Reply: Trends in US Income and Wealth Inequality: Revising After the Revisionists

David Splinter[*]
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When estimating income inequality with tax data, accounting for missing income presents many challenges. Researchers have adopted different approaches to address these challenges. Saez and Zucman (2020) discuss differences between the national income distributions of Piketty, Saez, and Zucman (PSZ, 2018) and Auten and Splinter (AS, 2019a). Saez and Zucman also make updates to their estimates for retirement income, partially responding to one of the concerns raised in AS. In this reply, I explain that SZ only partly correct this problem and do not address other issues raised by AS. For the allocation of underreported income—the most consequential difference between AS and PSZ—I show that the AS approach conforms with special audit studies in five ways, while the PSZ approach is inconsistent with them. I also provide historical background on the two projects, respond to technical points raised, and discuss estimates of tax progressivity.

I. Historical Background

Tax data provide an important view of how incomes have changed over time, particularly among those with high incomes. Tax data, however, have many limitations. More than one third of national income is missing and the reporting of income on tax returns has changed dramatically over time. For example, the Piketty and Saez (2003) estimates show a 40 percent jump in top one percent income shares in the two years following the Tax Reform Act of 1986. These estimates also included a long-run bias due to decreasing marriage rates. In addition, Piketty and Saez (2003) only estimated pre-tax/pre-transfer income and therefore did not account for increases in tax progressivity due to refundable credits or increases in government transfers. To develop a more consistent series, PSZ and AS distribute all national income, control for falling marriage rates, and estimate after-tax/after-transfer incomes. Despite these similarities, the results diverge because of methodological differences. Between 1979 and 2014, PSZ estimated that the top one percent after-tax/after-transfer income share increased by 6.5 percentage points, while the AS increase was 1.4 percentage points.

In a recent paper revising their prior estimates, SZ (2020) disputed our methods. This reply focuses on the key methodological differences, showing why the AS approaches are correct and explaining shortcomings of the PSZ approaches. The key differences are the treatment of underreported and retirement income. These account for about 60 percent of the difference in recent top one percent pre-tax income shares (AS Table 4). I then discuss differences regarding corporate taxes, ranking of tax units, and the allocation of government consumption. Finally, I discuss implications for tax progressivity and show that AS estimates resemble other studies, while PSZ estimates diverge from them. The appendix reviews prior discussions between AS and PSZ.

II. Underreported Income and Audit Studies

A key issue is the allocation of underreported income. This income is not reported on tax returns but included in national income. To allocate underreported income, AS divided it between filers and non-filers and the filer portion was allocated using estimates from IRS special random audit studies. These are not operational audits but are representative of the population and based on a stratified random sample that includes relatively more of those with high incomes. These audit studies are the basis for amounts added to national income.[1] Rather than using the distributional information of these audits studies to allocate missing income, PSZ allocated it proportionally to positive reported income. Below, I respond to three incorrect claims made by SZ and then discuss how to correctly use audit studies to allocate underreported income. Next, I explain how national income adjusts tax-based income for proprietors' income and other income sources.

A. Incorrect SZ claims

SZ made three incorrect claims regarding the AS allocation in their abstract. SZ wrote that "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." I address each of these three incorrect claims. First, when moving from fiscal income seen in tax data to national income, the net increase in business income nearly equals the evaded amounts seen in special audits. The depreciation-related additions emphasized by SZ (i.e., capital consumption adjustments) are partially offset by other deductions and not classified as tax evasion. Second, in AS, we do not allocate underreported income only to the bottom 99%, but over the entire distribution. In fact, SZ discuss the portion we add to the top one percent on page 29 of their paper. Third, as detailed below, AS follow the findings of the special audit studies to allocate underreported income. Moreover, the AS approach fits with the findings of multiple groups of researchers using these audit studies for different years—for filers, adding evaded income has relatively little impact on top one percent income shares.[2]

B. Using Audit Data

PSZ and AS both included underreported income, but they used different approaches to allocate this income. For each income source, PSZ allocated evaded income proportionally to positive reported income. PSZ used the same approach to close other measurement gaps not due to evasion, and therefore I refer to the income used to fill these gaps as underreported income—whether from evaded or legally exempt income. In comparison, AS relied on distributional estimates from IRS special audit studies, which are the basis for the amounts of evaded income added to national income.

The AS approach conforms with special audit studies in five ways, while the PSZ approach is inconsistent with them. First, AS allocated a portion of underreported income to filers with negative reported income, while PSZ disregard this evasion. Second, AS ratios of

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[1] The BEA (2019, pg. 16) explained that their "estimates of underreported income are based on audits of individual employment tax returns undertaken as part of the IRS National Research Program."

[2] With recent audit data, DeBacker et al. (2020, pg. 1113) found results that were "largely consistent with both Auten and Splinter (2017) and Johns and Slemrod (2010)." Note that BEA includes amounts resulting from detection controlled estimation in the amounts of evaded income added to national income, and the Johns and Slemrod (2010) estimates used by AS also include these amounts.

underreported to reported income conform to audit study patterns—for higher reported incomes they decrease—while for PSZ they are constant. Third, consistent with audit study estimates, the AS allocation has a small effect on top filer income shares, while the PSZ approach significantly increases top shares. Fourth, AS allocated underreported filer income to match audit estimates of evasion by reported income, while PSZ allocated a larger share to the top of the reported distribution than seen in the audit data. Fifth, the AS allocation results in significant re-ranking, as suggested by audit studies, while the PSZ proportional allocation results in little re-ranking.

The AS approach is buttressed by the importance of non-compliance among filers reporting losses. In the 1988 audit study, AS found that more than one tenth of evaded passthrough business income was found among tax filers reporting business losses. Johns and Slemrod (2008) and Johnston (2008) also found significant evasion among filers with reported losses. SZ noted that many filers with reported losses have higher true incomes and that AS accounted for re-ranking effects by allocating underreported income to select tax returns, including those with negative incomes. This is correct. In addition, AS did this in a way that approximated the audit findings of little net effect on top shares after re-ranking. In comparison, the PSZ allocation by positive reported income disregards observed evasion among filers with reported losses and therefore is inconsistent with the audit data.

Besides ignoring underreporting among those with reported losses, the PSZ allocation implies that the ratio of underreported income to reported income is *constant* for all positive incomes.[3] The IRS audit studies, however, show that the ratio of underreported income to reported income *decreases* for higher levels of reported income.[4] This is a second way the PSZ approach is inconsistent with the audit data.

A simple calculation shows a third inconsistency between the PSZ approach and the audit data. The PSZ allocation of underreported income increases their top one percent income shares by about 2 percentage points.[5] But Johns and Slemrod (2010, Table 5) showed that the top one percent share of filer AGI is unchanged when adding this income—it's identical for reported and underreporting-inclusive true income.[6] The AS approach, in comparison, results in little change in filer top income shares, which conforms with estimates from the audit data.[7]

A fourth way the PSZ approach is inconsistent with the audit data is that PSZ allocated a smaller share to the bottom of the *reported* distribution and a larger share to the top than shown by the audit data. In response to this observation, SZ suggested that underreported income should be allocated by *true* income rankings (reported plus underreported income). But true incomes are not observed in annual tax data, and therefore researchers using annual tax

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[3] The PSZ approach also implies that if a filer increases their reported income by decreasing evasion, then the filer is allocated more, not less, evaded income.

[4] The IRS measure of underreporting (net misreporting percentage) for total income in the 2001 audit study decreases from 96% for returns with negative reported incomes to 10% for middle incomes ($40 to $50k) and only 1% for returns with AGI of $2 million or more (Johnston, 2008). For more recent audit studies between 2006 and 2014, DeBacker et al. (2020) estimated average misreporting rates of 8% for the middle of the distribution by reported income and 3% for the top 0.5 percent.

[5] Recently, the PSZ approach allocates about 50% of underreported business income to the top one percent by *reported* income. But the 2001 audit study shows only 5% of underreported income going to the top one percent by *reported* income (Johns and Slemrod, 2010, Table 3, column 2). After re-ranking effects, this implies a difference between the PSZ approach and audit data of about $300 billion, or 2 percent of national income.

[6] Audit studies from earlier and later periods have the same finding. Between 1979 and 1988, Gini coefficients were relatively unchanged by adding evaded income (Bishop, Formby, and Lambert, 2000). Between 2006 and 2014, adding evaded income slightly decreased top one percent income shares (DeBacker et al., 2020).

[7] A share of AS underreported income is allocated to non-filers, contributing to a small decline in top shares.

data, like AS and PSZ, need to find appropriate ways to allocate underreported income based on reported pre-audit incomes. The AS approach directly targets evasion by reported income as observed in audit studies.

The AS allocation of underreported income results in substantial re-ranking from lower-income filers moving up the distribution. Controlling for this re-ranking (and removing the non-filer allocation) implies a larger share allocated to the top one percent ranked by true income than suggested by SZ. While the AS re-ranking approach has been limited by the available data, we hope to improve our methodology to better account for re-ranking using new estimates from audits by Auten and Langetieg (2020). In comparison to the substantial re-ranking in the AS approach, the PSZ constant allocation results in little re-ranking and disregards all re-ranking among filers with reported losses. This is a fifth inconsistency between the PSZ approach and the audit data.[8]

C. Proprietors' Business Income Gaps Between Tax Data and National Income

Proprietors' income in the national income and product accounts (NIPA) includes both sole proprietor and partnership income. The NIPA amounts differ from what is reported on tax returns for several reasons. The largest difference is the addition of evaded income. In 2015, the U.S. Bureau of Economic Analysis (BEA, 2019, pg. 15) added $672 billion of evaded income to the amounts reported on tax returns, based on results of IRS special audit studies. AS estimated a total gap of $647 billion between nonfarm proprietors' business income in tax data and national accounts. Because these amounts are nearly equal, AS used the IRS audit-based distribution to allocate this underreported income.

SZ pointed out another addition to the tax data in the 2015 national accounts: $228 billion of capital consumption adjustments due to NIPA using "economic" depreciation rather than the depreciation reported on tax returns. This large amount results from the substantial increase in expensing that began in response to the 2008 recession and widened the difference between NIPA and tax depreciation. Note that there may be a one-time shock for each law change because expensing only changes the timing of deductions—higher current-year deductions from expensing result in lower depreciation in the tax data in later years. Thus, if NIPA proprietors' income is increased by the amount of expensing this year, the amount exceeding first-year economic depreciation must be subtracted in later years. As a result, expensing can result in considerable re-ranking of taxpayers by reported income: those with large amounts move down in the year of expensing and move up in later years. This re-ranking, and the fact that expensing occurs throughout the distribution, indicate that allocating capital consumption adjustments by positive reported business income could overstate top income shares. In addition to these re-ranking effects, the rules and take-up of expensing have changed over time, further complicating the net effect of NIPA depreciation adjustments on the income distribution.

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[8] The SZ discussion of negative reported incomes confused reported and true incomes in a few ways. First, SZ wrote that the AS allocation of evaded income to those reporting negative incomes suggests substantial evasion by the true poor. Instead, those with reported negative incomes are often wealthy individuals with business losses or business loss carryovers. Audits find that those with reported negative income often have high true income, and the AS allocation seeks to replicate this finding. Second, SZ explained that a filer with true negative income has little incentive to evade. I agree. To repeat, AS allocate underreported income by reported income, not true income. Audit studies find that some filers with high *true* income, and therefore an incentive to evade, had negative *reported* incomes because of substantial evasion.

Moreover, the depreciation-related addition to tax data emphasized by SZ is partially offset by a *reduction* for other revisions.[9] These revisions remove foreign-source income and expenses for meals and entertainment that are limited in the tax data (BEA, 2019, pg. 17). PSZ did not separately allocate these additions or reductions. AS also did not take explicit account of these depreciation additions or revision reductions because—unlike the other audit-based amounts—these do not have clear distributional data. Despite this limitation, we plan to break out depreciation additions and revision reductions in future AS estimates. Still, the net gap between the two data sources is almost fully explained by the addition of IRS audit-based evaded income. This means the primary way to bridge the two data sources for distributional estimates is to use the distributions of the IRS special audit studies.

D. Other Gaps Between Tax Data and National Income

There are other gaps between tax data and national income due to additional business income and wages. In 2015, AS estimated gaps of about $40 billion for S corporations, $40 billion for farm income, and $90 billion for business rental income (AS online data Table T1). In total, these account for one percent of national income and—contrary to SZ's claim—much of this is not legally exempt. Unfortunately, the national accounts do not clearly break out the amounts due to evasion for these income sources. This is because the starting amount for farm and rental income is partly from surveys (BEA, 2017). However, a separate IRS audit study of S corporations for 2003 and 2004 found an annual average of just over $40 billion in evasion (GAO, 2009), nearly equal to the S corporation income gap that AS estimated in those years.

For wages, the gap is even larger—in both PSZ and AS it's over $300 billion when including evaded amounts.[10] The national accounts also do not start with wages on tax returns, but with amounts subject to unemployment taxation. NIPA Table 7.18 adjusts these amounts, adding $92 billion of evaded wages and $235 billion of "other" adjustments to capture non-governmental wages excluded from unemployment taxation and other items. Although together these amounts resemble the PSZ and AS gaps, this is partly a coincidence due to NIPA's different initial wages.[11] While AS allocated the gap according to audit data, PSZ divided the gap into evaded and non-evaded categories and allocated both by reported amounts. Hence, the important difference is not how to label this gap, but possible differences in the allocation distributions, which turn out to be close. Therefore, different approaches to allocating the wage gap explain little of the overall difference between the PSZ and AS top one percent income shares. Moreover, both estimates likely allocated too much to the top one percent because some of the "other" adjustments are excluded contributions to flexible spending accounts (BEA, 2017), which relative to reported compensation have low annual limits, such as $2,550 for health plans.[12]

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[9] Nonfarm proprietors' income in BEA's tax data is adjusted by adding $672 billion of misreported (evaded and nonreported) income, $227 billion of capital consumption adjustments (CCadj), and $47 billion of other adjustments; and removing $411 billion for revisions (NIPA Tables 7.13 and 7.14). While BEA starts with entity-level tax data, AS starts with income reported on individual tax returns that already exclude some of the revisions, such as double-counted partnership income and corporate income (thanks to Gabriel Zucman for raising this point), meaning about half of CCadj are offset by revisions. SZ suggested that the capital consumption adjustments should accrue disproportionately to those with high incomes, but the offsets likely also apply to this group.

[10] Thanks to Gabriel Zucman for clarifying this part of the PSZ approach.

[11] The AS and PSZ studies likely require a larger evaded amount because they start with amounts reported on tax returns (and some additions for non-filers), whereas NIPA starts with a broader measure—all wages subject to unemployment tax, regardless of whether they are fully reported on tax returns.

[12] www.irs.gov/newsroom/in-2015-various-tax-benefits-increase-due-to-inflation-adjustments

III. Other Differences Between AS and PSZ

A. Retirement Income

To allocate retirement income to taxpayers, PSZ used combined taxable and non-taxable retirement distributions. As shown by Auten and Splinter (2019a, 2020), this is inappropriate because most non-taxable distributions are rollovers. These amounts are very concentrated because they represent wealth stocks, not income flows, and this wealth can even show up multiple times due to repeated rollovers. This resulted in PSZ imputing too much income to the top of the income distribution. SZ acknowledged that non-taxable retirement income upwardly biased their top income shares. Their updated method, however, appears to retain some of this bias and possibly introduce a new bias over time. This is because SZ (pg. 51) now allocate pension wealth, and hence pension income, "10% proportionally to non-taxable pension distributions (e.g., Roth IRA distributions)." But this share is inappropriate for earlier years, when there were no non-taxable Roth distributions, and also too high in recent years because 2014 Roth distributions appear to be less than 0.5% of non-taxable amounts and the rest is nearly all highly concentrated rollovers (AS online appendix, pp. 24–25).

SZ (pg. 31) argued that "AS have too little" retirement wealth in the top of the distribution. However, AS estimated that in 2015 the top one percent by income has nearly 10 percent of retirement wealth, a bit more than estimates using the Survey of Consumer Finances. For example, Devlin-Foltz, Henriques, and Sabelhaus (2016, pg. 79) used this data to estimate that since 1989 the "top 1 percent of wealth holders own something like 7 to 8 percent of retirement wealth in all years."

In addition, SZ argued that AS top retirement wealth shares should be higher because we showed these ranked by income rather than wealth. SZ (pg. 31) wrote that "the top 1% [ranked] by income has a higher share of pension wealth than the top 1% [ranked] by wealth." This appears incorrect. The Distributional Financial Accounts show a *lower* top one percent share of pension entitlements when ranking by income (6.3 percent) rather than wealth (7.5 percent).[13]

B. Corporate Taxes, Government Consumption, and Ranking

This section discusses differences in corporate tax allocations, non-transfer government spending allocations, and the ranking of tax units. For corporate income taxes, a portion is generally allocated to labor income. However, PSZ allocated all corporate taxes to capital and SZ to corporate shareholders. In contrast, AS followed the Congressional Budget Office and the Joint Committee on Taxation by allocating one quarter to labor. Treasury's Office of Tax Analysis (Cronin et al., 2013) and the Urban-Brookings Tax Policy Center (Rosenberg, 2013) allocate a slightly lower portion to labor. Meanwhile, recent estimates have suggested that the labor incidence may be higher than one quarter (Liu and Altshuler, 2013; Suárez Serrato and Zidar, 2016; review by Hines, 2020).

Non-transfer government spending, or government consumption, is included in the after-tax/after-transfer measures estimated by AS and PSZ. The Congressional Budget Office (2013) considered two allocations of this government spending: each person derives an equal benefit or each person derives benefits proportional to their income. The CBO expressed concerns with both. In AS, we chose a halfway point, allocating government consumption half per capita and half by income. A Brookings Institution study made the same assumption (Reynolds and Smolensky, 1977). Rose (2020, pg. 14) suggested an even higher weight on the per capita

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[13] www.federalreserve.gov/releases/z1/dataviz/dfa/distribute/chart accessed on Oct. 20, 2020 (IRAs excluded).

component: "80 percent per person and 20 percent by income…may make the most sense." PSZ and SZ, however, allocated non-transfer government spending according to the second approach discussed by the CBO. This assumes no public goods attributes or redistribution from non-transfer government spending, such support for research or education.

To rank observations, AS used size-adjusted income. This is also done by the BEA for its distribution of personal income, by the CBO for its distribution of expanded fiscal income, and is standard for academic researchers (e.g., Gottschalk and Smeeding, 1997; Atkinson and Brandolini, 2001). This use of size-adjusting partially corrects for heterogeneity in marriage status and the number of children. These characteristics are used in determining taxes and transfers (e.g., standard deductions, earned income tax credits, and SNAP benefits), and therefore it's appropriate to account for them in measures of income inequality.

SZ claimed that size adjusting for ranking decreases the top income shares reported by AS. This is incorrect. Size adjusting for ranking *increases* top one percent shares by about one percentage point in all years. We explained this in AS footnote 18 and the appendix of Auten and Splinter (2019b). SZ (pg. 32) are correct that size adjusting means "rich families with kids are moved down the income ladder." But the second and larger effect of size adjusting is the entry of more tax units (and more income) into the top one percent.[14]

C. Tax Rates and Tax Progressivity

Mainstream estimates show that federal taxes are progressive in recent years. Figure 1 displays estimates of average tax rates by income from Piketty and Saez (2007), the Congressional Budget Office (CBO, 2019), the Joint Committee on Taxation (JCT), Treasury's Office of Tax Analysis (OTA), and the Urban-Brookings Tax Policy Center (TPC). These estimates, as well as those from AS (which have lower levels due to the inclusion of additional untaxed income sources), are broadly consistent with one another: negative or negligible tax rates for the bottom income quintile, 11 to 16 percent for the middle quintile, and about 33 percent for the top one percent.

Comparing the tax rates produced by Saez and Zucman's (2019) new approach with CBO's more standard estimates reveals a number of issues, as discussed in the online appendix of Splinter (2020). For example, the SZ average "tax rates" remove the refundable portion of tax credits from the bottom of the distribution. Ignoring the full impact of tax credits deviates from standard measures of tax rates and hides a primary source of increasing progressivity in the federal tax system (Splinter, 2019). It also introduces a bias. SZ excluded tax expenditures that benefit the bottom of the distribution (refundable tax credits) while retaining tax expenditures that benefit the top of the distribution (e.g., itemized deductions). Just as state and local tax deductions offset other taxes, refundable tax credits may be considered as offsetting payroll taxes. For example, a method of estimating child credits is based on payroll taxes and the earned income tax credit was originally aimed to offset payroll taxes (Eissa and Liebman, 1996). There is some ambiguity about classifying specific programs as taxes or

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[14] An illustrative example: assume there are 89 single tax units with income of $10, 10 single tax units with income of $20, and 1 four-person tax unit with income of $30. If grouping by #tax units and ranking by tax unit income the top ten percent share is 19% (9•$10+1•$30=$210). Grouping by #individuals decreases the top ten percent share to 13% (6•$10+4•$30=$150). Still grouping by #individuals and now ranking by size-adjusted income increases the top ten percent share to 18% (10•$10=$200) because single filers enter the top group. Replacing the family with a married couple and applying the PSZ #adults/equal-split incomes shows similar changes. Moving from tax units to the larger household unit of observation for size-adjustments would further lower top income shares (Larrimore, Mortenson, and Splinter, 2019).

transfers. The solution, however, is not to abandon standard practices for tax rates, but instead to shift from tax progressivity to measures of tax-and-transfer redistribution. Splinter (2020) estimated trends in redistribution using CBO data. These showed that taxes and transfers lower the market income Gini coefficient by nearly a third, and that the Reynolds–Smolensky redistribution index increased since 1979 by 59 percent.

Recent estimates also show increasing tax progressivity. In AS, we found that top average tax rates have changed little since the early 1960s while bottom 50 percent average tax rates have fallen substantially. Using CBO data, Splinter (2020) found a doubling of federal tax progressivity since 1986 when measured by the Kakwani index. The increase in tax progressivity is seen from trends in CBO's average federal tax rates. Between 1979 and 2016, top quintile rates decreased by about 1 percentage point, middle quintile rates decreased by about 5 percentage points, and bottom quintile rates decreased by about 8 percentage points. The larger decrease at the bottom of the distribution means tax progressivity increased.

SZ contrasted this finding with the much higher marginal tax rates for individual income taxes in the 1960s. But very few people paid those top rates. For example, fewer than 500 tax returns paid the top marginal rate in 1962.[15] The reason top average tax rates (total taxes of an income group divided by their income) are lower than expected in the 1960s is that a significant share of top one percent income was not reported on individual tax returns, largely due to corporate retained earnings. This explains why measures using national accounts by Pechman (1985), AS, and PSZ, found that the 1966 average federal income tax rate for the top one percent was between 14 and 16 percent. The stability of top tax burdens over time is because falling statutory rates were offset by an increasing share of top incomes being taxable.

IV. Other Estimates Are Consistent with AS

AS estimates appear consistent with levels and changes in top income shares estimated by other researchers using different data and approaches. The Bureau of Economic Analysis estimates the official U.S. national accounts and their recent estimates of the distribution of personal income combine survey data with imputations from tax data summary tables (Fixler, Gindelsky, and Johnson, 2020). For 2014, BEA's estimates show a top one percent share of 12.6 percent. The AS pre-tax/after-transfer estimate of 12.4 percent resembles this and the PSZ after-transfer estimate of 17.7 percent reported by the BEA significantly exceeds it.

Bricker et al. (2016) used Survey of Consumer Finance data. Between 1988 and 2012, they found a top one percent share increase of 3 percentage points (pp). The AS pre-tax increase of 3.6 pp resembles this and the PSZ pre-tax increase of 6 pp exceeds it. The Congressional Budget Office (2019) used tax return and survey data. Between 1988 and 2015, CBO found that the top one percent share of pre-tax income increased 3.4 pp. The AS pre-tax increase of 2.5 pp is a bit lower and the PSZ pre-tax increase of 5 pp exceeds it.[16] Burkhauser et al. (2012) used internal Census data to overcome top-coding issues. Between 1967 and 2004, they found a top one percent share increase of 2 pp. The AS pre-tax increase of 2 pp is similar and the PSZ pre-tax increase of 5 pp exceeds it.[17]

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[15] See page 114 of the 1962 SOI Individual Income Tax Return Report at www.irs.gov/pub/irs-soi/62inar.pdf. Splinter (2020) presented the number paying the top marginal rate for other years.

[16] Auten and Splinter (2019b) provided a detailed comparison between the AS and CBO income definitions.

[17] The SZ revisions lower each of these increases by about 1 percentage point.

V. Conclusion

I welcome Saez and Zucman's (2020) clarification of their specific concerns with Auten and Splinter (2019a). This reply provides historical background of discussions between the two research groups and respond to their main concerns. It shows that the PSZ allocation of underreported income is inconsistent with special audit studies in five ways. Meanwhile, the AS approach conforms to the audit data in these five ways. When moving from business income seen in tax data to amounts in national income, I show that depreciation-related additions are partially offset by a similar amount of deductions. Note that Gerald Auten and I have been working to update our estimates. Our updates should address some of our shared concerns with SZ about the increase in depreciation-related NIPA income adjustments, as well as the heterogeneity of non-filer income and re-ranking due to adding underreported income.

The goal of the Auten and Splinter research has been to provide accurate and consistent estimates of inequality and tax burdens. We cannot escape the limitations of the underlying tax data. More than one third of national income is missing from tax returns and the reporting of income on tax returns has changed dramatically over time (Kopczuk and Zwick, 2020). This means overly simplistic estimates using tax data will result in biased long-run estimates. Therefore, an open discussion is needed to refine methods to address the inherent difficulties of using tax data.

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Figure 1: Average Federal Tax Rates by Income Group in Recent Years
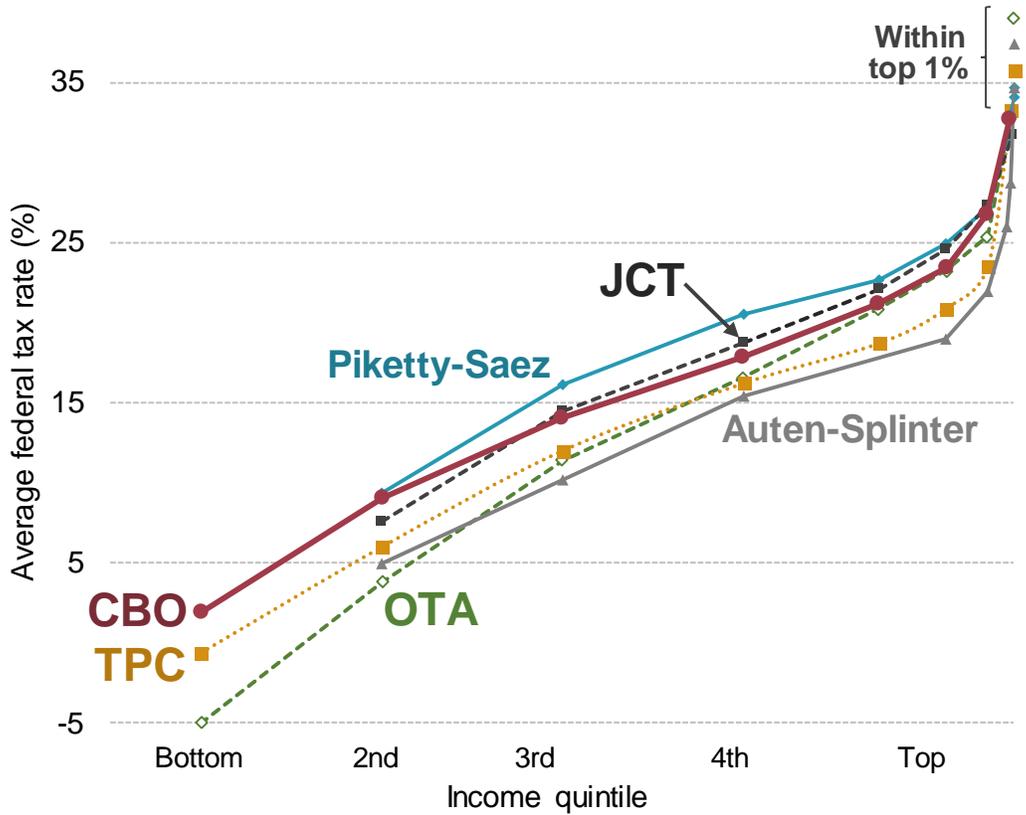
Source: Splinter (2020) based on Piketty and Saez (2007), AS (2019a), JCT, OTA, and TPC (with size-adjustment).
Notes: Average tax rates are federal taxes divided by income, defined by Piketty-Saez as fiscal income plus payroll and corporate taxes, AS as pre-tax/after-transfer national income, JCT as expanded income, TPC and OTA as expanded cash income, and CBO as market income plus social insurance benefits. Incomes include realized capital gains, although AS instead include corporate retained earnings. AS and TPC include income accrued in retirement accounts. AS taxes include non-federal corporate and estate taxes and the bottom 50% rate accounts for refundable tax credits and is placed in the 2nd quintile bin and P50–90 rate in the 4th quintile. Rates are for 2014, but OTA and JCT for 2015 and Piketty-Saez for 2004.

Appendix

Prior Discussions

Piketty, Saez, and Zucman (2019) previously commented on the AS estimates. However, their analysis did not directly compare differences in approaches, and instead relied on new "simplified" estimates. These were based on Piketty and Saez (2003) fiscal income shares augmented using two distributions—taxable capital and non-capital income—to allocate missing amounts and target national income. This overly simplistic methodology had significant issues. For example, the 2014 "simplified" estimates allocated about 16% of employer-sponsored insurance and payroll taxes to the top one percent, instead of what should have been about 2% and 4%, respectively. The "simplified" estimates also allocated owner-occupied imputed rent like taxable capital income, meaning 53% of imputed rent went to the top one percent, instead of what should have been about 9%. See our full response in the appendix of Auten and Splinter (2019b).

In Auten and Splinter (2020), we summarized differences between AS and PSZ. In addition to the issues already discussed in this paper, we explained how we accounted for changes in the treatment of business losses. SZ's updates still do not account for these changes. We also discussed the allocation of deficits. PSZ allocated half of deficits by transfers received, which removes transfers that were actually received that year. In addition, while PSZ only report the final effects of their assumptions (with select income sources shown), AS sequentially added income sources to provide a more transparent analysis.