolution of wealth and capital income inequality.

This inconsistency can be traced to specific assumptions made by AS about corporate re-

tained earnings and investment income earned in retirement accounts, detailed in Appendix D.

3.3   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 mistakes.

Factor-price vs. market-price national income.   National income at market price includes taxes on products (sales and excise taxes), even though nobody "earns" these taxes as an income. There is no reason why income inequality should change when moving from factor-price income (income as paid to workers and capital owners, that can buy domestic production before taxes on products) to market-price income (income as saved and consumed, that can buy domestic production after taxes on products), a move that reflects a mere price index change. However, 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). This error 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.[13]

To understand the conceptual mistake made here, consider a tax on bread. In AS, the pre-tax income of the poor is inflated by the amount of the tax they pay on bread. The bread tax "enriches" the poor. The higher the tax, the richer the poor become, and the less pre-tax inequality there is. When computing post-tax inequality, AS subtract the imputed bread tax. Since what is subtracted is exactly what was 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—while in reality a high tax on bread reduces their consumption and also increases post-tax inequality.

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. 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.

The conceptual mistake here is the following. A government deficit reduces current inequality because government spending is equalizing. In AS this equalizing effect is double-counted: a first time because public sending primarily goes to the bottom of the distribution, and a second time because the deficit itself is assumed to be notionally "paid" disproportionately by the rich.

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[13]For a formal discussion of how to treat product taxes, see Saez and Zucman (2023, Appendix A.4).

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 rich—affecting the distribution of post-tax income at that time. In the meantime the deficit itself does not affect the distribution of current consumption and current saving.

Government consumption. The US government spends around 17%–18% of total national income in collective consumption of public goods–defense, police and prison, infrastructure, and education—with no trend. 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. The upshot is that the bottom 50% is assigned about 40% of government consumption as post-tax income. This dramatically 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. There is no sound reason for allocating the rest other than in a distributionally-neutral manner.[14]

3.4 Putting It all Together

In AS, the top 1% pre-tax income share rises by 4.4 points between 1979 and 2019. After fixing the various issues highlighted in this comment, summarized in Table 1, it rises by $4.4 + 3.3 = 7.7$ 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 Piketty, Saez and Zucman (2018, updated) over the entire period 1979–2019 (top panel of Figure 5). The bulk of the adjustment to AS comes from fixing the empirical errors with the allocation of legally-exempt business income and the conceptual error in the treatment of product taxes.

Similarly, in AS the top 1% post-tax income share rises by 1.4 point between 1979 and 2019. After our corrections, it rises by $1.4 + 4.2 = 5.7$ points, close to the rise of 6.4 points in the Piketty, Saez and Zucman (2018, updated) series; see bottom panel of Figure 5. The bulk of

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[14]Piketty, Saez and Zucman (2018) 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 problems with pretax income, see Table 1 below), reducing the lump-sum portion increases the level of inequality without affecting the flat AS trend.

the adjustment comes from fixing pretax income.

AS (Table 4) also provide a comparison with Piketty, Saez and Zucman (2018). AS's Table 4, however, lumps together the two largest sources of divergence in pre-tax income concentration between AS and Piketty, Saez and Zucman (2018): 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, it is legally exempt income (where AS make their mistake) that is quantitatively key.[15]

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, when explicitly and carefully examined, are proved to be either erroneous or inconsistent with existing evidence. Once these issues are corrected, the AS estimates turn out to be similar in level and trend to those of Piketty, Saez and Zucman (2018).

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[15]Table 1 also explains the methodological reasons behind the differences. For example, discrepancies in "non-retirement pre-tax corporate income" (in AS Table 4) are traced in our Table 1 to the different methodologies used to allocate retained earnings; differences in retirement income to the treatment of unfunded pensions (both discussed in Appendix Section D). AS's Table 4 uses the original PSZ series which ended in 2014, while Table 1 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.

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Figure 1: Gap Between Fiscal Depreciation and Economic Depreciation
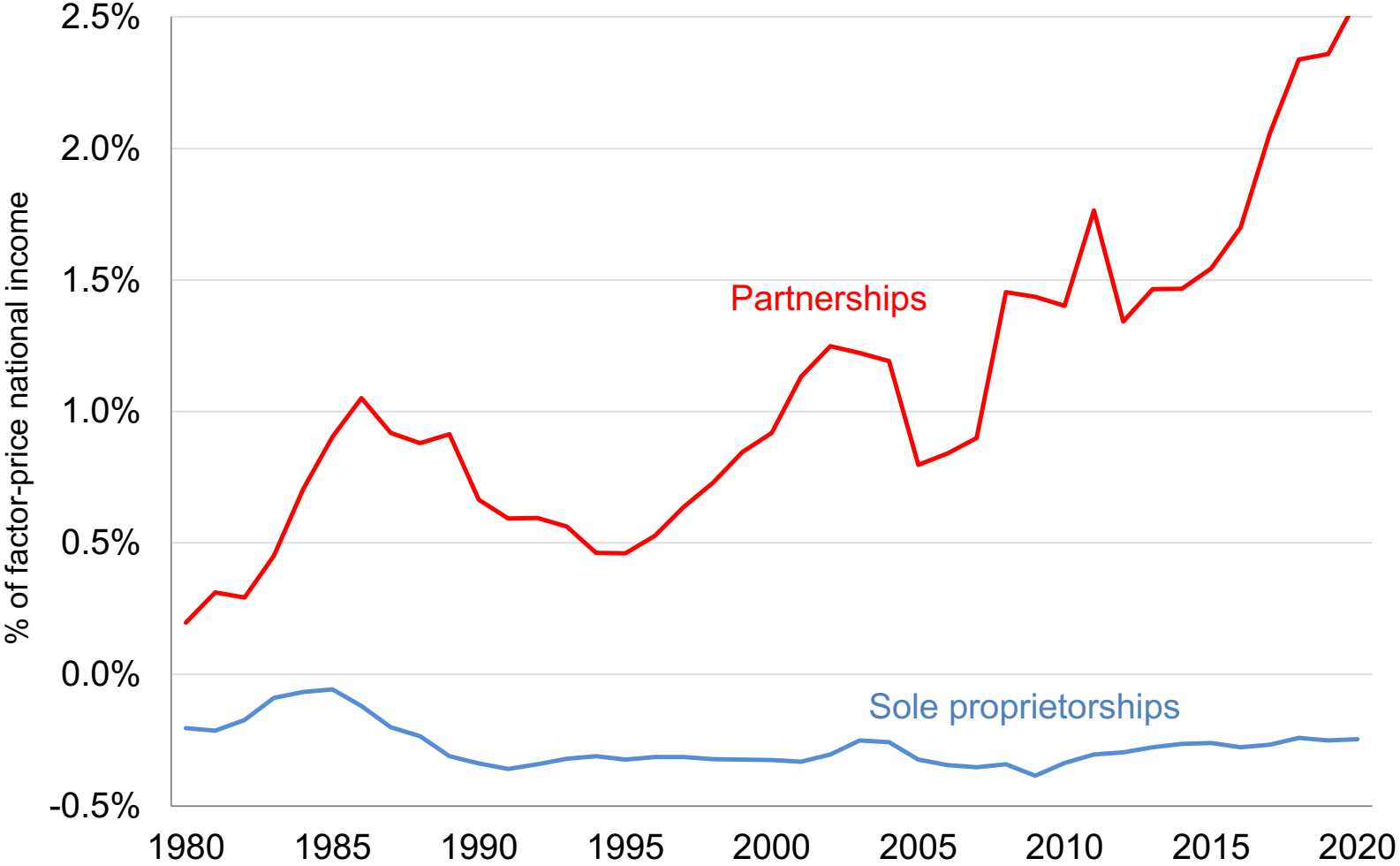
Notes: This figure reports the excess of fiscal depreciation (as reported by businesses in their tax returns) over economic depreciation (as estimated by the Bureau of Economic Analysis for the computation of national income) for non-farm sole proprietorships and partnerships separately, expressed as 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); see text and appendix A for details. Sources: see Appendix A.

# Figure 2: Top 1% Share of Taxed vs. Untaxed Business Income
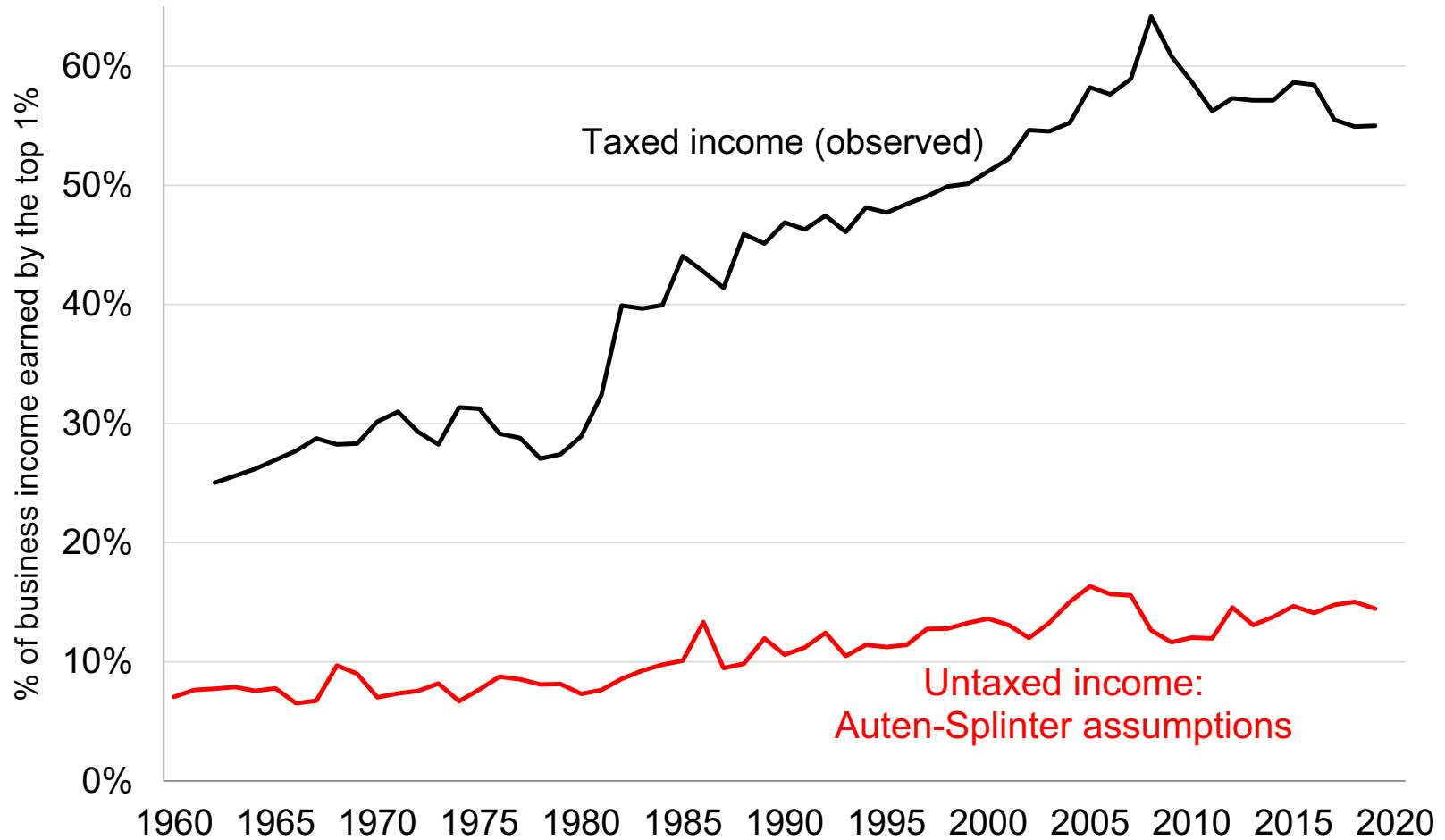
Notes: The black line shows the share of taxable sole proprietorships, partnership, and S-corporation net income earned by the top 1% individuals with the highest fiscal income, where fiscal income is taxable market income excluding capital gains, and the unit of observation is the adult individual with 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 B.2.

Figure 3: Business Income: Taxed vs. Untaxed (2019)
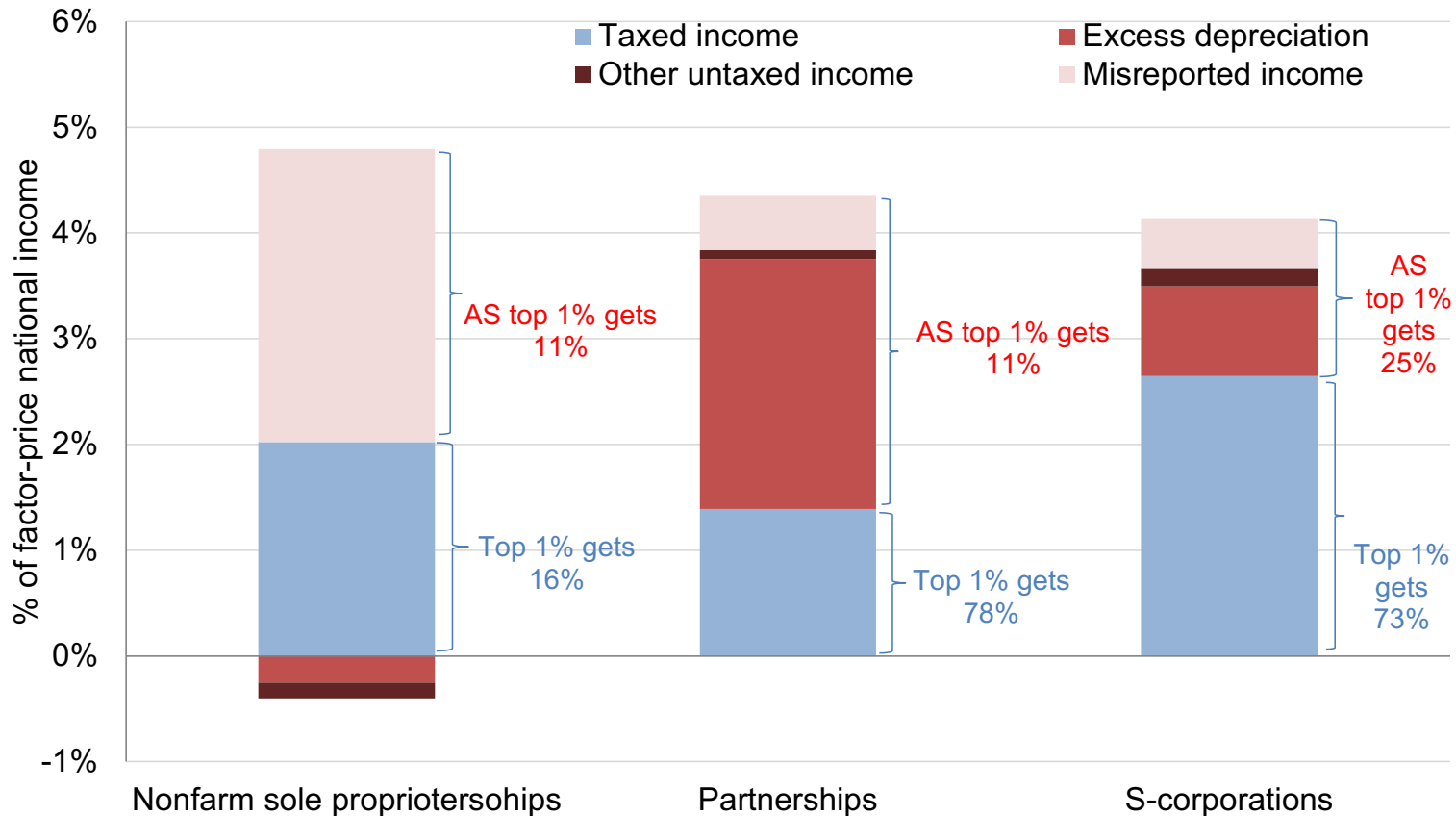
Notes: The bars on the figure decomposes the macro-economic income of sole proprietorships, partnerships, and S-corporations in 2019. Taxed income is the net amount reported in individual income tax returns. Excess fiscal depreciation is computed in Appendix A for sole proprietorships and partnerships, 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 B.2.

# Figure 4: Top 1% Share of Wealth vs. Capital Income
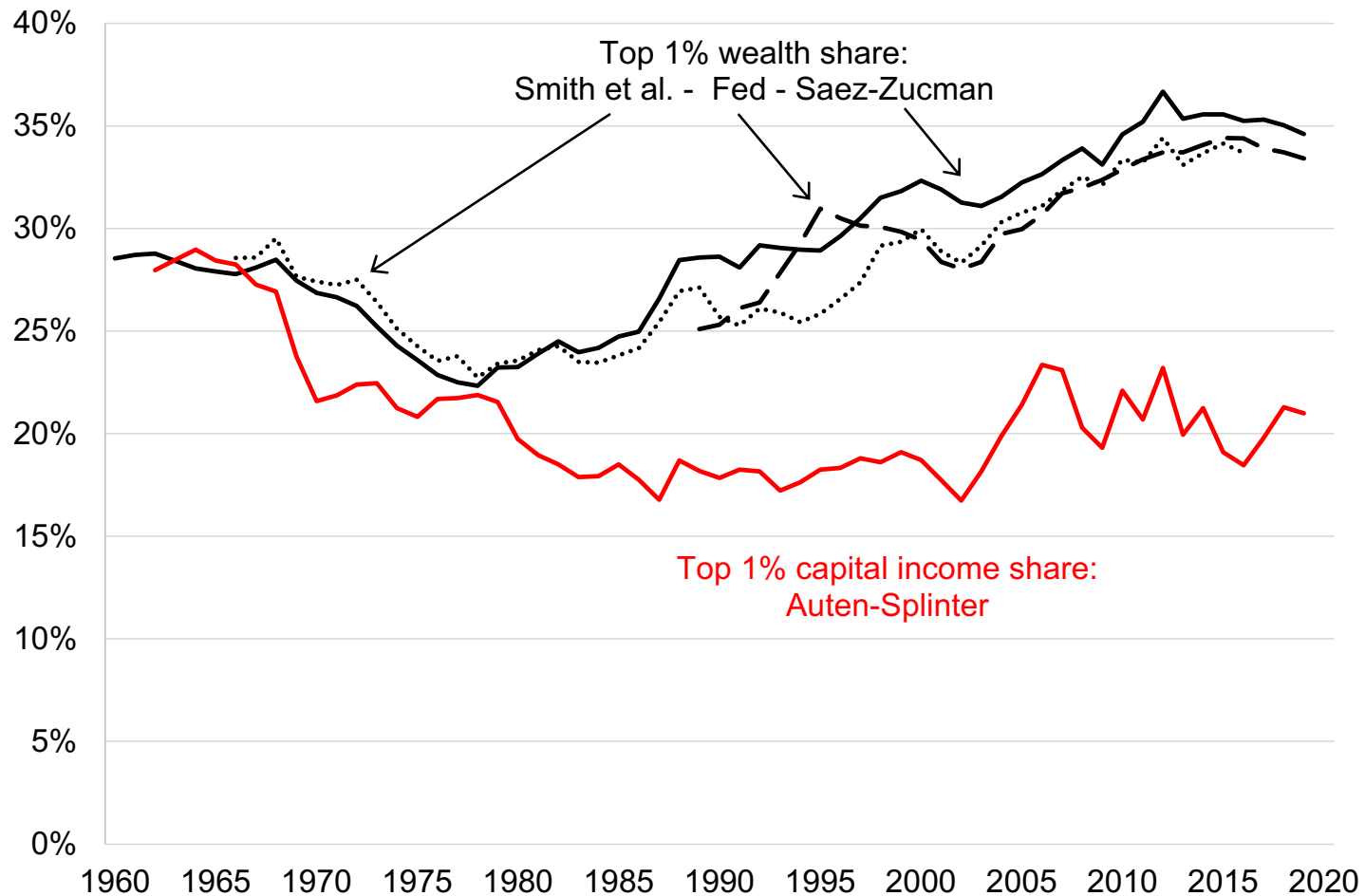
Notes: The red line shows the share of capital income (taxed plus untaxed) earned by the top 1% according to AS. Taxed capital income includes taxable dividends, interest, rents, and estates and trust income; its distribution is computed using publicly-available samples of income tax returns, ranking 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 B.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 5: Top 1% Income Share: AS vs. Corrected AS

(a) Pre-Tax Income

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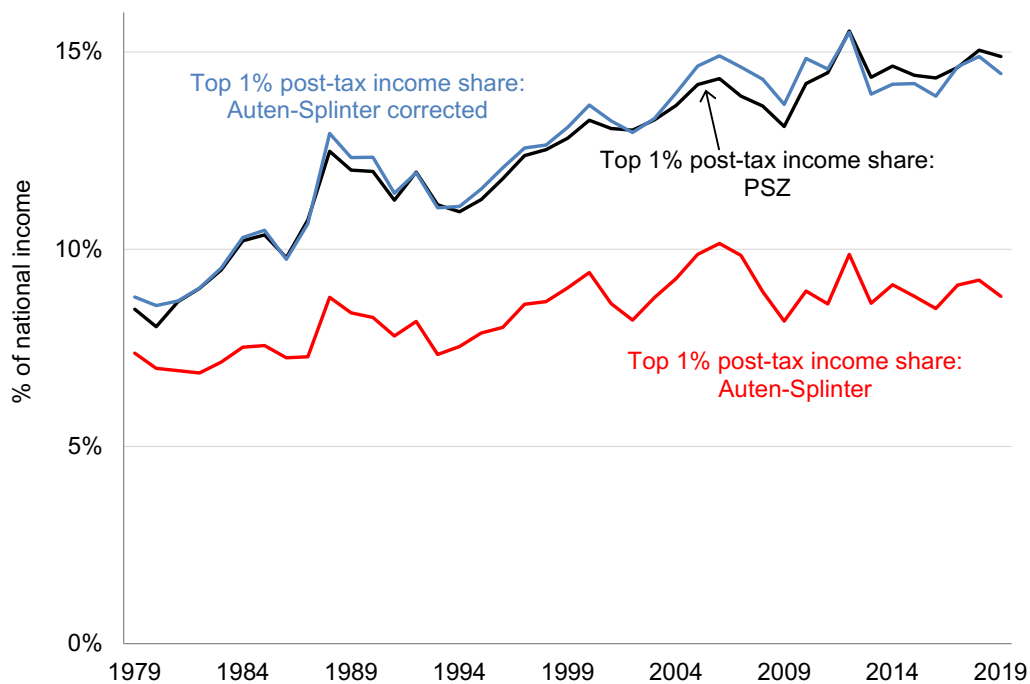
Notes: The red line shows the top 1% income share in AS. The black line shows the top 1% share in Piketty, Saez and Zucman (2018, updated). The blue line shows the top 1% income share in AS after implementing the corrections listed in Table 1 each year from 1979 to 2019. See notes to Table 1.

Table 1: Sources of Bias in AS's Methodology: Summary

Type of untaxed income	AS methodology	Nature of issue 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 error	Allocated to owners of partnerships	1.3
Tax-exempt income of S-corporations	Allocated to owners of C-corporations	Empirical error	Allocated to owners of S-corporations	0.4
Undetected tax evasion	Assumed to reduce inequality and its rise	Questionable assumption	Allocated proportionally to reported income, component by component	0.4
Corporate retained earnings	3/4 allocated proportionally to dividends	Questionable assumption	Allocated proportionally to equity wealth	0.4
Tax-exempt capital income generated by funded pension plans	Allocated proportionally to funded and unfunded pension wealth	Conceptual error	Allocated proportionally to funded pension wealth	0.3
Moving from factor-price to market-price national income	Assumed to reduce inequality and its rise	Conceptual error	Distributionally neutral	0.5
Pre-tax income total				**3.3**
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 error	Distributionally neutral	0.2
Post-tax income total				**4.2**
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 B.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 the bulk 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 nearly zero over the 1979-2019 period (as well as each year, see Figure 5).

Appendix (for Online Publication)

A Excess Fiscal Depreciation for Partnerships vs. Sole Proprietorships

A.1 BEA Methodology

To compute the economic depreciation of sole proprietorships and partnerships, 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. BEA starts with total depreciation and amortization in tax data, calculated 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)

This total fiscal depreciation is reported in NIPA Table 7.13 line 14 ($642 billion in 2020).[16]

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.

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

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[16]The total reported in NIPA Table 7.13 differs very slightly from the sum of these five items (with an absolute value of the difference of less than 1% each year, e.g., $646 billion vs. $642 billion in 2019), mainly because BEA removes an estimate of partnership farm depreciation.

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 published data for each type of business.

Partnerships. The excess fiscal depreciation of partnerships is computed as:
Fiscal depreciation of partnerships (Line 22 of form 4562 filed by partnerships)
Plus Fiscal amortization of partnerships (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 (Line 13 of Schedule C filed by individuals)
Plus Fiscal depreciation for business use of home (Line 42 of form 8829 filed by individuals)
Plus Fiscal amortization of sole proprietorships (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 7).[17]

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%.[18]

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[17]Fixed Assets Table 6.5 line 6 is the CFC of sole proprietorships, and NIPA Table 7.5 line 7 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 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).

[18]This residual (of \$3.7 billion in 2019) is due to, e.g., the excess fiscal depreciation of farm partnerships and other residual discrepancies that cannot be readily addressed with public data.

B Allocating Untaxed Income

B.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 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 $s_s > sh(y)$.[19] 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.

B.2 Recovering the Distribution of Untaxed Income in AS

Armed with this conceptual framework, we can use the AS online Excel files to clarify the assumptions made by AS about the distribution of untaxed income.[20] Using their Table C1,

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[19]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).

[20]https://davidsplinter.com/AutenSplinter-IncomeIneq.xlsx downloaded on December 1st, 2023.

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.[21]

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. 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[22]) 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 2.

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 A1.[23]

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[21]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.

[22]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.

[23]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.

C Treatment of Business Losses

Piketty, Saez and Zucman (2018), henceforth 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 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.[24] 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).[25]

The bottom line is that the PSZ treatment of ignoring losses can be seen as a middle-ground 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).[26] In the national accounts, S-corporation net profits are $716B and partnership net profits are $852B.[27]

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%.

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[24]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).

[25]Intermediate cases such as $a = -.5$ or $a = .5$ can also be considered and lead to smaller adjustments.

[26]These numbers are obtained when aggregating profits and losses within each tax return for the partnerships category and the S-corporation category respectively.

[27]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.

- If $a = 0$ (fiscal losses are all paper losses, PSZ benchmark): the top 1% income share grows to 23.58%.

- 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.

D   Distribution of Untaxed Capital Income

The inconsistency between the evolution of AS's top 1% capital income share since 1979 and the evidence about the evolution of the top 1% wealth share can be traced to specific assumptions made by AS about the allocation of corporate retained earnings and investment income earned in retirement accounts.

D.1   Retained Earnings

AS 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 lead to biased trends.[28] AS do not justify their approach, which is at odds with the literature and does not appear to have a particular empirical basis.[29]

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 below).

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

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[28]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. The large increase in the concentration of capital gains since the 1960s is in line with the large rise in wealth inequality, and hard to reconcile with AS's view that capital income inequality has decreased.

[29]AS simply note (p. 2197): "We favor using dividends received as the primary indicator of corporate ownership (Smith et al., 2023)." This reflects a confusion between the distribution of corporate profits and the distribution of retained earnings. 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).

D.2 Pensions

AS also 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, 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.[30] 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.

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[30]Moreover, "pension entitlements" excludes individual retirement accounts, which are slightly more concentrated than funded DB plus DC pensions.

Figure A1: Top 1% Share of Taxed vs. Untaxed Capital Income
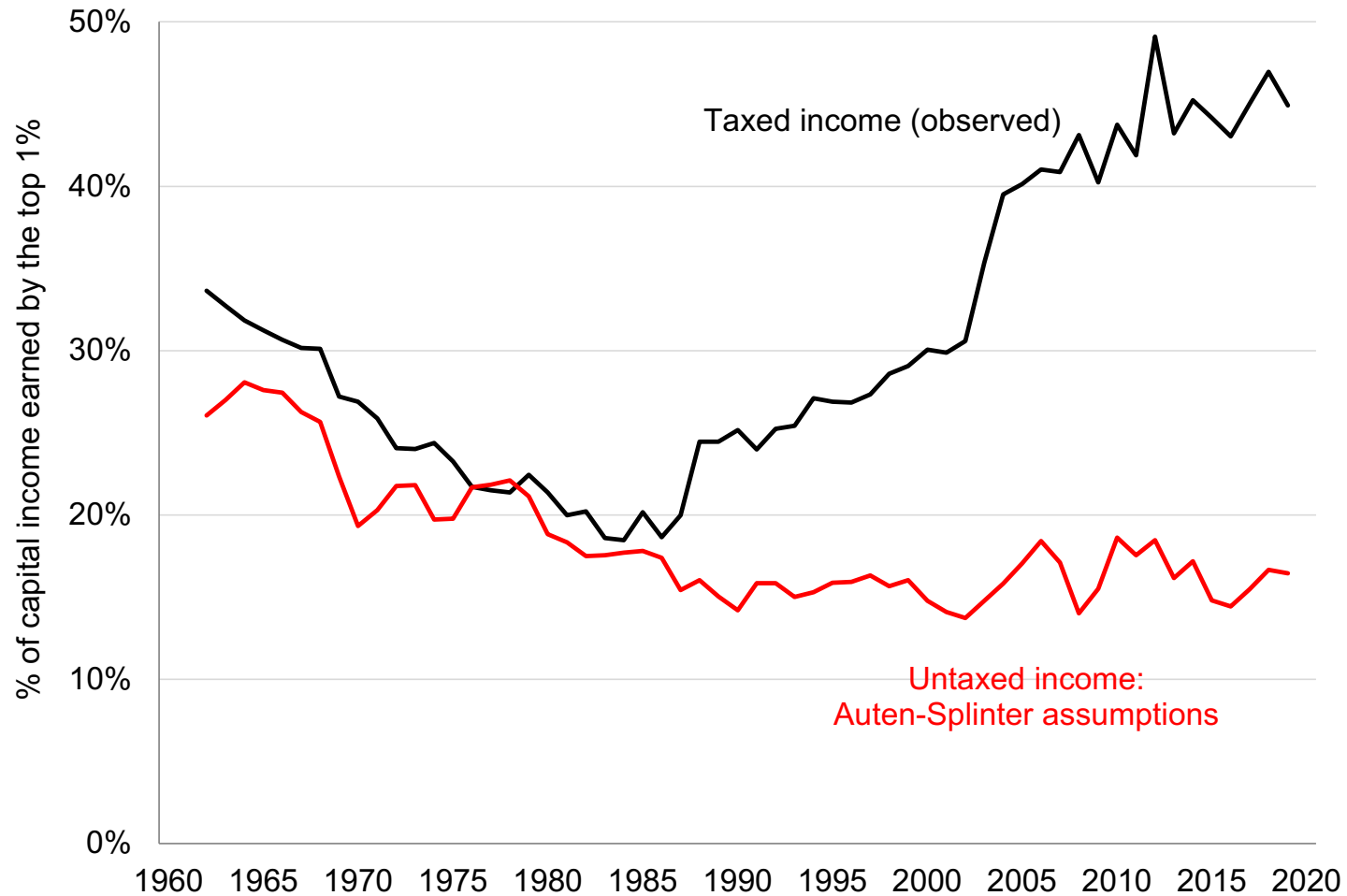
Notes: The black line shows the share of taxed capital income (the sum of taxable dividends, interest, rents, and estate and trust income) earned by the top 1% individuals with the highest fiscal income, where fiscal income is taxable market income excluding capital gains, and the unit of observation 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 B.2.