

ONLINE APPENDIX

Income Inequality in the United States: Using Tax Data to Measure Long-term Trends

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This online appendix provides details about each adjustment made to create consistent market income, pre-tax income, and after-tax income. Table B1 summarizes each adjustment and the relevant data sources. Figure B1 shows the effect on top one percent income shares of each income correction and setting groups by the number of adults. Figure A1 in the main paper shows the effect of income expansions. Figures B2 and B3 show the effects of adding government transfers and removing taxes.

NIPA data sources

Our income measures include sources not reported on individual income tax returns. Values for these sources of income, as well as target totals for income items that are only partially reported on tax returns, are taken from the Bureau of Economic Analysis (BEA) National Income and Product Accounts (NIPA). C corporation retained earnings are defined as undistributed profits, that is, profits with inventory value and capital consumption adjustments less taxes and net corporate dividends from NIPA table 1.12. C corporation taxes include federal and state C corporation taxes from NIPA table 1.12, but remove payments to the U.S. Treasury by Federal Reserve banks from NIPA table 3.2 (these are government income from the interest on Federal Reserve assets, mostly mortgages). Total tax-exempt interest is based on monetary interest paid by state and local governments from NIPA table 7.11 and distributed based on tax returns since 1987 and Surveys of Consumer Finances in prior years. The following come from various NIPA tables: employer provided insurance from table 7.8, government transfers from table 3.12, federal income tax from table 3.2, state and local income and property taxes from table 3.3, net imputed rent from table 7.9, property taxes on housing from table 7.4.5, payroll taxes from table 2.1, fuel and utility “taxes” from table 3.5, and total taxes from table 3.1. Fuel taxes and public utility payments are excluded from total taxes because they are closer to “user fees” than taxes.

Replicating Piketty and Saez income shares

Our replication follows the Piketty and Saez (2003, hereafter PS) definitions. We make two corrections for these estimates. First, we remove a very small number of duplicate observations from the confidential files between 1987 and 2013, about two dozen each year except for 2013, when the number was much larger as a result of major changes in top tax rates that caused taxpayers to file a second return with corrections. Since most of the duplicate observations are high income tax returns, they have small weights (often of one) and so their removal has little impact on the overall results. We have discussed this issue with the IRS Statistics of Income and duplicates have been removed from the 2014 and 2015 files. Second, in 1964 an additional \$21.5 billion in income is added total income to match PS and published IRS total income. This replicates PS 1964 top income shares. In addition, our replication of PS numbers treat capital gains distributions from mutual funds reported directly on the 1040 as ordinary income rather than as capital gains to match PS totals. Our later computations of consistent market income treat these as capital gains and so remove them.

1. Consistent market income: Corrections

Remove non-deductible losses before 1987

Before TRA86, taxpayers could offset taxable income with passive passthrough and rental losses (Joint Committee on Taxation, 1985). One of the goals of the reform was to limit the effect of these tax shelters with passive loss limitations (Nelson and Petska, 1990). The resulting non-deductible losses increased taxable income. In order to make non-deductible losses consistent before and after TRA86, post-TRA86 loss limitations are imputed in pre-TRA86 years. The fraction of losses that are non-deductible declines gradually after TRA86, which may be due to portfolio adjustments, the gradual phasing in of slower depreciation for real estate, or other behavioral changes as these losses became less valuable. It is less difficult to model imposing limits on pre-TRA86 losses than to try and simulate continuation of the prior regime of tax shelters and other tax avoidance. Therefore, we estimate non-deductible losses before TRA86 rather than make non-deductible losses deductible after TRA86. The imputation of non-deductible losses is based on the fractions of partnership/S corporation losses and rental losses that match those of non-deductible losses in years immediately following TRA86.¹

Include tax-exempt interest

State and local government tax-exempt interest payments are excluded from federal taxable income, although they have been reported on tax returns since TRA86 and should be included in market income. We include reported tax-exempt interest since 1987 and imputed tax-exempt interest in earlier years. For each year before 1987, the total tax-exempt interest received by tax units is assumed to be 65 percent of NIPA state and local monetary interest paid, the average percentage reported on tax returns since 1987.

Tax units with high marginal tax rates tend to invest in tax-exempt bonds more than those with lower marginal rates. Since top marginal rates were much higher before 1987, the fraction of tax-exempt interest going to the top of the distribution was also higher. As seen in Figure B4, high income tax units were still shifting out of tax-exempt bonds in 1988. Between 1982 and 1986, the fraction of tax-exempt interest going to each income group is based on shares from the 1983 Survey of Consumer Finances, which are similar to the 1987 shares seen in the tax data. The shares for 1960 and 1962 are based on the 1962 Survey of Financial Characteristics of Consumers. The shares are assumed to decrease in a straight-line for years between 1962 and 1982. Before 1987, tax-exempt interest is allocated after tax units have already been divided into relative income groups.

Removing filers younger than 20 years old and remaining dependent filers

Using Census data for the U.S. resident population, PS estimate the total number of tax units as the sum of married men, divorced and widowed men and women, and single men and women aged 20 and over. The implicit assumption is that all primary tax filers are age 20 and over, independent economic units, and resident in the U.S. Our replication analysis starts with these estimates and assumes that the number of non-filers is the total number of tax units less the number of tax returns filed in a given year.² However, substantial numbers of tax returns are filed

¹ Non-deductible losses affect the top of the distribution more and allowed rental losses phase out for AGIs over \$100,000. For tax units with positive market incomes over \$100,000 in 1987 (indexed in earlier years), 85% of partnership/S corporation losses and 30% of rental losses are estimated to be non-deductible. For tax returns below the threshold, 20% of partnership/S corporation losses are assumed to be non-deductible.

² Note that the 2007 sample omits returns identified as only filing in order to claim a tax rebate. The actual number of 2007 tax filers was more than the PS number of total tax units because nearly 10 million filers were younger than 20 years old.

by individuals who are under age 20. Removing these young filers increases the non-filer tax units in 2015 by more than 7 million. Social Security data on dates of birth is used to identify filers younger than 20 years old, but before 1979 we cannot link this data to public use data and so target this number based on constant fractions of the BLS number of workers aged 16 to 19. We select unmarried tax returns without age exemptions with low AGIs in order to hit these the targeted number of young filers. For example, in 1978 their AGIs ranges between \$1,400 and \$4,200.

Dependent filers are claimed as a dependent by another taxpayer but file their own tax return. To be claimed as a dependent means the individual provided less than half of his or her own support for the year, implying that they were not economically independent. Rules changes in TRA86 greatly increased the numbers of dependent filers beginning in 1987. Prior to 1987, dependents who filed their own return could claim a personal exemption (\$1,080 in 1986), but could not claim a standard deduction. Under TRA86, a dependent could no longer claim the personal exemption if claimed on another return, but could claim a standard deduction of the larger of \$500 or earned income up to the amount of the regular standard deduction. In addition to meeting a number of other tests, a child age 19 or over could not be claimed as a dependent unless they were a full time student receiving over half of their support from the taxpayer claiming them, and beginning in 1989 had to be under the age of 24. A child 18 or under can be claimed as a dependent if the other tests, such as the support test, are met. The drop from \$1,080 to \$500 in exempt income resulted in millions of additional tax returns being filed by young dependents. At a higher income level, dependent filers could be subject to a complicated “Kiddie Tax” that required summing the incomes of all family members and allocating the incremental tax on dependent income among all the dependents. This tightening of the rules for dependents was primarily in response to concerns that tax planning among some high income taxpayers included shifting income to their children to reduce their family’s taxes. For example, Lourie and Cutler (1971) explained how to reduce taxes by shifting some income to children or spouses to benefit from multiple uses of the lower tax brackets.

Given the requirements needed to be claimed as a dependent, we remove remaining dependent filers regardless of their age. Since the unit of observation of our analysis is non-dependent tax units age 20 and over, the most appropriate approach is to treat dependent filers age 20 or older as part of another tax unit. The alternative, which seems less appropriate, would be to treat them as if they were low income independent households. In 2013, for example the average market income of dependent filers age 20 to 23 was about \$8,000 compared to \$18,000 for non-dependents. Therefore, our approach is to drop all filers under age 20 and dependent filers over age 20 and allocate their income proportionally by the number of dependents claimed on a tax return. Since this adjustment effectively joins two tax units, the total number of tax units is reduced by the number of age 20 and over dependent filers removed.

Remove non-resident filers and correct for married filing separately returns

As the number of total tax units is based on the U.S. resident population, non-resident filers are dropped and replaced with non-filer tax units. Since 1979, nonresident filers are identified as any filer with excluded foreign earned income or with an address outside the fifty states or the District of Columbia. For example, in 2011 this includes 800 thousand tax filers with average incomes of \$77,000. Before 1979, the public use files do not have state codes and so non-resident filers are identified by possible foreign earned income exclusions identified as follows: including returns with wages of at least \$100, other income losses of at least \$100, and other income equals negative wages within a range of plus or minus \$50. In 1979, this correction

decreases top one percent income shares by only 0.02 percentage points, suggesting that any effect in earlier years would be small.

The PS estimate of the total number of tax units counts all married couples as one tax unit. But some married couples file separate tax returns and so the PS approach counts them as two filing tax units. This means the number of adult tax returns is greater than the number of adult filing tax units, which leads to an undercount of the number of non-filers. To correct for this effect, we increase the number of non-filing tax units by half the number of married filing separately returns.

Verify income of non-filers

Based on non-filer information return data, non-filer income is assumed to be 20 percent of average filer income, which is the same as the PS assumption. Table B2 shows that the 20 percent estimate is stable between 2000 and 2010. After including underreported IRS income in a later step, non-filer incomes increase to about 30 percent of average filer income.

To estimate non-filer income, we use the SOI Databank, an individual level panel containing every person with a taxpayer identification number who was born before 2012 and had not died by 1996. For each year, we select individuals who did not file a tax return (we remove late filers), were ages 20 to 99 years and had not died. Information returns for individuals over age 99 are excluded because these records often reflect erroneous SSNs or fraudulent information returns. The information returns used to estimate the incomes of these individuals are: Forms W-2, 1099-DIV, 1099-MISC, and 1099-R. To control for outliers, 1099-MISC income for each source is excluded if \$99,999 or more.³ Summing income from these sources and dividing by the number of corrected non-filer tax units gives average non-filer income. This approach gives a conservative estimate of non-filer income because it excludes many sources of income, such as illegal sources, that can be important for some non-filers.

To avoid double counting wages, we subtract wages of those filing tax returns where all filers use Individual Taxpayer Identification Numbers (ITINs). These are numbers that the IRS began issuing in 1996 to individuals without Social Security Numbers (SSNs) so that they could file tax returns and in many cases claim refundable child tax credits. However, ITINs are not allowed to be used on Form W-2s. The IRS accepts tax returns where the ITIN on the tax return does not match the SSN on Form W-2. This ITIN/SSN mismatch implies that we would attribute a large fraction of those W-2 wages to non-filers, even though the wages were claimed by ITIN filers. We use individual tax return samples to estimate wages on tax returns where all filers have ITINs and subtract this amount from our non-filer income.

Corrections for income sources

Some income sources are missing from or do not belong in consistent market income. Our corrections and adjustments are to (1) add excluded dividends, (2) add excluded combat pay, (3) deduct gambling losses up to the amount of gambling income, (4) add back net operating losses that have been deducted from income, (5) remove capital gains distributions, (6) remove Individual Retirement Account (IRA) contributions, and (7) remove taxable state and local income tax refunds.

³ By comparing similar filers and non-filers, Larrimore, Mortenson and Splinter (2017) estimate that about 70 percent of non-filer 1099-MISC income is offset by deductions. Accounting for this would reduce estimated non-filer income about one or two percentage points of filer income.

Gambling winnings are generally included in other income on tax returns, but gambling losses may only be deducted up to the level of reported winnings by taxpayers itemizing their deductions. Since only net income from gambling should be counted as income, the asymmetric treatment of gambling gains and losses is corrected by subtracting deducted gambling losses. Net operating losses are losses carried over from earlier years for tax purposes and do not represent income during the calendar year. In addition, large operating losses in one year may result in negative AGI for several years so that the one-time loss can be counted multiple times in future years. This adjustment for losses moves some taxpayers from bottom centiles to the top one percent.

Beginning in 1970, a new simplification measure allowed taxpayers with capital gains distributions and no other capital gains to report them directly on Form 1040 without filling out a Schedule D (except in 1997 and 1998). A separate line was added in 1971. It appears that this change was not accounted for in PS computations of market income. Therefore the capital gains reported only on Form 1040 (adjusted for the capital gains exclusion) are subtracted as a correction from our replication of PS. Previously, taxpayers did not have this option and so capital gains distributions were already removed in those years. Refunds of state and local income taxes are included in total income on tax returns to correct for itemized deductions in the previous year that were too large (resulting in a lower tax burden). These refunds should not be included in measures of market income.

Individual Retirement Account (IRA) contributions, as well as Keogh, SEP, SIMPLE and other qualified plan contributions, are removed for two reasons: they are parallel to employee contributions to defined contribution accounts such as 401(k) plans, which are also excluded, and retirement income is measured on a distribution basis, so contributions should be removed to prevent double counting. Note that we do not include non-taxable pensions or non-taxable IRA distributions reported on Form 1040, because most of the large values are likely to be rollovers, and small numbers of Roth IRA distributions in recent years. While some of the smaller non-taxable pensions and distributions reflect typically small amounts of pension basis recovery or housing allowances for certain religious employees, these cases are not common and also difficult to identify.

Economists generally consider economic income to be net of the expenses of earning that income. Failing to net expenses treats some income as gross income, rather than net income. As discussed above, our analysis corrects one important situation by netting reported gambling losses up to the amount of reported gambling income. However, other netting corrections could also be considered, the most important of which are employee business expenses and expenses associated with investment income, including investment interest expense. Our current analysis does not make these adjustments, in part because since 1987 employee business expenses are only observed for itemizing taxpayers and to the extent that they exceed two percent of AGI.

Due to missing variables in early years, some corrections are missing or can only be imputed. State and local tax refunds are available in the data only since 1971, the first year this appears on IRS tax forms. This may reflect a new regulation as there is no mention of this in the instructions in prior years. Gambling losses are only deducted since 1972. The effect of ignoring gambling in the 1960s is small because this is well before the expansion of lotteries, casinos, and other legalized gambling activity. Before 1991, gambling losses are set equal to miscellaneous deductions if miscellaneous deductions are equal to or slightly less than other income. In later years, this method accounts for over half of gambling loss deductions. Before 1989, net

operating losses are generally assumed to be 80 percent of other income losses, since a large fraction of losses in other income in later years reflect net operating losses. In more recent years, the foreign earned income exclusion is included in other income on Form 1040 as an offset to wages. Because the tax returns with excluded foreign earned income are dropped from the sample, we do not address the effects of the foreign earned income exclusion.

Alimony received and paid is worth a brief discussion. Alimony received is included in our income measures since it is part of AGI, but alimony paid is not deducted (as we add back adjustments). Thus, alimony income is over-counted. This issue could be addressed by deducting reported alimony paid. This amount, however, is larger than the amount of reported alimony income. To correct for these issues, reported alimony income could be increased to match deducted alimony payments and alimony payments removed. This would address the issues of over counting and the difference between the amounts, and attribute this income to the more correct recipients. While not currently in our adjustments, this approach would have a negligible effect on top one percent income shares. For example, in 2015 the after-tax share would decrease by only 0.01 percentage point. A related issue is that child support payments are also not properly attributed because there are no administrative records in the tax data. As a result, these amounts are counted with the income of the payer, not the income of the recipient, which also slightly overstates top income shares.

Measure income group sizes using the number of adults

Decreasing marriage rates outside the top of the income distribution have tended to overstate the increase in unadjusted top income shares. To provide a measure of top income shares that is independent of the declining marriage rate outside of the top of the distribution our analysis bases income groups on the number of adults age 20 and over, rather than by the number of tax units. This means that there are equal numbers of adults rather than equal numbers of tax units in each percentile. Since married tax units contain two adults and the marriage rate was relatively constant for high income tax units, this will cause these two approaches to have different trends in top income shares.

For example, assume there are 100 million tax units and all of the top one percent are married and half of the bottom 99 percent are married, so there are about 150 million adults. Grouping by tax units, the top one percent has 2 million adults and 1 million tax units. Grouping by adults, the top one percent has 1.5 million adults and only 0.75 tax units. There are fewer tax units because the threshold to be in the top one percent of adults is higher. Since there are fewer tax units in the top one percent of adults, there is less income in the top one percent and so their income share is lower.

If the marriage rate were constant over the income distribution, changing from tax units to adults would not affect top income shares, as the threshold would not move. But because the marriage rate is higher in the top one percent, converting to adults will always decrease top one percent income shares. The falling marriage rate outside the top one percent implies that the switch from grouping by tax units to adults decreases top income shares more in more recent years.

2. Consistent market income: Expansions

Include undistributed fiduciary income

Fiduciaries, which include estates and trusts, distribute much of their income each year and this distributed income is included in individual taxable income on tax returns. Some fiduciary income, however, may be retained and missing from tax-based measures of income. To include

undistributed fiduciary income, we add undistributed income excluding capital gains to individual income and add both distributed and undistributed interest, dividends, and capital gains to each of these sources, such that later imputations based on these income sources include fiduciary income. Undistributed fiduciary income is allocated to tax returns by taxable fiduciary income (1966 shares going to income groups are used in prior years). Fiduciary income is split among interest, dividends, capital gains, and other income according to total income ratios of each source. Fiduciary level income taxes (excluding estate tax) are added to state income taxes and federal fiduciary taxes are added to federal income taxes and also allocated by taxable fiduciary income.

Include C corporation retained earnings

C corporation retained earnings are distributed to various corporate owners and beneficiaries of corporate income: individual owners, retirement account owners and pension beneficiaries, and non-profit organizations and domestic governments. C corporation retained earnings is defined as NIPA undistributed corporate profits and calculated as profits with inventory value and capital consumption adjustments less taxes and net corporate dividends. These amounts include reinvested earnings of incorporated foreign affiliates of U.S. corporations, that is, unrepatriated foreign earnings.⁴ Also, in all years the ownership by U.S. residents of foreign corporations is almost exactly offset by the non-resident ownership of U.S. corporations. Therefore, we implicitly assume that the retained earnings accruing to residents from the ownership of foreign corporations is similar to that accruing from a similar amount of asset value of domestic corporations.

Including current year retained earnings of C corporations is one way to account for capital gains income. There are several ways to measure capital gains income: realized capital gains on tax returns, accrued capital gains and losses, or the underlying income that produces capital gains income. Realized capital gains reported on tax returns may have accrued over many years but are only seen on tax returns when realized. Accrued capital gains are difficult to measure and can be highly volatile due to the effects of asset price bubbles and their collapse and business cycles (Larrimore, et al., 2017).

A portion of corporate retained earnings are allocated to individual filers. Since we want to attribute retained earnings accrued in a given year to the owners of corporations, we favor using dividends received as the primary means of indicating corporate ownership.⁵ Since some corporation don't pay dividends, we also allocate a portion by realized capital gains. Three-quarters of retained earnings are imputed based on a tax filer's share of dividends and one-quarter based on their share of Schedule D capital gains.⁶

Another portion of corporate ownership is associated with retirement income, including private and public pensions, IRAs, and life insurance funds. Based on the Federal Reserve Financial Accounts, the fraction of corporate ownership associated with these retirement funds was 4 percent in 1960, peaked at 57 percent in 2008, and decreased to 50 percent by 2012.⁷ The inside

⁴ For more details, see www.bea.gov/national/pdf/chapter13.pdf

⁵ Alstadsæter et al. (2015) use a national registry of stock ownership to impute accrued business income to personal owners in Norway. No centralized registry is available for the United States.

⁶ Taking into account the small amount of dividends earned by non-filers (about 2 percent of the total) would slightly decrease our estimates of top income shares.

⁷ We use the 2017 Investment Company Institute Fact Book data to estimate the corporate equity shares of IRA assets, including shares owned through mutual funds, which ranged from about 60 percent to 80 percent from 1997 through 2015.

buildup in these accounts associated with retained earnings is captured at the time of withdrawal since taxable pensions and IRA distributions are included in consistent market income. The fraction of corporate ownership by non-profit organizations and domestic governments increased from 5 percent in 1960 to 7 percent in 2013. Rosenthal and Austin (2016) present similar estimates.

Include C corporation taxes

C corporation taxes are imputed to tax filers following the approach used by Congressional Budget Office (2012) and the Joint Committee on Taxation (2013): one quarter of the tax is borne by wages. The remaining three-quarters is allocated by corporate ownership and interest bearing assets. The share associated with household corporate equity ownership is allocated three-quarters by dividends and one-quarter by capital gains reported on tax returns. The share associated with bonds is allocated by taxable interest. The share associated with retirement plan ownership is allocated by taxable retirement income.

In 2015, for example, these assumptions result in 18 percent of corporate tax being assigned to the top one percent. First, 25% is assigned to wages, of which the top one percent (after our adjustments) earns only 6%, including executive bonuses. Of the remaining 75%, half is attributed to retirement accounts and the top one percent receives 5% of retirement account distributions. Finally, the remaining share is allocated by capital income with the top one percent earning about 40% of dividends, capital gains, and interest. In summary: $0.25 \cdot 6\% + 0.75 \cdot (0.50 \cdot 5\% + (1 - 0.50) \cdot 40\%) = 18\%$. This fraction of corporate tax assigned to the top one percent is less than Congressional Budget Office (2016) estimates which disregard the large fraction of ownership of corporations by retirement accounts.

Include business property taxes

Business property taxes are also included in income. The aggregate amount is defined as all property taxes less housing property taxes and is distributed to tax returns in proportion to capital ownership shares. The portion associated with household corporate equities is allocated by three-quarters dividends and one-quarter capital gains. The portion associated with bonds is allocated by taxable interest. The portion associated with retirement plan ownership is allocated to taxable retirement income. The portion associated with passthrough ownership is distributed to passthrough entity positive net income.

Inflation adjustment

Inflation affects real incomes differently over the income distribution, and so correcting for inflation moves towards a more consistent measure of top income over time. Inflation causes an overstatement of interest receipts and an understatement of business profits, which are net of deductible interest payments. Steuerle (1985) explains that “[i]nflation raises the nominal interest rate on loans and decreases the probability that nominal financial or taxable income will be measured as positive even when real economic profits are present.” (pg. 129) This inflation effect may partially explain low nominal business income in the 1970s and early 1980s. Businesses may have increased this inflation caused understatement of income to the extent they sought to lower tax burdens by increasing borrowing and deductible interest payments. Between 1961 and 1981, total interest payments that were potentially deductible increased from 5.5 to 13.1 percent of GNP (Steuerle, 1985).

In order to estimate incomes that are more consistent across years despite inflation rate fluctuations, we make three adjustments to interest flows. First, we decrease household net

interest receipts by the fraction accounted for by inflation, estimated as the inflation rate (using the PCE) as a fraction of the Baa corporate bond yield.⁸

Second, we increase business income by the fraction of net interest payments accounted for by inflation as a fraction of the Aaa corporate bond yield.

Third, we account for the effects of inflation on employer sponsored pensions. Inflation likely reduces the real retirement income of households and causes businesses to increase real contributions to pension and other retirement funds, especially if benefits are indexed to inflation. We divide the retirement account portion of the inflation adjustment equally between households and businesses. The main household inflation adjustment is distributed by taxable and non-taxable interest and the retirement effect by wages. The business adjustment is distributed by all business net income, both corporate and positive passthrough income.

Fourth, governments also benefit from lower real interest payments. We estimate the aggregate value of inflation on government interest payments as the difference between household interest decreases and business income increases, such that total income is unchanged by the inflation adjustment. This residual approach results in amounts that are similar to the net interest paid by governments to domestic residents times the fraction of inflation. It is unclear who benefits from lower real government interest payments, but it likely decreases current taxes and so we distribute the effect by federal and state income taxes.

This inflation adjustment increases top one percent income shares by up to 0.9 percentage points in the 1970s and early 1980s when inflation was high. But the effect is much smaller in the 1960s and recent decades. This approach, however, may understate the impact of inflation on top income shares. Steuerle (1985) suggests that higher income business owners are better able to secure loans to take advantage of inflation tax arbitrages than lower income business owners. Allocating a larger fraction of the inflation based business income increase based on this assumption would further increase top income shares in the inflationary 1970s.

Add underreported income

Since income is underreported on tax returns, we add this missing income. This is an important addition since it results in roughly doubling sole proprietor and partnership income.

Underreporting rates are based on the IRS National Research Program (NRP) and previous Taxpayer Compliance Measurement Program (TCMP) studies, which are detailed audits used to estimate the overall degree of underreporting. BEA also uses these studies in estimating national income. Since these studies are the best available information on underreported income, the distributions observed are the primary basis for allocating it across the distribution.⁹

Underreported income is a large source of income, but there is little research available on its distribution. One exception is Johns and Slemrod (2010), which used the tax year 2001 NRP Individual Income Tax Reporting Compliance Study to estimate income shares with and without underreported income. While the top one percent receives about 18 percent of reported AGI, it

⁸ The Baa bond rate assumption is likely between the appropriate rate for high income taxpayers who are more likely to hold bonds and lower and middle income households whose interest income comes more from savings and checking accounts with lower nominal interest rates.

⁹ Because of the importance of this issue and the possibility that the NRP and earlier TCMP may not fully capture underreported income of some of the wealthiest taxpayers, we are continuing to examine the distribution of underreported income.

accounts for only about 5 percent of underreported income. If underreported income were distributed evenly across taxpayers within AGI groups then top shares should decrease. Underreported income, however, is concentrated in a subset of taxpayers and so its inclusion puts some taxpayers into the top one percent while others drop out. This re-ranking effect explains why the top one percent share in 2001 was unchanged when adding underreported income.

We distribute underreported income in four steps. First, underreported income is estimated as the difference between amounts already in market income and NIPA totals, separately estimated for wages and salaries, rental income, farm income, non-farm proprietor income, and S corporation net income.¹⁰ This approach leads to similar amounts as BEA “misreported” income. For example, Park (2000) presents BEA estimates of 1996 misreported wages of \$84 billion and non-farm proprietors’ income of \$224 billion, as compared to our estimates of \$86 billion and \$231 billion, respectively.

Second, we allocate one-tenth of underreported income to non-filers. While most of the Johns and Slemrod study only includes tax filers, their Table 1 shows an individual income tax gap of \$25 billion for non-filers out of a total of \$222 billion. Because non-filers likely have lower tax rates than filers, their share of underreported income is likely larger than the 11 percent suggested by the fraction of the tax gap. Therefore, we assume that non-filers account for 15 percent of underreported income. We believe this is still a conservative assumption and that non-filers may account for an even greater share of underreported income. Our assumption implies that the underreported income attributed to non-filers represented an average of one-quarter of non-filer total market income since 1960, and about a third in recent years.

Third, the filer portion of underreported income is allocated among income classes using Johns and Slemrod (2010) estimates of the shares for each reported AGI group. Table 3 of Johns and Slemrod (2010) shows that in 2001 the bottom 90 percent of the distribution by reported AGI accounts for 80 percent of underreported income. For other income groups it is distributed as follows: P90-95 receive 5%, P95-99 receive 10%, P99-99.5 receive 2%, P99.5-99.9 receive 1.5%, P99.9-99.99 receive 1%, and the top 0.01 percent receive 0.5% (the final three groups divide the estimated share of the top 0.5 percent by average relative income shares). These shares are used to distribute underreported income to tax filers in all years by reported AGI income groups using tax unit weights. To obtain a consistent measure of AGI closer to the 2001 definition, employee business deductions are added back before 1991 and excluded Sch. D capital gains are added back before 1987. Our preliminary tabulations of the 1988 IRS TCMP suggest a similar distribution of underreported income, although a larger fraction going to those with negative AGIs.

Within each AGI group, underreported wages are distributed by shares of reported wages. The same is done for underreported business income (including rental, farm, sole proprietorship, partnership, and S corporation income), but using the absolute value of business income and only for select taxpayers.

Fourth, we select a subset of taxpayers to receive underreported business income such that we target the changes in reported and true income shares estimated by Johns and Slemrod (2010, see

¹⁰ Specifically, it is the difference between NIPA values and tax-based income values for each sources: wages (including estimated amounts from non-filers), Sch. F farm income, Sch. C and partnership net income (including estimated amount from non-filers), rental income, and S corporation income. See Table T1 in the online data for details.

Table 5). Specifically, 50% of tax units in the bottom 95 percent and 10% of tax units in the top 5 percent are selected to receive underreported business income. This generates large re-ranking effects at the top such in 2001 top one percent income shares are unchanged, while top ten percent income shares increase by 0.4 percentage points (these estimates are before distributing any underreported income to non-filers, because the targeted AGI shares changes in Johns and Slemrod excluded non-filers). The re-ranking effect that emerges from this approach tends to slightly decrease top shares during business expansions but have little effect in recessionary years, such as 2001.

Include imputed housing rents

Imputed rental income accruing to residents of owner-occupied houses is included and allocated by real estate taxes, which are identified for the top ten percent by deductions on tax returns. This includes property taxes paid, as this is a pre-tax measure.

Include employer payroll taxes

The employer portion of payroll taxes for filers is based on reported wages and for non-filers based on average wages and applying tax rates and annual OASDI contribution limits. For individual filers in 2013, these taxes include a 6.2% OASDI tax on the first \$113,700 of wages, a 1.45% Medicare tax on all wages, and a 6.0% unemployment insurance (UI) tax on the first \$7,000 of wages. Since both spouses may work, we adjust the OASDI and UI covered wages for married filers by increasing the annual contribution limits for OASDI by between six and eight-tenths. The effect of adding employer payroll taxes to income is smaller in years before 1979, since the employer OASDI rate was below 4.0 percent for most of the 1960s and the Medicare tax was non-existent before 1966. The difference between total NIPA payroll taxes and amounts estimated for filers, which usually ranges between 5 and 10 percent of the total, is allocated to the bottom 90 percent of tax units because this residual represents payroll taxes paid by non-filers.

Include employer provided insurance

We use the proportional distribution of non-taxable employer provided health insurance reported on 2014 Forms W-2 to distribute the total NIPA amount of employer provided insurance in all years to each income group. This includes health, life, and workers' compensation insurance paid for by employers, of which health insurance represents about 90 percent in recent years.¹¹ Bureau of Labor Statistics data presented in Warshawsky (2016) suggest that the distribution of this benefit in top earnings groups was very similar in 1992 and 2010 (see Table C11 of the online data). We estimate that the top one and ten percent of tax units (grouped by the number of adults) had 1.6 and 20.6 percent of employer provided health insurance.¹² The effect of adding employer provided insurance on top income shares increased monotonically and in 2015 decreased the top one percent share by 0.7 percentage points. Kaestner and Lubotsky (2016) review distributional studies of the effect of adding employer provided health insurance. While adding insurance to income increases distribution-wide inequality, as the top half of the distribution earns most

¹¹ In recent decades, health insurance accounts for almost all of employer provided insurance. In the 1960s, however, life insurance accounted for a significant fraction.

¹² Employer provided health insurance shares for the top 10, 5, 1, 0.5, 0.1 and 0.01 percent tax unit income groups (set by number of adults and based on PS total number of tax units) are: 20.9, 9.9, 1.6, 0.75, 0.15, and 0.02 percent. These estimates are similar to U.S. Treasury distributions of the health insurance exclusion tax expenditure (www.treasury.gov/resource-center/tax-policy/tax-analysis/Documents/Selected-Credits-Deductions-and-Exclusions-2015-Revised.pdf).

employer provided insurance, we show that it can decrease top inequality, as insurance becomes a smaller share of income at the top of the distribution.

3. Pre-tax income

Include Social Security benefits

Most Social Security and disability insurance (SS) benefits are excluded from federal taxable income, but since 1984, some benefits have been reported on tax returns. We add reported benefits to tax filers' incomes since 1985 and imputed SS benefits in earlier years. To create an imputation, we match the 1985 distribution and adjust proportionally by the fraction of adults at least 65 years old in each income group, where both adults on joint returns are counted if the primary filer is at least 65 years old. The fraction of filers age 65 and over in the top one percent was higher in earlier years: about 1.8 percent 1962 compared to 1.2 percent in 1985. Adjusting shares of SS based on these fractions, the top one percent of adults received 3.8 percent of SS benefits in 1962 and 2.5 percent in 1985. The fraction of SS benefits reported on tax returns (SS plus railroad retirement benefits) increased from one third in 1985 to two-thirds of NIPA totals more recently. Unattributed benefits are added to total income, assuming that the residual benefits do not go to those in the top ten percent of the income distribution.

Include unemployment insurance benefits

Unemployment insurance (UI) benefits were at least partially excluded from federal taxable income before 1987. Since 1979, UI benefits of filers have been reported on their tax return. Reported benefits since 1981 are added to tax filers' incomes and imputed benefits in earlier years. To create an imputation, we match the 1981 distribution and levels of reported benefits. In 1981, the top ten percent of adults receive only 2.2 percent of unemployment benefits. Since 1981, the total UI benefits received by tax units average 84 percent of NIPA unemployment insurance. Unattributed benefits are added to total income.

Include other cash transfers

We add the NIPA value of cash transfers to total income, assuming that no tax filers in the top ten percent of the distribution receive cash transfers. Cash transfers include federal supplemental security income (SSI) and refundable tax credits (generally, earned income and additional child tax credits). Also included are transfers from state and local governments: social insurance funds (generally, temporary disability insurance and workers' compensation), family assistance (generally, aid to families with dependent children and temporary assistance for needy families), and SSI.

Include Medicare

The NIPA value of Medicare is added, where each income group receives a share proportional to the number of adult individual tax filers aged 65 or older, assuming that if the primary filer is aged 65 or older then the secondary is also. In 2013, the share of individuals aged 65 or older in each income group is roughly proportional. That is, the top tenth of one percent contains 0.13 percent of individuals aged 65 or older, and the top one percent contains 1.09 percent of individuals aged 65 or older.

Include other non-cash transfers

We add the NIPA value of remaining non-cash transfers, such as Medicaid and food stamps to total income, assuming that top income groups receive none of these in-kind transfers. Kaestner and Lubotsky (2016) estimate that among top decile families less than one percent has a family

member participating in Medicaid. Elwell and Burkhauser (2016) find that Medicaid is the largest income source in the bottom quintile.

4. After-tax income

Each tax is removed from pre-tax income sequentially. For each tax, the difference between the amounts accounted for on tax returns and NIPA totals are attributed to the bottom 90 percent of the distribution, which includes non-filers and almost all non-itemizers. Since the overwhelming majority of tax returns at the top of the distribution itemize deductions (including state income taxes and housing property taxes), this approach provides good measures of state and local taxes for top income groups. Note that estate and gift taxes are not removed because personal transfers are not included in pre-tax income.

Federal individual income taxes are federal tax liability after non-refundable credits. That is, the refundable portion of credits are excluded because they are already accounted for in cash transfers. State and local income taxes are set to deducted amounts.¹³ Property taxes include both previously calculated business property taxes and deducted housing property taxes. In years where specific tax deductions are not available, distributions are set to those in surrounding years. The large effect of property taxes on top shares in 1960 is due to the substantial fraction of business property taxes being distributed corporate equity owners. This fraction declined as corporate ownership shifted to retirement accounts. State and local income taxes are set to deducted amounts. Corporate income taxes are those previously calculated.

Payroll taxes removed include the employer and employee taxes, as well as self-employment taxes as reported on tax returns. Employee payroll taxes are set equal to previously calculated employer taxes except for 1984, 2011 and 2012 due to employee portion payroll tax holidays. Two surtaxes on high income taxpayers began in 2013: the Additional Medicare Tax and the Net Investment Income Tax. We include these surtaxes in federal income taxes despite their association with Medicare, because their tax base is not strictly labor earnings as is the case with other payroll taxes. Sales and other taxes (excluding fuel and utilities “taxes” as these are closer to user fees) are distributed by disposable income, which is after-tax income up to this point, less savings. Savings rates for the top ten percent groups come from the Surveys of Consumer Finance in Dynan, Skinner and Zeldes (2004): 24 percent for P90-95, 37 percent for P95-99, and 51 percent for the top one percent. For the bottom 90 percent, we assume that saving rates are 10 percent.

5. Sensitivity Analysis

After-tax income: Set groups by number of individuals and size-adjusted income

Following the CBO (2012) approach, this sensitivity test examines the effects of basing income groups on the number of individuals (primary and secondary taxpayers and dependents) and ranking tax units using size-adjusted incomes. This approach accounts for sharing and economies of scale. Since exemptions may be claimed for spouses and children living in Canada or Mexico, a correction is needed because the number of individuals exceeds Census population estimates. Cilke (2014) also observed an excess number of resident children in the IRS tax data. To correct the data for this issue, the number of individuals is reduced since 2005 by the number of secondary filers and children with ITINs. Size-adjusted income is tax unit income divided by the square-root of the number of individuals in the tax unit.

¹³ The fraction of the top one percent itemizing was generally at least 95 percent between 1960 and 2015. Most of these non-itemizers live in states with no income tax.

National income targeting

To facilitate comparison of our results to Piketty, Saez and Zucman (forthcoming, hereafter PSZ), we extend our estimates to present estimates of after-tax top income shares when distributing all of national income, which fully accounts for government taxation and spending. We focus on after-tax national income because PSZ “pre-tax” income removes payroll taxes, while our pre-tax definition includes these taxes in order to have an appropriate base for estimating consistent effective tax rates. To estimate after-tax national income we add three income sources to after-tax income: (1) undistributed current year income of retirement accounts,¹⁴ (2) government deficits (or surpluses), and (3) other undistributed income, which consists of non-profit and government income, remaining indirect taxes, transfers, subsidies, surplus of government enterprises, and government consumption. Transfers largely consist of donations, insurance payments, losses due to fraud and theft, deposit insurance premiums, fines and fees, lawsuit settlements, and excise taxes paid by non-profits. Subsidies are mostly federal payments for housing and agriculture. The inclusion of sales and excise taxes in pre-tax national income shifts the price base from the conventional tax exclusive base used for tax incidence studies to a tax inclusive base, which inflates price levels. This is why sales and excises taxes were not added to our earlier measures of income.

Undistributed current year retirement account income is distributed according to the shares of non-Social Security pension income in PSZ. Government deficits are distributed by income and payroll taxes paid, but excluding state income taxes because almost all deficits are at the federal level. Government consumption includes spending valued at cost of military expenditures, schooling costs, and other non-transfer government spending. Given the uncertainty of how indirect taxes and government consumption should be distributed, these are added last and such that income shares are unaffected, similar to the approach in PSZ.

PSZ national income targeting for 2014

For 2014, PSZ estimated the top one percent after-tax national income shares to be 15.7 percent compared to our estimate of 10.2 percent—a 5.5 percentage point difference. Nearly one half of this gap is due to PSZ attributing much more underreported income to top earners than suggested by the IRS National Research Program (NRP). PSZ distribute underreported passthrough income by reported passthrough income, but truncated at zero, thereby ignoring business losses. IRS audit data shows that a substantial share of underreported business income is found on tax returns that reported business losses and overall negative incomes.

While Johns and Slemrod (2010) do not separate out taxpayers with negative AGI, their tabulations of the 2001 NRP illustrate the importance of business losses and non-compliance of those with negative reported incomes. For the bottom decile, the percentage of underreported sole proprietorship income as a fraction of reported sole proprietorship income is negative, implying that reported losses are offset or even turned into positive income by these audits. In addition, the bottom decile of returns ranked by *reported* income accounts for 13 percent of underreported income. When ranked by *actual* income (including underreported income), the bottom decile accounted for less than 0.5 percent of underreported income. Therefore, the addition of underreported income to the bottom decile by reported income pushes these tax

¹⁴ In the main paper, we discuss a number of issues with applying this accrued income approach to undistributed retirement income. Another issue is that early withdrawals of accrued income in defined contribution accounts would face a 10 percent early withdrawal penalty, implying that a discount should be applied to this income under an accrual basis. We ignore this effect for national income targeting.

returns higher up the distribution (the re-ranking effect discussed above). As shown next, many of these re-ranked tax returns seem to have reported negative business income.

Preliminary tabulations by the authors of the 1988 TCMP data suggest that nearly one-third of underreported passthrough business income (sole proprietorships, partnership, S corporations, and farms) was found among taxpayers reporting business losses and 13 percent of underreported business income was found among taxpayers with negative AGI. In contrast, less than 5 percent of underreported business income was found among the top one percent of taxpayers ranked by AGI, even though they accounted for a considerable share of business income. These results highlight the importance of non-compliance among taxpayers reporting business losses.¹⁵

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¹⁵ Also using the 1988 TCMP data, Auten and Gee (2009) found that while over half of taxpayers in the top one percent by reported AGI were found to have underreported income, it represented only 6 percent of reported income. The lower the income class, however, the larger the proportion of underreported income. For the bottom quintile of returns, underreported income was 39 percent of reported income. Thus, while the dollar amounts are much smaller in the lower part of the distribution, the relative amounts of underreported income do not increase in proportion to reported incomes.

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Table B1: Descriptions and data sources of adjustments to income and tax units

Adjustments	Initial Year	Final Year	Data source	Adjustment Method
<i>Panel 1: Consistent market income, Corrections</i>				
Remove nondeductible losses	1960	1986	Tax return microdata	Limit pre-1986 business losses based on post-TRA86 rules
Add tax-exempt interest	All Years		NIPA Table 3.3, tax return & SCF data	Listed on returns since 1987, shares before 1988 based on SCF, see Figure B2
Remove <20 yr old filers	All Years		Tax return and Social Security microdata	Remove tax filers younger than 20 years old, as not counted in Census age 20+ population
Remove other dependent filers	1987	2015	Tax return microdata	Primarily college students age 20-23, not identified before 1987, although fewer before 1987
Remove non-resid. filers & MFS fix	All Years		Tax return microdata	Remove if excluded foreign earned income (all years) or not residing in the U.S. (since 1979)
Adjust non-filer income	All Years		IRS information return data	Assume non-filer income is 30% of avg. filer income, see Table B3 for details
Include excluded dividends	1960	1986	Tax return microdata	\$100/200 exclusion ended with Tax Reform Act of 1986
Add tax-exempt combat pay	1995	2015	IRS Compliance Data Warehouse	Use information returns, for missing years use military pay (2000-01), interpolate (2002-04), 1999 values minus \$500M a year (1995-98)
Net out gambling losses	1972	2015	Tax return microdata	Before 1991, equals miscellaneous deductions (not subject to 2% AGI limit after 1986), but only up to other income (which includes gambling winnings)
Remove cap. gains distributions	1971	2015	Tax return microdata	From 1040 amounts not on Schedule D. Not separate in 1997 and 1998 and before 1971
Remove IRA contributions	1975	2015	Tax return microdata	Remove amount reported on return, in data since 1975
Remove tax refunds	1971	2015	Tax return microdata	State and local income tax refunds variable missing before 1971
Remove net operating losses	1960	2015	Tax return microdata	Before 1989, equals 80 percent of other income losses
Set income groups by number adults	All Years		Tax return microdata	Set income group sizes and cutoffs by giving joint filers twice their tax unit weight
<i>Panel 2: Consistent market income, Expansions</i>				
Add fiduciary retained income	All Years		IRS public data	Allocate by taxable fiduciary income (use 1966 shares in prior years)
Add C-corp retained earnings	All Years		NIPA Table 1.12, Tax return microdata & U.S. Financial Accounts	Allocate household portion 3/4 by dividends, 1/4 by capital gains
Add corporate income tax	All Years		NIPA Table 1.12, Tax return microdata & U.S. Financial Accounts	Allocate household portion of C-corp ownership 3/4 by capital (as above) & 1/4 by wages on tax returns. Allocate retirement portion of C-corp ownership by pension income.
Add business property tax	All Years		NIPA Tables 3.3 and 7.4.5	Allocate to corp. capital and household equities by dividends, capital gains, interest, and taxable retire. income
Inflation effect on interest	All Years		BEA inflation & Moody's BAA corp. yields	Increase business income, decrease household interest receipts and government payments
Add underreported income	All Years		NIPA residuals of taxable income	Allocate additional wages and business income by distribution in Johns and Slemrod (2010) Table 3
Add imputed rent	All Years		NIPA Tables 3.3, 7.9, and 7.4.5	Includes real estate taxes as pre-tax measure. Allocate by real estate taxes deducted.
Add employer payroll tax	All Years		Tax return microdata	Calculated based on reported wages or non-filer income and legislated rates and benefit bases
Add employer sponsored insurance	All Years		2014 Form W-2 & NIPA Table 7.8	Allocate NIPA health, life, and workers' comp. insurance using 2014 Form W-2 distribution
<i>Panel 3: Pre-tax income</i>				
Add SS benefits	All Years		Tax return microdata & NIPA Table 3.12	Include reported benefits, use 1985 distribution in prior years, unallocated in total income
Add UI benefits	All Years		Tax return microdata & NIPA Table 3.12	Include reported benefits, use 1981 distribution in prior years
Add other cash transfers	All Years		NIPA Table 3.12	Veterans benefits, fed. SSI, ref. tax credits, wkrs. comp., and state/local social insurance
Add Medicare	1965	2015	NIPA Table 3.12	Allocate based on fraction of age 65+ adults in each income group, use 1979 fractions for previous years
Add other non-cash transfers	All Years		NIPA Table 3.12	Includes federal SNAP, state and local medical care, general assistance, energy assistance, and other
<i>Panel 4: After-tax income</i>				
Remove federal indiv. inc. tax	All Years		Tax return microdata & NIPA Table 3.12	Include foreign tax credits
Remove state/local indiv. inc. tax	All Years		Tax return microdata & NIPA Table 3.3	Based on tax deductions, unallocated in total income
Remove corporate income tax	All Years		see above	As calculated above
Remove property tax	All Years		Tax return data & NIPA Tables 3.3 & 7.4.5	Allocate business portion as above & housing portion by deductions
Remove payroll tax	All Years		Tax return microdata & NIPA Table 2.1	Employee tax equal employer FICA tax, except in 1981, 2011 and 2012
Remove sales and other taxes	All Years		Tax return data & NIPA Tables 3.1 & 3.5	Allocate to filers by after-tax income less savings

Notes: Unallocated amounts of transfer payments are allocated to income groups below the top 10 percent.

Table B2: Non-filer reported income as a fraction of filer income (at least 20 years old)

	Non-filers All ages Wages (millions \$)	Non-filers >=20 yrs old Dividends (millions \$)	Non-filers >=20 yrs old Misc Inc. (millions \$)	Non-filers >=20 yrs old Txbl. Retire (millions \$)	ITIN filers All ages Total wages (millions \$)	Non-filers >=20 yrs old Total Income (millions \$)	Non-filers >=20 yrs old N. tax units (thousands)	Non-filers >=20 yrs old Avg. Income (\$)	Filers >=20 yrs old Avg. Inc. (\$)	Non-filers >=20 yrs old %Filer Inc. (%)
2000	112,000	8,000	27,000	23,000	5,000	165,000	18,581	8,900	42,200	21%
2001	109,000	8,000	22,000	22,000	8,000	153,000	19,543	7,800	42,200	18%
2002	113,000	5,000	24,000	23,000	11,000	154,000	21,219	7,300	41,100	18%
2003	115,000	7,000	30,000	25,000	14,000	163,000	22,468	7,300	41,400	18%
2004	132,000	12,000	34,000	28,000	19,000	187,000	22,860	8,200	43,600	19%
2005	142,000	9,000	35,000	28,000	39,000	175,000	22,646	7,700	46,100	17%
2006	154,000	11,000	37,000	28,000	49,000	181,000	21,390	8,500	48,600	17%
2007	---	---	---	---	---	---	---	---	---	---
2008	163,000	12,000	37,000	31,000	61,000	182,000	21,216	8,600	50,600	17%
2009	151,000	11,000	36,000	34,000	57,000	175,000	22,137	7,900	47,300	17%
2010	156,000	12,000	42,000	41,000	60,000	191,000	22,186	8,600	48,300	18%

Notes: Wages are from Form W-2, dividends from Form 1099-DIV, miscellaneous income from Form 1099-MISC, and taxable retirement income from Form 1099-R. To control for outliers, 1099-MISC income for each source (non-employee compensation, medical payments, fishing income, rents, royalties, other income) is excluded if \$99,999 or more. Individuals with years of death in subsequent years or aged 100 or more are removed. 2007 removed due to stimulus filers. After including underreported IRS income, non-filer incomes increase to about 30 percent of average filer income.

Sources: SOI Databank, IRS population data, SOI individual tax return data, Piketty and Saez (2003 and updates).

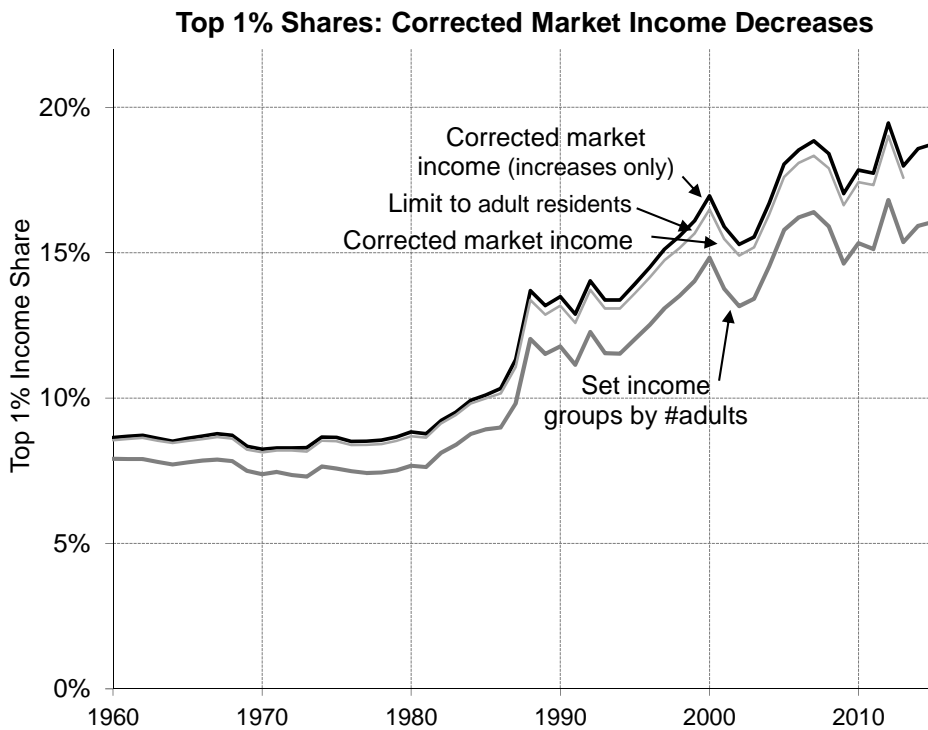
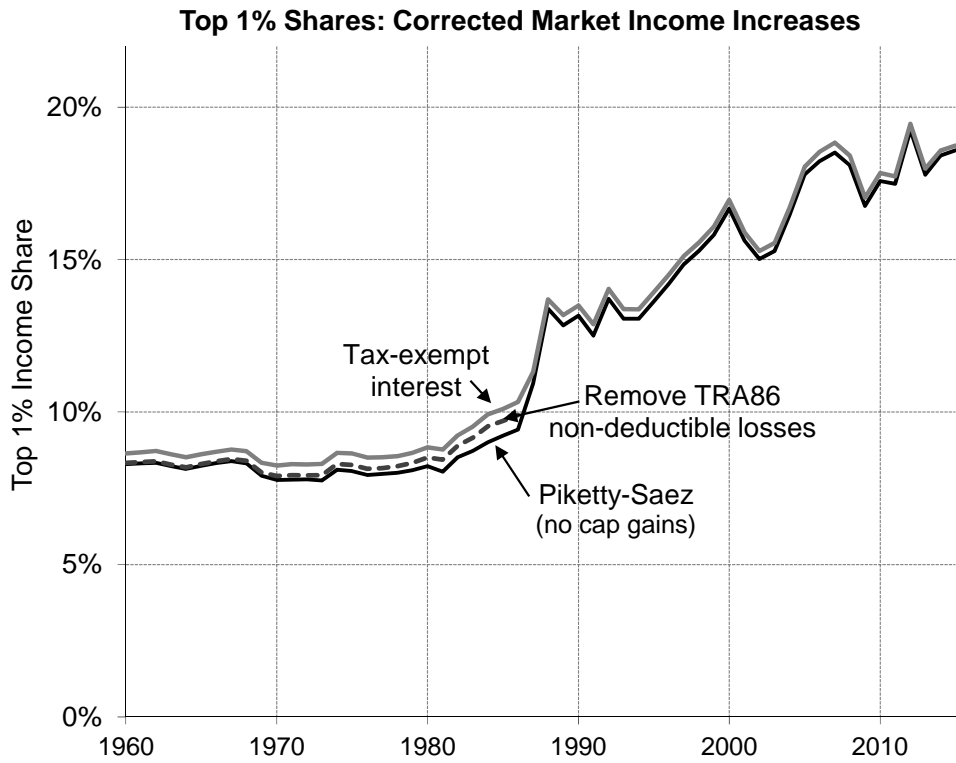


Figure B1: Top 1% income shares: Corrected market income adjustments

Notes: Replicated Piketty and Saez series is shown, where income is adjusted gross income less adjustments, government transfers, and capital gains. See text for description of adjustments.

Sources: Authors' calculations, IRS, BEA, and Piketty and Saez (2003 and updates).

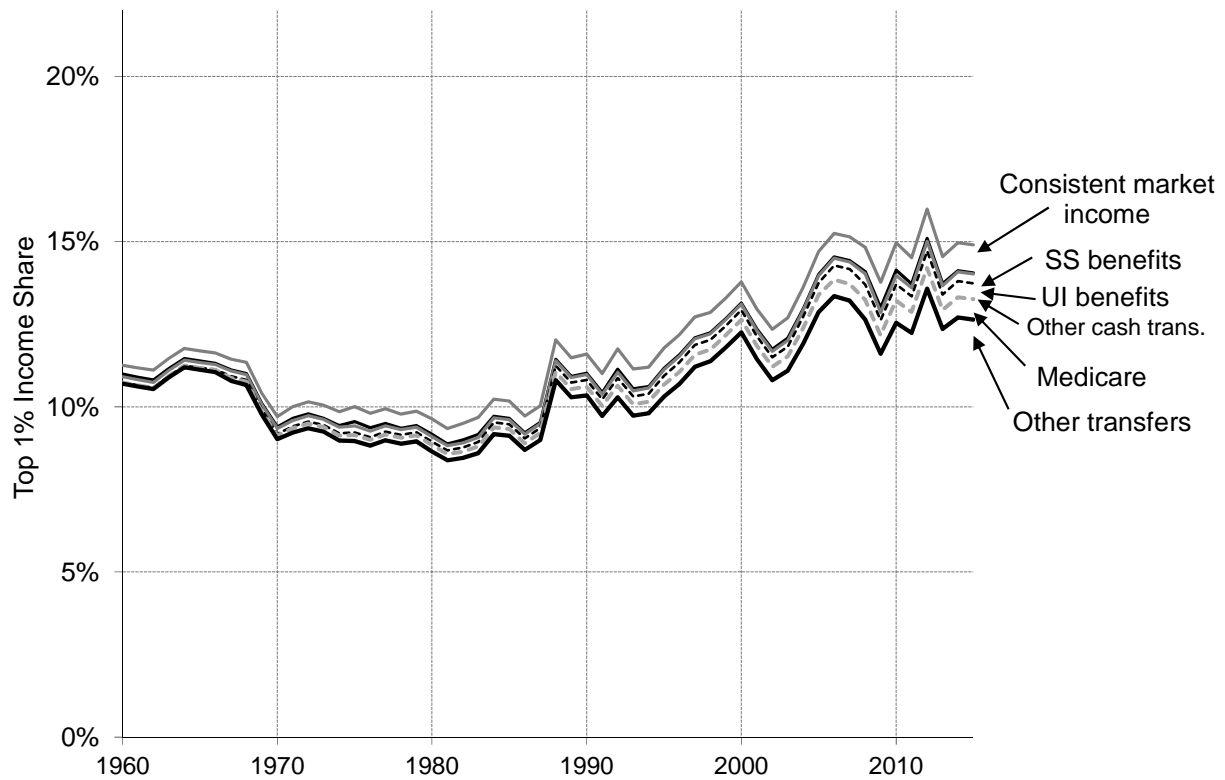


Figure B2: Top 1% income shares: Inclusion of transfers in pre-tax income

Notes: Income groups are PS income excluding capital gains with non-deductible losses removed. Tax-exempt interest was only reported on tax returns since 1987 and shares are estimated in previous years.

Sources: Authors' calculations, IRS, and Surveys of Consumer Finance.

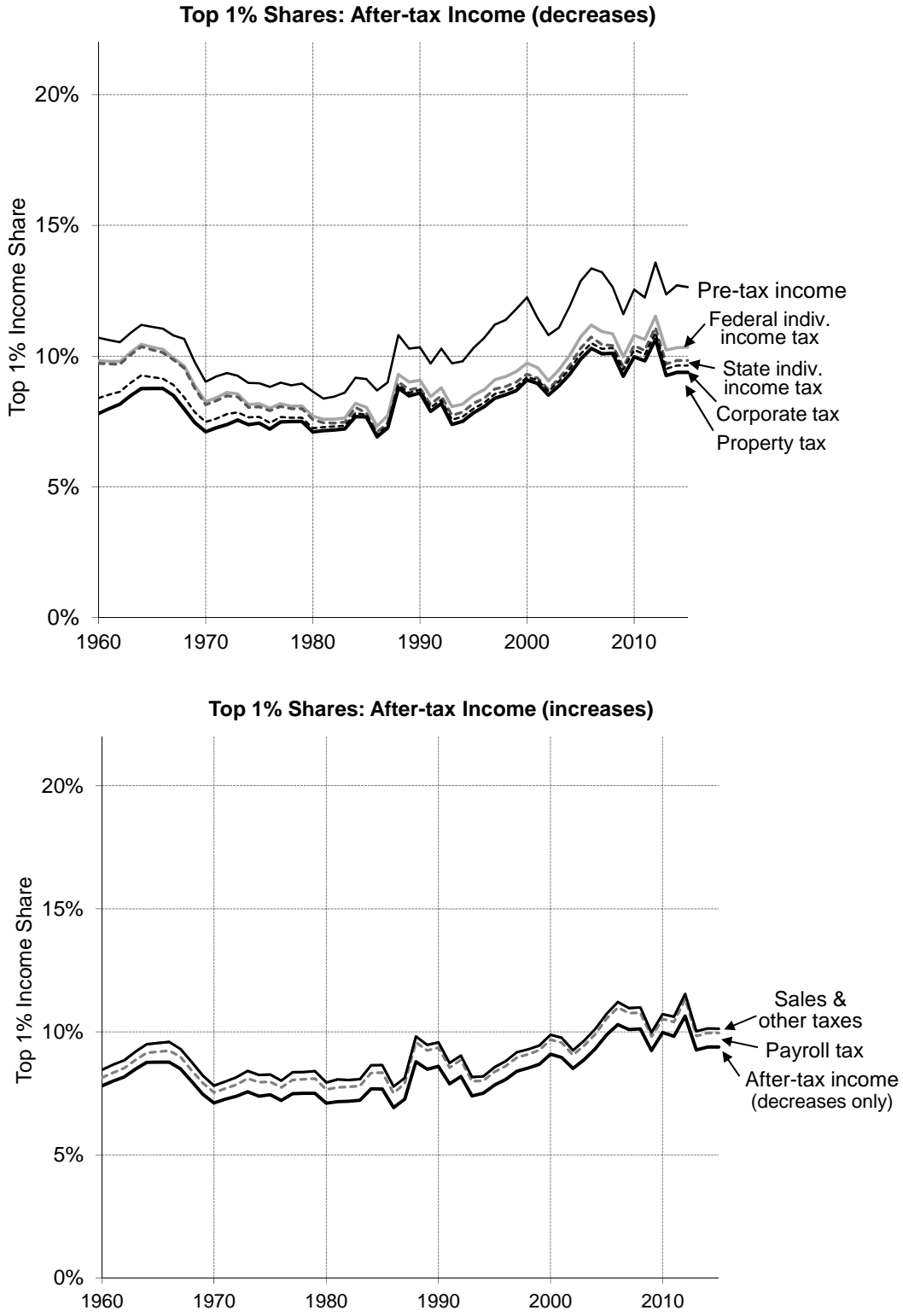


Figure B3: Top 1% income shares: After-tax income adjustments

Notes: Taxes that decrease top income shares are in the top figure and those increasing them in the bottom figure.

Sources: Authors' calculations, IRS, BEA.

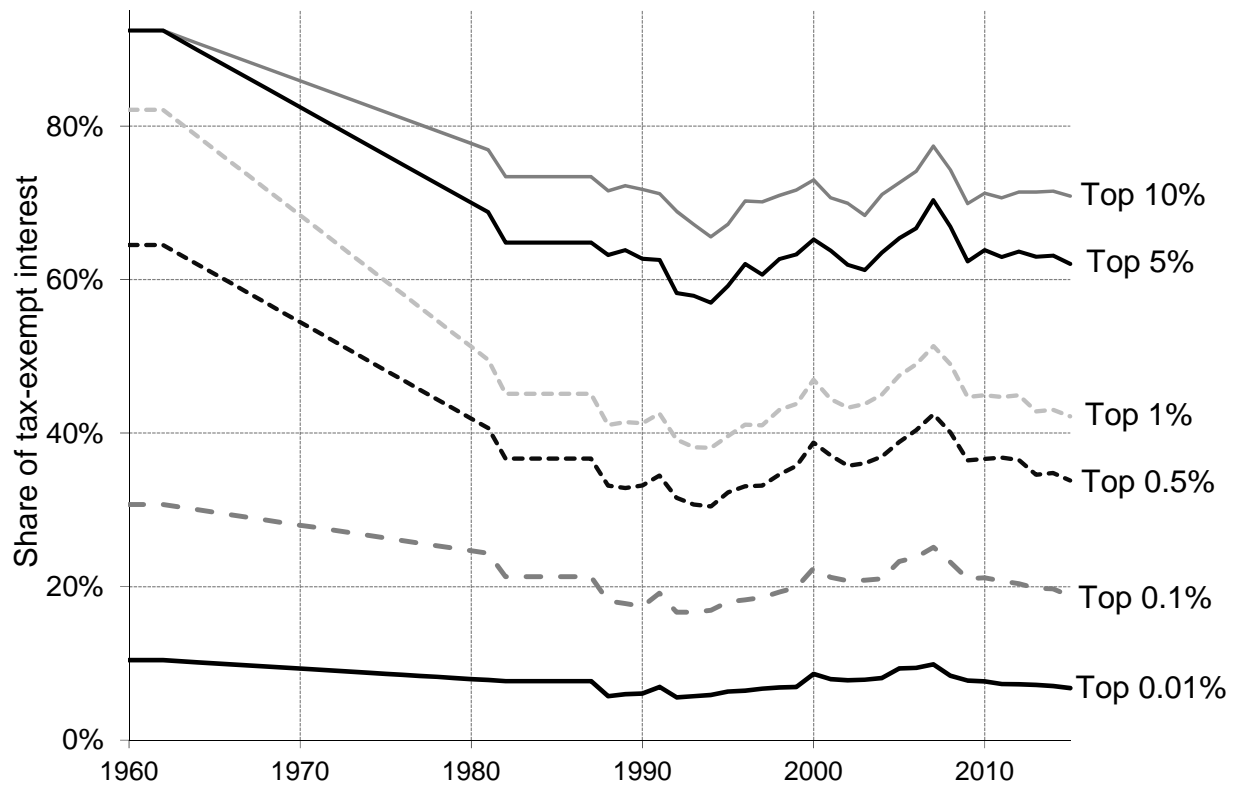


Figure B4: Share of tax-exempt interest by income group

Notes: Income groups are PS income excluding capital gains with non-deductible losses removed. Tax-exempt interest was only reported on tax returns since 1987 and shares are estimated in previous years.

Sources: Authors' calculations, IRS, and Surveys of Consumer Finance.