

Online Appendix

The Same But Different:

How the Income Tax Affects Black and White Households

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This Online Appendix (1) describes how we supplement the SCF sample described in the paper with members of the Forbes 400, (2) defines, constructs, and examine the features of our measure of “expanded income,” (starting on page 3) and (3) provides background figures and tables as discussed in the paper (starting on page 18).

I. Constructing Micro-Records for Forbes 400 Members

The SCF is prohibited from interviewing members of the Forbes 400 because it would be too easy to identify them in the survey. But Forbes 400 families currently hold an estimated 3 percent of household wealth, a share has been growing. Estimates of wealth concentration using the SCF require an adjustment to account for the missing top tail (Bricker et al, 2016; Vermeulen 2018). Adding the estimated Forbes wealth brings adjusted SCF top wealth shares into line with estimates based on capitalizing income taxes (Smith, Zidar, and Zwick, 2023).¹

To account more fully for aggregate wealth, income, and taxes, we construct a micro-based file for Forbes 400 members. We add 400 new records – each with a weight of “1” – to

¹ The role of the Forbes 400 in wealth concentration estimates such as Saez and Zucman (2016) and Smith, Zidar, and Zwick (2023) based on “capitalization” is more nuanced. Capitalization uses aggregate wealth estimates and incomes reported for tax purposes to reverse engineer the wealth distribution. Forbes wealth is included in the aggregates, but the wealth inequality measures still depend on the (heterogeneous) relationship between wealth and taxable income at the family level, and it is not possible to identify Forbes families in the income files used for capitalization.

each SCF survey year sample.² The same factor that forbids the SCF from interviewing Forbes 400 members – that their information would allow them to be identified in the survey – is also the underlying premise of our construction of a Forbes micro file. Namely, many of the variables needed to address specific tax policy questions for the Forbes families exist in public records and internet repositories, and the other variables can be estimated.

To gather the data on each Forbes 400 member, we exploit the fact that the Forbes web site reports estimates of the total net worth for the top 400 families, along with names and other identifying information that makes it possible to link additional data. In various projects using Forbes data, other researchers have added key demographics such as age, marital status, number of children, source/origin of wealth, and gender.³

We combine this publicly available information on Forbes families with a SCF “near-Forbes” data set to estimate income and taxes.⁴ We draw a “near-Forbes” sample that includes the top 100 wealth observations (roughly 1,000 on a weighted basis) in each SCF survey from 2001 to 2019. The near-Forbes sample lives up to its name, with average wealth in 2019 of \$933 million, and a top range that approaches \$2 billion, just below the bottom of the Forbes 400.

Using TAXSIM, we calculate taxes for the near-Forbes sample and assume that the ratio of taxes to wealth is the same in the Forbes sample. For most types of income, we assume that the income-to-wealth ratio in the near-Forbes sample also holds in the Forbes sample. For other types, such as social security, we assign the average in the near-Forbes sample to the Forbes

² This approach is consistent with limitations on SCF sampling, and confirmed by analysis that shows so-called “rich list” observations (such as the Forbes 400) are consistent with a Pareto “power law” (Vermeulen, 2018) approximation of the missing top tail.

³ See especially Kaplan and Rauh (2013a, 2013b), Korom, et al. (2017), and Fernholz and Hagler (2023).

⁴ Leiserson and Yagan (2021) follow a similar approach but stop short of creating a micro-level Forbes file, however, because their goals require knowing only total wealth, total income, and total taxes paid for the Forbes group.

sample. Tax credits are assumed capped (and most often zero) and thus we use the average within near-Forbes value for assigning values to the Forbes sample.

This approach gives us a realistic estimate of *average* taxes paid by the Forbes 400, though the distribution within the group remains a topic for future work.⁵ The result is 400 records per year and information on wealth, income, taxes, marital status, dependents, and race.

II. Expanded Income

Given our construction of AGI, we calculate EI in two steps (for additional details, see Gale and Sabelhaus (2024)). First, we calculate ECI by following TPC’s calculations (Rosenberg 2013). That is, we start with AGI and add untaxed employer-provided benefits, employer payroll taxes for Social Security and Medicare, untaxed retirement contributions and inside buildup, tax-exempt interest, corporate income tax liability, nontaxable Social Security, and means-tested transfers.

Second, given our estimate of ECI, we construct EI. The change in descriptor from ECI to EI tells most of the story. Our EI measure goes beyond ECI to include *non-cash* incomes, such as unrealized capital gains and the imputed rental value of owner-occupied housing. We also include some forms of cash income that are not included in ECI – untaxed closely held business incomes, inheritances received, net child support, Medicare, and Medicaid. These adjustments move the EI measure closer to a Haig-Simons measure (see Haig 1921, Simons 1938), and, as shown below, expand the total amount of income used for classification and add income disproportionately to the top of the EI distribution.

A. Magnitude of Aggregate EI, ECI, and AGI

In this Online Appendix, we will denote tables and figures related to EI with the prefix

⁵ For example, we produce estimates consistent with the 8 percent average effective tax rate found by Leiserson and Yagan (2021) when we use our Expanded Income measure.

“EI.” EI-Table 1 shows how our estimates of total EI and ECI compare to our estimate of total AGI across SCF survey years. Estimated total ECI is roughly one third larger than total AGI, with little trend over time, consistent with TPC’s measure of ECI (Rosenberg 2013). Our estimate of EI is quite a bit larger, almost twice as large as AGI across survey years.⁶ EI-Figure 1 shows that both income measures have grown over time and EI is consistently substantially larger than AGI.

B. Magnitude of Components of ECI and EI not included in AGI

EI-Table 1 also shows the magnitude of the components of EI that are not included in AGI. Untaxed labor and retirement-related incomes are the largest components of ECI not included in AGI. Employer-provided health insurance and deductible employee-paid health insurance premiums together add up to 8 to 10 percent of AGI, and employer-paid payroll taxes another 5 or 6 percent. Untaxed retirement plan contributions and inside buildup with DB and DC pensions—the sum of contributions to pension plans and the interest, dividends, and capital gains earned by retirement plans, net of retirement plan distributions (which are included in AGI) – equal 12 to 15 percent of AGI. ECI also includes untaxed government transfers: the non-taxable portion of Social Security benefits and various means-tested cash and near-cash transfers, that together amount to 5 or 6 percent of AGI. Finally, in terms of capital incomes, ECI includes nontaxable interest (less than 1 percent of AGI) and corporate income taxes (about 3 percent of AGI in recent years).

When the classifier is expanded from ECI to EI, capital income plays a much more

⁶ The estimated ratio of EI to AGI would be more volatile (and EI could in principle be negative) if we calibrated the EI estimate to match actual total capital gains (as measured in the Financial Accounts of the United States) in each survey year. Instead, the values reported here use an estimate of capital gains derived by smoothing average capital gains rates (one for each asset class) across the entire sample period, then applying those rates to each year’s asset values. TPC uses similar smoothing in their estimates of inside build up on DC retirement plans. See also, for example, Sabelhaus and Park (2020).

sizable role. Unrealized capital gains – the difference between our estimate of total capital gains and SCF respondent-reported taxable gains – is far and away the largest part of the gap between AGI and EI, equal in size to about 30 percent of AGI in recent years (and about two-thirds of the difference between ECI and EI). Untaxed closely held business income is roughly 8 percent of AGI in recent years, imputed rent on owner occupied housing is nearly 5 percent, and both have increased relative to AGI over time. Inheritance income adds another 3 to 5 percent to AGI. (Net child support income, in the aggregate, is (and should be) close to zero. It is negative in the Table because people who pay support are more likely to report it than people who receive it.)

C. Distribution of Aggregate AGI, ECI, and EI

EI-Table 2 shows the distribution of aggregate AGI, ECI, and EI in tax year 2018 across the distribution of EI. Based on our SCF-TAXSIM estimates, the bottom quintile receives 4.9 percent of all AGI; the top quintile receives 55 percent, and the top 1 percent receives 16.2 percent.

Aggregate ECI is distributed more equally than AGI. The bottom quintile receives 5.6 percent of ECI, the top quintile receives 52 percent, and the top 1 percent receives 13.4 percent. This occurs because the components of ECI that are not in AGI are quite progressive. In the aggregate, of the additions to ECI relative to AGI, 7.3 percent go to the bottom quintile, 44.6 percent to the top quintile, and 6.5 percent to the top 1 percent.

In contrast, EI is distributed more unequally than AGI. The bottom quintile receives 5.2 percent of EI, the top quintile receives 56.6 percent, among which the top 1 percent receives 18 percent. The top 1 percent share of EI is much larger – 18 percent compared to 16.2 – than its share of AGI. This occurs because many of the components of EI that are not included in ECI are distributed extremely unequally. In the aggregate, 4.3 percent of those additions to ECI go to the

bottom quintile, 67.1 percent to the top quintile, including 28.7 percent to the top 1 percent. In the aggregate, of the total difference between EI and AGI, 5.5 percent goes to the bottom quintile, 58.2 percent to the top quintile, and 19.9 percent goes to the top 1 percent.

D. Distribution of Components of EI and ECI not in AGI

EI-Table 2 also reports on how the various individual components added to AGI are distributed across the EI distribution. Most of the adjustment from AGI to ECI involves items related to untaxed labor income or government transfers. Health insurance coverage and plan generosity rise with earnings. As a result, we estimate 60 percent of untaxed employer-provided benefits (compared to 74 percent of AGI and 76 percent of EI) benefits tax units in the top 40 percent of the EI distribution. This group also receives about 64 percent of the benefits of employer-paid payroll taxes. The benefits of tax-preferred retirement plans are even more skewed – with 85 percent of benefits going to the top 40 percent of tax units, including a whopping 47 percent going to the top 10 percent alone. (these estimates are consistent with Sabelhaus and Volz 2019).

The capital income components of ECI are much smaller than the labor- and retirement-based components but (as expected) more skewed to the top income groups than the labor and retirement components. Tax-exempt interest is just under 1 percent of AGI, but virtually all of it flows to the top quintile and more than half flows to the top 1 percent of taxpayers. Corporate income tax burdens are also skewed to the top of the EI distribution, with 85 percent borne by the top 40 percent, including 68 percent borne by the top quintile.⁷

⁷ We follow TPC (Nunns 2012) in allocating the corporate income tax – with 20 percent allocated proportionally to labor income, 60 percent proportionally to corporate equity holdings, and 20 percent proportionally to all capital income. Gale and Thorpe (2024) allow for rent sharing in incidence of the corporate tax, with many of the distributional outcomes similar to those in Nunns (2012) and subsequent literature, such as Power and Frerick (2016).

The government transfers in ECI are (again, as expected) distributed towards lower EI groups. More than half of non-taxable Social Security accrues in the bottom half of the EI distribution, but there is a fair amount in the top of the distribution as well.⁸ Unsurprisingly, means-tested government transfers such as SSI, TANF, and SNAP are also skewed towards the bottom of the EI distribution.

In contrast to the adjustment from AGI to ECI, the largest components of the adjustment from ECI to EI are forms of capital income, concentrated at the top of the income distribution. We estimate that the untaxed component of SCF respondent-reported business incomes is heavily skewed towards the top of the EI distribution—80 percent accrue to taxpayers in the top quintile, and 37 percent in the top 1 percent.

Unrealized capital gains (and SCF reported realized capital gains) are similarly skewed towards the top of the EI distribution, because wealth and EI are highly correlated. Imputed rent on owner occupied housing is also skewed towards the top of the distribution, though less so than unrealized capital gains and untaxed business income. Inheritance income is highly skewed towards the top of the distribution—over 90 percent of inheritance income accrues to taxpayers in the top EI quintile.

Net child support is largely allocated to low-income taxpayers, although it is a negligible component of total EI. Medicare and Medicaid income, on the other hand, are much more evenly distributed across the EI distribution.

E. The joint distribution of EI and AGI

Changing the income classifier from AGI to EI changes the level of income, as noted

⁸ Retirees generally have higher wealth-to-income ratios than younger individuals, and the higher wealth leads to higher EI through unrealized gains and owner-occupied housing, even if their AGI (and thus taxable Social Security) is low.

above, and can also change the *sorting* of tax filing units across distributional groups. EI-Table 3 shows a cross-tabulation of tax filing units by EI and AGI groups using tax-year 2018 data. Most observations in any EI (or AGI) percentile group are in the same percentile group when using the other classifier, as shown by the large values on the diagonal entries. Taxpayers are more likely to move up two or more quintiles when switching from AGI to EI than vice-versa. This occurs because some tax filing units have low AGI but substantial amounts of untaxed income (unrealized capital gains or imputed rent, for example) and thus have high EI. In contrast, since EI includes AGI, there are no taxpayers with little EI and high AGI

F. EI relative to AGI by income percentile

EI-Figure 2 shows the ratio of aggregate EI/AGI when sorting tax filing units either by EI or by AGI. Across most of the income distribution – measured by either EI or AGI – the ratio is roughly similar – about 1.75. There are key differences in the tails, though.

When sorting by AGI, the ratio of EI/AGI in the first AGI decile is 22.9. (This number is omitted from the graph because including it would make it difficult to see the other changes.) The high ratio arises because many taxpayers with no or very little AGI nevertheless have substantial untaxed sources of income – such as imputed rent, untaxed Social Security, inheritance income, Medicare, Medicaid, or unrealized capital gains. In contrast, when sorting by EI, the EI/AGI ratio is just above 2 in the second and top EI deciles, somewhat higher than the rest of the distribution.

G. Implications for the levels and distribution of tax burdens

A new income classifier will create new results for the level and distribution of average tax rates. EI-Figure 3 shows average tax rates over the income distribution using AGI and EI in tax year 2018. The blue bars sort taxpayers by AGI and reflect the ratio of group tax liability

(after credits) to group AGI. The orange bars reflect our preferred (EI-based) measure of average tax rates; taxpayers are sorted by EI, and the measure of average tax rates is group tax liability (after credits) divided by group EI.

For all income groups, tax burdens are lower relative to income when using EI than when using AGI. This makes sense because aggregate EI is greater than aggregate AGI at all levels of income. However, the impact of moving from AGI to EI is not proportional across income groups. For taxpayers in the 80th to 90th percentiles, average tax rates using AGI are 1.75 times as large as average tax rates using EI (11.4 vs. 6.5 percent), but for units in the top 1 percent tax rates on AGI are 2.3 times as large as tax rates on EI (26.4 vs. 11.7 percent).

The estimated reduction in effective tax rates for the very affluent is consistent with a recent Leiserson and Yagan (2021) blog post that estimates an 8.2 percent average effective tax rate for the Forbes 400 between 2010 and 2018. Using EI as the denominator, we find an average ETR of 6.8 percent for the Forbes 400 over the same period.

EI-Figure 4 shows that, relative to using an AGI classifier, switching to an EI classifier reveals a tax system in which the top 1 percent bears less of the burden (33.8 percent versus 36.7 percent under EI) and moderate- and middle-income tax filing units in the second and third quintiles of the EI distribution bear more of the burden.

EI – Table 1: Aggregate Components of Expanded Income (\$billions)

Source of Income	2001	2004	2007	2010	2013	2016	2019	2022
Adjusted Gross Income (AGI)	6,338.8	6,627.5	8,031.6	7,618.4	8,704.6	10,433.3	11,612.1	14,721.9
<i>Plus ECI components in excess of AGI</i>								
Untaxed employer-provided benefits	494.8	640.4	758.9	831.9	904.7	995.3	1141.9	1190.1
Employer payroll taxes for Social Security and Medicare	400.3	433.2	484.3	484.0	454.7	591.5	671.2	763.5
Untaxed retirement plan contributions and inside buildup	872.8	921.0	1,081.2	1,151.8	1,228.4	1,417.2	1,575.9	1,759.3
Tax-exempt interest	55.9	59.3	71.0	64.5	67.3	82.5	97.3	87.2
Corporate income tax liability	236.1	215.7	436.4	205.0	336.9	398.3	299.4	419.4
Non-taxable Social Security benefits	274.5	320.4	353.8	413.2	493.0	558.9	581.3	670.9
SSI, TANF, and SNAP, and other means-tested transfers	61.1	94.9	150.5	192.8	226.8	241.6	215.0	251.4
<i>Equals</i>								
Expanded Cash Income (ECI)	8,735.8	9,313.1	11,368.9	10,962.6	12,417.0	14,719.3	16,195.8	19,865.0
<i>Plus EI components in excess of ECI</i>								
Untaxed closely-held business Income	439.3	455.7	690.4	626.4	728.6	902.1	952.3	1174.2
Unrealized capital gains	1621.0	2122.1	2689.0	2540.9	2596.9	3385.1	3787.8	5095.5
Imputed rent on owner occupied housing	135.5	173.1	108.8	319.8	431.3	479.7	538.2	668.8
Net child support income	-13.9	-12.6	-7.1	-14.6	-25.1	-40.2	-17.5	-65.1
Inheritance income	187.1	154.0	207.2	231.2	387.1	515.1	533.6	563.5
Medicare	216.6	274.0	394.9	490.3	552.0	632.2	729.4	869.6
Medicaid	165.3	220.9	251.6	310.8	352.5	451.5	499.0	619.1
<i>Equals</i>								
Expanded Income (EI)	11,485.2	12,699.7	15,702.6	15,466.4	17,439.6	21,044.1	23,216.8	28,789.3
<i>Components as a Percent of AGI</i>								
Untaxed employer-provided benefits	7.8%	9.7%	9.4%	10.9%	10.4%	9.5%	9.8%	8.1%
Employer payroll taxes for Social Security and Medicare	6.3%	6.5%	6.0%	6.4%	5.2%	5.7%	5.8%	5.2%
Untaxed retirement plan contributions and inside buildup	13.8%	13.9%	13.5%	15.1%	14.1%	13.6%	13.6%	11.9%
Tax-exempt interest	0.9%	0.9%	0.9%	0.8%	0.8%	0.8%	0.8%	0.6%
Corporate income tax liability	3.7%	3.3%	5.4%	2.7%	3.9%	3.8%	2.6%	2.8%
Non-taxable Social Security benefits	4.3%	4.8%	4.4%	5.4%	5.7%	5.4%	5.0%	4.6%
SSI, TANF, and SNAP, and other means-tested transfers	1.0%	1.4%	1.9%	2.5%	2.6%	2.3%	1.9%	1.7%
<i>Equals</i>								
Expanded Cash Income (ECI)	137.8%	140.5%	141.6%	143.9%	142.6%	141.1%	139.5%	134.9%
<i>Plus EI components in excess of ECI</i>								
Untaxed closely-held business Income	6.9%	6.9%	8.6%	8.2%	8.4%	8.6%	8.2%	8.0%
Unrealized capital gains	25.6%	32.0%	33.5%	33.4%	29.8%	32.4%	32.6%	34.6%
Imputed rent on owner occupied housing	2.1%	2.6%	1.4%	4.2%	5.0%	4.6%	4.6%	4.5%
Net child support income	-0.2%	-0.2%	-0.1%	-0.2%	-0.3%	-0.4%	-0.2%	-0.4%
Inheritance income	3.0%	2.3%	2.6%	3.0%	4.4%	4.9%	4.6%	3.8%
Medicare	3.4%	4.1%	4.9%	6.4%	6.3%	6.1%	6.3%	5.9%
Medicaid	2.6%	3.3%	3.1%	4.1%	4.0%	4.3%	4.3%	4.2%
<i>Equals</i>								
Expanded Income (EI)	181.2%	191.6%	195.5%	203.0%	200.3%	201.7%	199.9%	195.6%

Source: Author’s calculations using Survey of Consumer Finances (SCF) and NBER TAXSIM. Aggregate SCF income estimates are calculated using tax unit weights. Data include members of the non-primary economic unit who were deemed to be filers. Estimates of TPC’s ECI constructed using SCF data.

EI – Table 2. Percent Distribution of EI Components Across the EI Distribution, Tax Year 2018

Source of Income	Quintile					Within Top Quintile			
	Bottom	Second	Middle	Fourth	Top	80-90	90-95	95-99	Top 1
Adjusted Gross Income (AGI)	4.9	8.7	12.3	19.1	55.0	14.3	9.7	14.8	16.2
Untaxed employer-provided benefits	6.0	14.2	20.3	27.9	31.6	16.5	7.7	5.8	1.5
Employer payroll taxes for Social Security and Medicare	8.6	12.0	15.3	21.8	42.3	16.0	9.4	11.1	5.8
Untaxed retirement plan contributions and inside buildup	1.2	4.5	9.0	18.5	66.9	19.7	15.7	23.4	8.2
Tax-exempt interest	0.3	0.4	0.3	2.0	96.9	2.2	7.3	28.8	58.5
Corporate income tax liability	2.1	4.8	8.3	17.0	67.8	16.5	12.7	21.0	17.7
Non-taxable Social Security benefits	20.4	29.3	27.8	16.0	6.6	3.4	1.9	1.0	0.3
SSI, TANF, and SNAP, and other means-tested transfers	29.4	39.7	21.6	6.3	3.0	2.5	0.3	0.2	0.0
EI in excess of AGI	7.3	12.7	15.4	20.0	44.6	14.9	9.9	13.2	6.5
Expanded Cash Income (ECI)	5.6	9.8	13.2	19.3	52.0	14.5	9.7	14.4	13.4
Untaxed closely-held business income	1.2	2.4	5.1	10.3	81.0	8.5	8.4	27.1	37.0
Unrealized capital gains	1.5	3.4	6.5	11.3	77.3	9.2	9.6	24.8	33.6
Imputed rent on owner occupied housing	2.8	6.3	12.0	15.7	63.2	13.3	11.0	24.2	14.7
Net child support income	54.9	2.0	(3.9)	20.1	26.9	(0.9)	4.2	8.5	15.1
Inheritance income	0.1	1.3	1.5	3.8	93.4	7.0	8.5	20.8	57.1
Medicare	16.7	21.8	23.6	20.1	17.7	8.6	4.6	3.6	1.0
Medicaid	21.4	28.6	23.0	16.6	10.4	7.8	1.8	0.8	0.0
EI in excess of ECI	4.3	7.0	9.3	12.2	67.1	9.1	8.4	20.9	28.7
EI in excess of AGI	5.5	9.3	11.7	15.3	58.2	11.4	9.0	17.9	19.9
Expanded Income (EI)	5.2	9.0	12.0	17.2	56.6	12.9	9.3	16.3	18.0

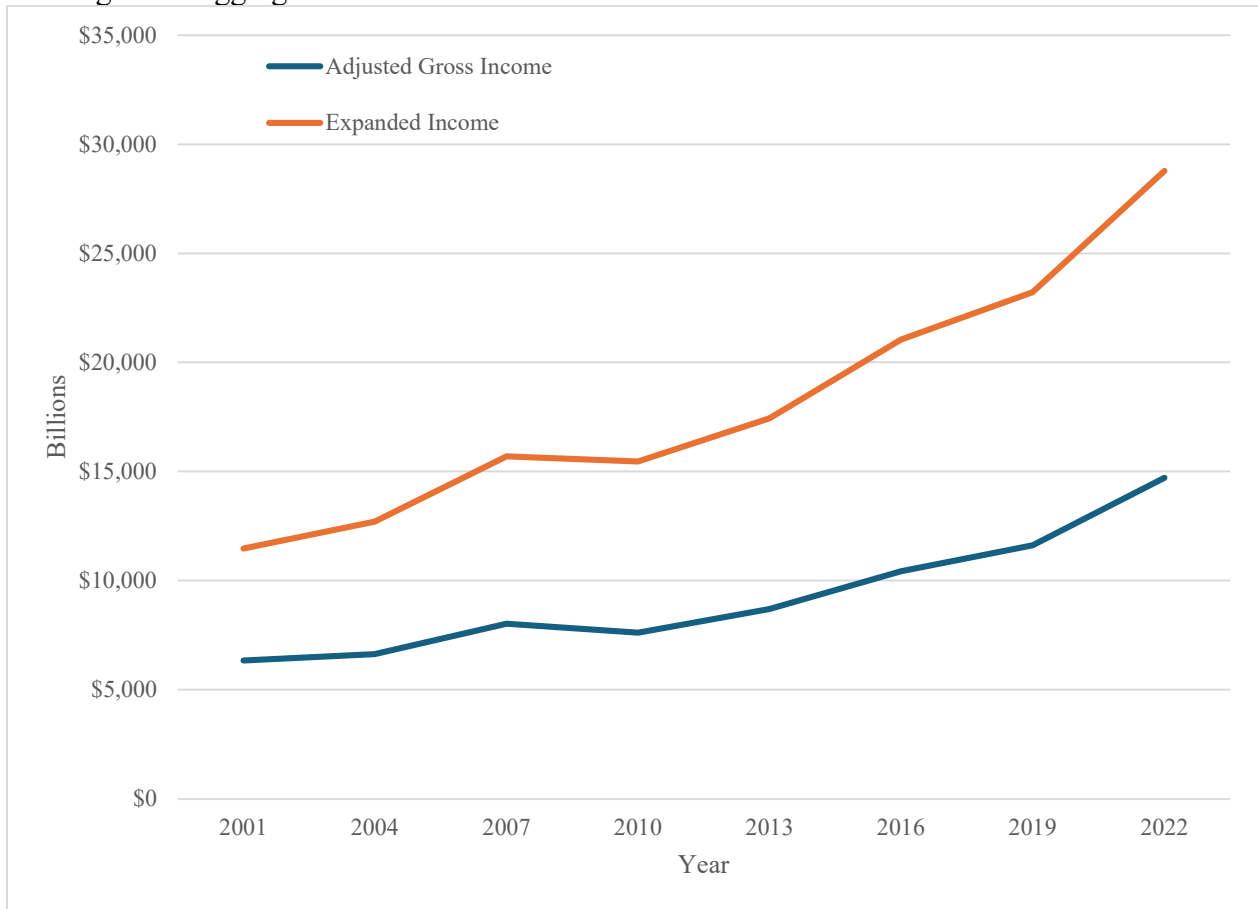
Source: Author’s calculations using Survey of Consumer Finances (SCF) and NBER TAXSIM. Distributional breaks are calculated using population weights, and aggregate incomes are calculated using tax unit weights. Data include members of the non-primary economic unit who were deemed to be filers. Observations sorted by Expanded Income (EI).

EI – Table 3: Percent Distribution of Individuals Across the AGI and EI Distributions, Tax Year 2018

		EI Quintile					Within Top EI Quintile				Total
		Bottom	Second	Middle	Fourth	Top	p80-90	p90-95	p95-99	Top 1	
AGI Quintile	Bottom	12.2	4.9	2.0	0.4	0.1	0.0	0.1	0.0	0.0	19.7
	Second	7.5	8.5	3.5	0.6	0.2	0.1	0.1	0.0	0.0	20.3
	Middle	0.3	6.6	10.1	2.7	0.3	0.3	0.0	0.0	0.0	20.0
	Fourth	0.0	0.0	4.4	13.2	2.4	1.9	0.3	0.2	0.0	20.0
	Top	0.0	0.0	0.0	3.0	17.0	7.7	4.5	3.8	1.0	20.0
Within Top AGI Quintile	p80-90	0.0	0.0	0.0	3.0	7.0	5.8	0.9	0.2	0.0	10.0
	p90-95	0.0	0.0	0.0	0.0	5.0	1.9	2.4	0.7	0.0	5.0
	p95-99	0.0	0.0	0.0	0.0	4.0	0.0	1.2	2.6	0.1	4.0
	Top 1	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.2	0.8	1.0
Total		20.0	20.0	20.0	20.0	20.0	10.0	5.0	4.0	1.0	100.0
Notes: Percentile breaks calculated using total population											

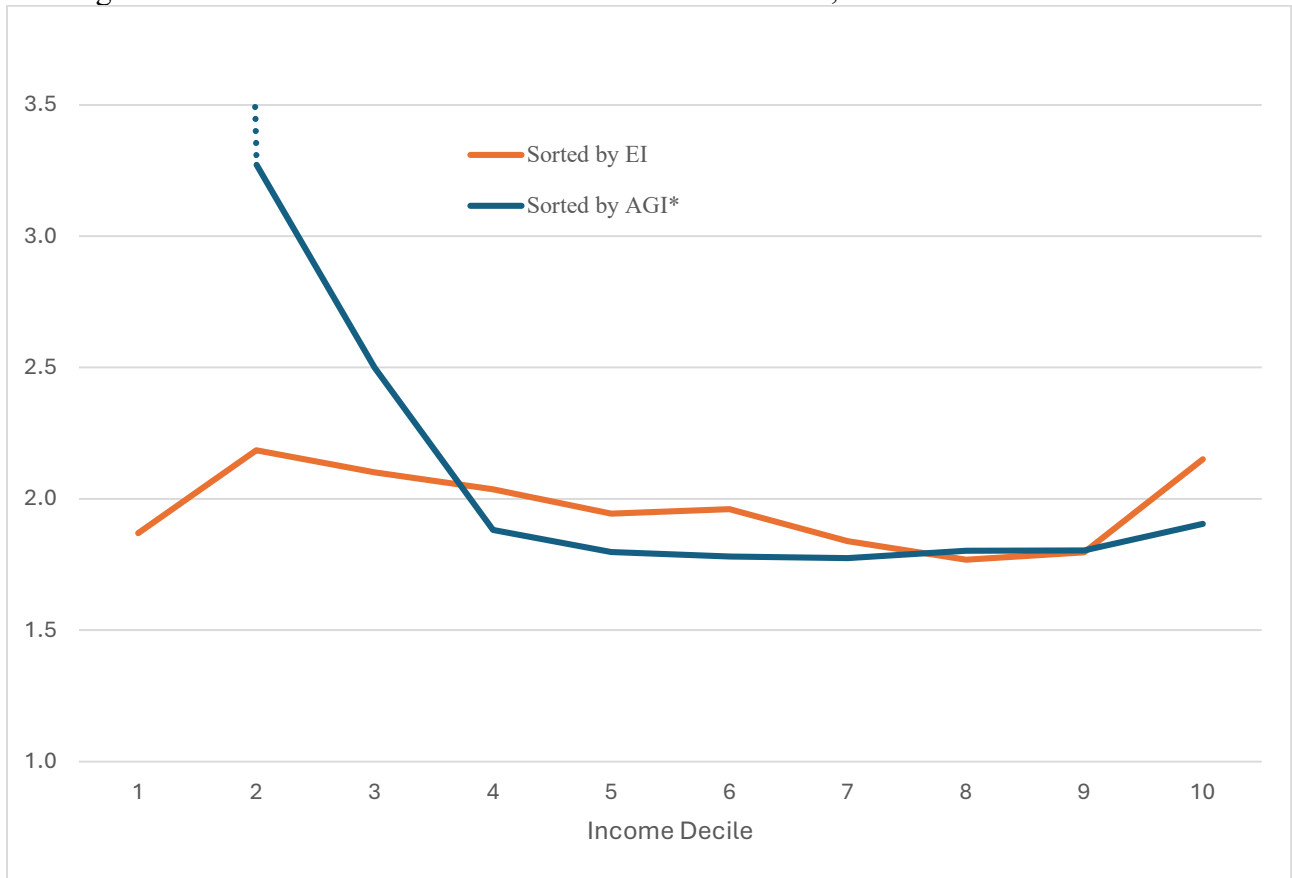
Source: Author’s calculations using Survey of Consumer Finances (SCF) and NBER TAXSIM. Distributional breaks are calculated using population weights. Data include members of the non-primary economic unit who were deemed to be filers. Observations sorted by Expanded Income (EI) and Adjusted Gross Income (AGI)

EI – Figure 1: Aggregate Values for AGI and EI Across SCF Years



Source: Internal Revenue Service Statistics of income (SOI) and author’s calculations using Survey of Consumer Finances (SCF) and NBER TAXSIM. Data exclude non-filing tax units and dependent filers but include members of the non-primary economic unit who were deemed to be filers.

EI – Figure 2 Ratio of EI to AGI Across the Income Distribution, Tax Year 2018



*EI/AGI ratio omitted in AGI decile 1 for scale. Value: 22.9

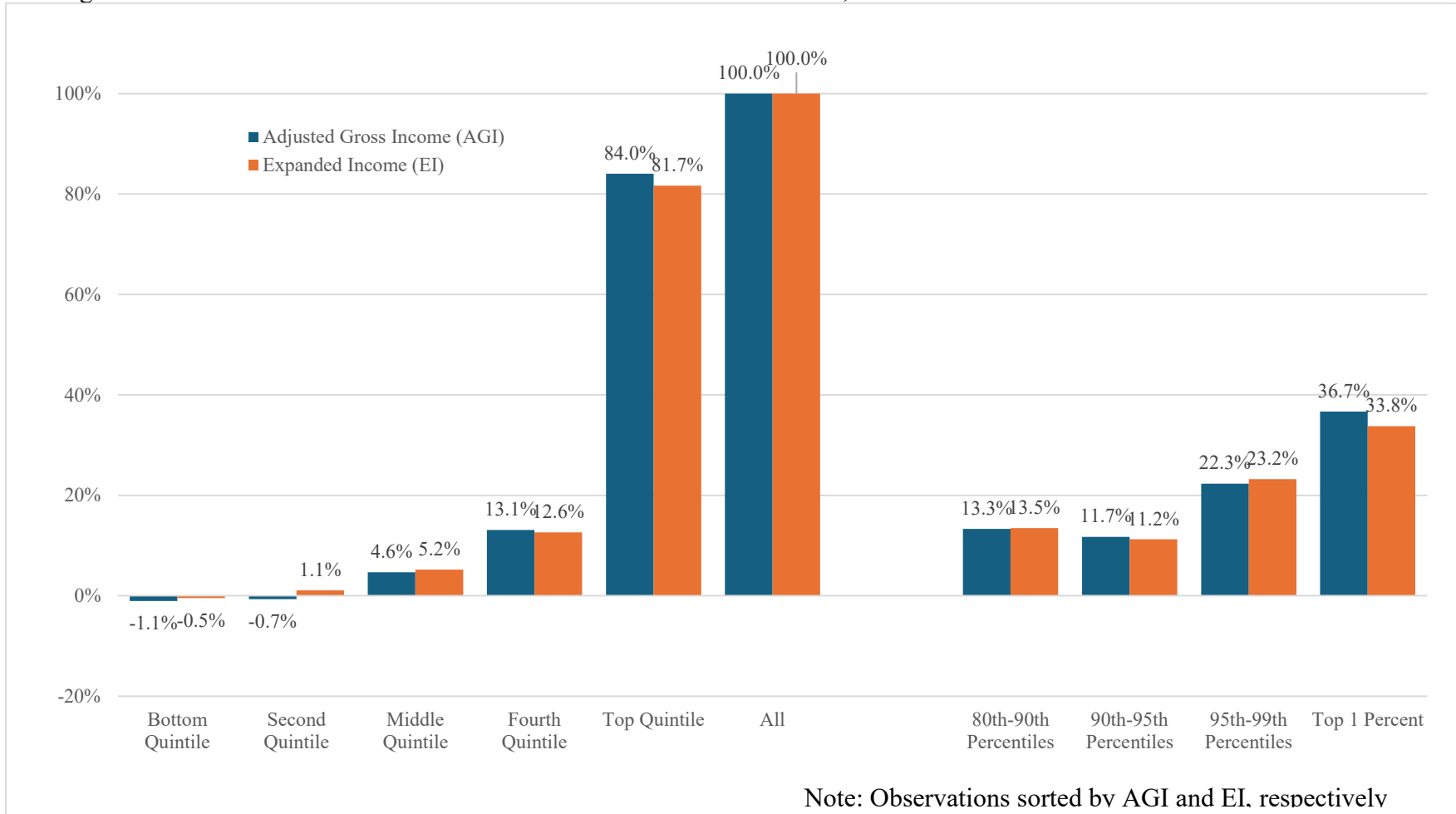
Source: Author's calculations using Survey of Consumer Finances (SCF) and NBER TAXSIM. Distributional breaks are calculated using population weights, and aggregate incomes are calculated using tax unit weights. Data include members of the non-primary economic unit who were deemed to be filers. Observations sorted by both Adjusted Gross Income (AGI) and Expanded Income (EI).

EI – Figure 3: Average Tax Rates Across the AGI and EI Distributions, Tax Year 2018



Source: Author’s calculations using Survey of Consumer Finances (SCF) and NBER TAXSIM. Distributional breaks are calculated using population weights, and aggregate incomes are calculated using tax unit weights. Data include members of the non-primary economic unit who were deemed to be filers. Average tax rates on AGI are sorted by AGI, and average tax rates on EI are sorted by EI.

EI – Figure 4: Allocation of Tax Burdens Across the AGI and EI Distributions, Tax Year 2018



Source: Author’s calculations using Survey of Consumer Finances (SCF) and NBER TAXSIM. Distributional breaks are calculated using population weights, and aggregate incomes are calculated using tax unit weights. Data include members of the non-primary economic unit who were deemed to be filers. Aggregate tax burdens by income fractile are represented as a percent of the total aggregate tax burden.

III. Background Tables and Figures Supporting the Main Text

Table A1. Benchmarking: Number of Returns (millions)

	Model	SOI	Model/SOI
<i>Panel A. Filing Status</i>			
Single	77.1	73.8	104%
Married Filing Jointly	62.2	54.9	113%
Married Filing Separately	3.0	3.3	91%
Head of Household	21.1	21.8	97%
<i>Panel B. Credits</i>			
Child Tax Credit	45.9	39.4	117%
EITC	27.4	26.5	104%
<i>Panel C. Deductions</i>			
Itemized Deductions	28.2	17.5	161%
All Returns	163.9	153.8	107%

Notes: The table reports filing status and credit eligibility and usage for from our model and SOI data.

Source: Surveys of Consumer Finances and authors' calculations

Table A2. Descriptive Statistics by Expanded Income Decile

Panel A. Demographics (Figure 1)

EI Percentile	MFJ			HOH			EITC			Family Size			CTC			Itemizers		
	White	Black	Hisp.	White	Black	Hisp.	White	Black	Hisp.	White	Black	Hisp.	White	Black	Hisp.	White	Black	Hisp.
Decile 1	0.020	0.015	0.060	0.078	0.156	0.131	0.285	0.355	0.397	1.174	1.322	1.435	0.012	0.023	0.040	0.002	0.001	0.001
Decile 2	0.070	0.049	0.186	0.136	0.275	0.244	0.195	0.301	0.385	1.395	1.649	2.081	0.100	0.163	0.254	0.016	0.013	0.013
Decile 3	0.169	0.105	0.327	0.155	0.327	0.259	0.218	0.352	0.443	1.620	2.003	2.500	0.180	0.293	0.403	0.039	0.041	0.028
Decile 4	0.281	0.185	0.453	0.158	0.334	0.226	0.190	0.312	0.396	1.827	2.298	2.803	0.252	0.401	0.496	0.088	0.068	0.050
Decile 5	0.399	0.268	0.521	0.133	0.326	0.216	0.132	0.234	0.294	2.076	2.447	3.211	0.305	0.446	0.578	0.120	0.146	0.110
Decile 6	0.536	0.338	0.559	0.115	0.274	0.157	0.063	0.089	0.125	2.301	2.476	3.048	0.368	0.463	0.564	0.177	0.191	0.218
Decile 7	0.666	0.517	0.704	0.074	0.191	0.141	0.020	0.033	0.049	2.533	2.697	3.386	0.407	0.531	0.690	0.235	0.248	0.229
Decile 8	0.759	0.615	0.764	0.048	0.126	0.103	0.007	0.017	0.015	2.654	2.652	3.400	0.437	0.494	0.685	0.303	0.361	0.335
Decile 9	0.827	0.731	0.817	0.031	0.085	0.062	0.003	0.006	0.003	2.786	2.909	3.262	0.461	0.487	0.611	0.457	0.493	0.512
p90-p99	0.838	0.791	0.835	0.030	0.031	0.078	0.005	0.013	0.000	2.791	2.800	3.229	0.382	0.438	0.575	0.694	0.688	0.710
Top 1	0.880	0.526	0.944	0.032	0.214	0.018	0.000	0.000	0.000	2.842	2.644	4.104	0.037	0.000	0.054	0.903	0.982	0.951

Panel B. Income Composition (Figure 2)

EI Percentile	Wages			Untaxed Labor/Retirement			Tax-preferred Capital			Untaxed Capital			All Capital			Untaxed Govt. Transfers		
	White	Black	Hisp.	White	Black	Hisp.	White	Black	Hisp.	White	Black	Hisp.	White	Black	Hisp.	White	Black	Hisp.
Decile 1	0.491	0.429	0.602	0.521	0.461	0.614	0.008	0.003	0.005	0.055	0.035	0.031	0.064	0.040	0.038	0.198	0.298	0.202
Decile 2	0.411	0.407	0.585	0.437	0.430	0.594	0.007	0.003	0.005	0.075	0.045	0.038	0.086	0.051	0.045	0.219	0.294	0.197
Decile 3	0.424	0.443	0.536	0.458	0.472	0.548	0.007	0.003	0.009	0.097	0.051	0.058	0.109	0.057	0.071	0.173	0.248	0.191
Decile 4	0.420	0.463	0.513	0.471	0.507	0.533	0.011	0.004	0.011	0.115	0.065	0.081	0.132	0.072	0.094	0.133	0.184	0.169
Decile 5	0.412	0.467	0.518	0.479	0.522	0.543	0.015	0.007	0.010	0.129	0.082	0.093	0.153	0.092	0.105	0.106	0.137	0.151
Decile 6	0.414	0.476	0.505	0.492	0.546	0.535	0.017	0.008	0.017	0.139	0.083	0.118	0.166	0.096	0.141	0.083	0.110	0.104
Decile 7	0.434	0.479	0.511	0.511	0.547	0.540	0.019	0.011	0.027	0.147	0.108	0.138	0.176	0.127	0.172	0.062	0.072	0.056
Decile 8	0.433	0.483	0.484	0.519	0.550	0.521	0.023	0.017	0.028	0.158	0.117	0.167	0.192	0.142	0.205	0.043	0.052	0.055
Decile 9	0.420	0.472	0.500	0.494	0.534	0.534	0.032	0.019	0.019	0.181	0.130	0.172	0.229	0.160	0.208	0.027	0.034	0.028
p90-p99	0.331	0.423	0.375	0.376	0.475	0.389	0.064	0.051	0.055	0.284	0.192	0.294	0.386	0.262	0.388	0.011	0.013	0.008
Top 1	0.214	0.314	0.386	0.222	0.440	0.386	0.149	0.105	0.034	0.390	0.273	0.323	0.622	0.430	0.415	0.002	0.002	0.000

Panel C. Income and Taxes (Figures 3 and 4)

EI Percentile	TI/EI			AGI/EI			Taxes/EI		
	White	Black	Hisp.	White	Black	Hisp.	White	Black	Hisp.
Decile 1	0.092	0.071	0.094	0.562	0.497	0.640	0.014	0.033	0.049
Decile 2	0.188	0.166	0.219	0.469	0.455	0.619	0.002	0.021	0.043
Decile 3	0.240	0.232	0.253	0.486	0.493	0.578	0.004	0.015	0.030
Decile 4	0.272	0.290	0.289	0.503	0.527	0.564	0.012	0.001	0.014
Decile 5	0.305	0.328	0.328	0.516	0.544	0.573	0.021	0.014	0.000
Decile 6	0.333	0.377	0.361	0.532	0.569	0.578	0.028	0.031	0.021
Decile 7	0.373	0.408	0.406	0.553	0.580	0.600	0.036	0.040	0.031
Decile 8	0.413	0.434	0.423	0.568	0.594	0.588	0.045	0.050	0.041
Decile 9	0.432	0.448	0.449	0.560	0.581	0.586	0.058	0.063	0.058
p90-p99	0.419	0.470	0.429	0.505	0.561	0.528	0.083	0.095	0.081
Top 1	0.444	0.590	0.504	0.502	0.641	0.542	0.133	0.195	0.162

Notes: The Table reports numbers used in Figures 1-4 of the paper.

Source: Surveys of Consumer Finances and authors' calculations.

Table A3. Regression Estimates: Differences in Adjusted Gross Income as a Percent of Expanded Income, by EI Percentile, Race/Ethnicity, and Income

VARIABLES	(1) Decile 1	(2) Decile 2	(3) Decile 3	(4) Decile 4	(5) Decile 5	(6) Decile 6	(7) Decile 7	(8) Decile 8	(9) Decile 9	(10) P90-P99	(11) P99-P100
Black	-6.034*** (1.712)	-1.272 (1.315)	1.242 (1.293)	3.059** (1.219)	3.611*** (1.261)	4.083*** (1.187)	3.557*** (1.217)	2.959*** (1.077)	2.531** (1.209)	2.360 (2.028)	12.88 (9.019)
Hispanic	4.734*** (1.553)	15.56*** (1.347)	10.25*** (1.334)	7.000*** (1.341)	6.649*** (1.401)	5.616*** (1.277)	6.197*** (1.267)	3.035** (1.358)	3.273*** (1.257)	1.974 (2.138)	5.943 (6.378)
EI	-0.000187 (0.000246)	3.36e-05 (0.000132)	0.000298** (0.000131)	0.000150 (0.000136)	4.95e-05 (0.000103)	-5.62e-05 (6.13e-05)	9.11e-05** (4.32e-05)	1.28e-05 (2.59e-05)	-1.35e-05 (1.30e-05)	06*** (1.42e-06)	2.05e-07** (1.00e-07)
Constant	60.27*** (10.61)	47.57*** (4.781)	41.08*** (6.303)	46.29*** (8.934)	54.83*** (7.933)	66.50*** (6.244)	51.38*** (5.493)	61.19*** (4.422)	63.55*** (3.007)	59.95*** (1.702)	53.55*** (2.739)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,430	6,041	5,051	4,391	3,885	3,664	3,474	3,536	3,907	6,347	5,632
R-squared	0.004	0.030	0.040	0.032	0.034	0.046	0.067	0.030	0.026	0.022	0.033

Robust standard errors in parentheses

*p<0.1; **p<.05; ***p<.01

Table A4. Regression Estimates: Differences in Adjusted Gross Income, by EI Percentile, Race/Ethnicity, and Income

VARIABLES	(1) Decile 1	(2) Decile 2	(3) Decile 3	(4) Decile 4	(5) Decile 5	(6) Decile 6	(7) Decile 7	(8) Decile 8	(9) Decile 9	(10) P90-P99	(11) P99-P100
Black	-748.1*** (208.6)	-374.8 (430.2)	517.3 (606.3)	1,892** (759.3)	2,998*** (993.6)	4,055*** (1,190)	4,583*** (1,520)	4,953*** (1,747)	5,721** (2,796)	22,964* (12,632)	510,291** (253,788)
Hispanic	1,299*** (197.2)	5,039*** (455.5)	4,691*** (634.1)	4,312*** (823.4)	5,239*** (1,106)	5,574*** (1,266)	7,813*** (1,597)	4,599** (2,208)	7,586*** (2,905)	7,904 (10,730)	207,636 (298,438)
EI	0.519*** (0.0113)	0.503*** (0.0431)	0.641*** (0.0640)	0.610*** (0.0823)	0.572*** (0.0802)	0.483*** (0.0610)	0.672*** (0.0549)	0.594*** (0.0416)	0.534*** (0.0334)	0.458*** (0.0141)	0.622*** (0.0377)
Constant	-95.46 (244.9)	-501.8 (1,503)	-4,106 (3,031)	-3,284 (5,408)	1,383 (6,140)	12,524** (6,175)	-5,354 (6,937)	6,333 (6,969)	15,949** (7,455)	49,209*** (9,673)	-265,850* (145,401)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,430	6,041	5,051	4,391	3,885	3,664	3,474	3,536	3,907	6,347	5,632
R-squared	0.285	0.059	0.070	0.059	0.060	0.068	0.118	0.101	0.164	0.489	0.745

Robust standard errors in parentheses

*p<0.1; **p<.05; ***p<.01

Table A5. Regression Estimates: Differences in Taxable Income as a Percent of Expanded Income, by EI Percentile, Race/Ethnicity, and Income

VARIABLES	(1) Decile 1	(2) Decile 2	(3) Decile 3	(4) Decile 4	(5) Decile 5	(6) Decile 6	(7) Decile 7	(8) Decile 8	(9) Decile 9	(10) P90-P99	(11) P99-P100
Black	-1.149*** (0.367)	-2.132*** (0.798)	-0.411 (0.994)	2.309** (1.078)	2.938*** (1.136)	4.609*** (1.149)	4.248*** (1.178)	2.532** (1.091)	1.996 (1.292)	2.087 (1.981)	13.22 (9.885)
Hispanic	0.500 (0.402)	3.314*** (0.935)	1.827* (0.961)	2.379** (1.098)	3.021** (1.272)	3.596*** (1.206)	4.686*** (1.342)	2.002 (1.411)	2.370* (1.403)	1.199 (2.223)	7.787 (6.855)
EI	0.000744*** (2.35e-05)	0.000520*** (8.28e-05)	0.000460*** (9.66e-05)	0.000245** (0.000106)	0.000135 (8.30e-05)	4.61e-05 (5.87e-05)	0.000172*** (4.11e-05)	6.21e-05** (2.58e-05)	1.60e-05 (1.34e-05)	-2.72e-06* (1.43e-06)	2.29e-07** (1.05e-07)
Constant	-5.745*** (0.429)	1.385 (2.838)	6.539 (4.664)	15.45** (7.038)	25.74*** (6.603)	34.35*** (5.950)	22.22*** (5.289)	37.38*** (4.408)	43.68*** (3.081)	47.49*** (1.653)	47.44*** (2.681)
Survey Round											
FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,430	6,041	5,051	4,391	3,885	3,664	3,474	3,536	3,907	6,347	5,632
R-squared	0.196	0.020	0.023	0.021	0.023	0.031	0.061	0.028	0.019	0.013	0.031

Robust standard errors in parentheses

*p<0.1; **p<.05; ***p<.01

Table A6. Regression Estimates: Differences in Taxable Income, by EI Percentile, Race/Ethnicity, and Income

VARIABLES	(1) Decile 1	(2) Decile 2	(3) Decile 3	(4) Decile 4	(5) Decile 5	(6) Decile 6	(7) Decile 7	(8) Decile 8	(9) Decile 9	(10) P90-P99	(11) P99-P100
Black	-239.7*** (80.67)	-685.2** (269.9)	-240.1 (463.9)	1,442** (670.7)	2,460*** (894.7)	4,611*** (1,149)	5,435*** (1,472)	4,160** (1,783)	4,582 (2,962)	23,093* (12,460)	528,811* (277,798)
Hispanic	89.76 (85.14)	1,099*** (321.7)	818.3* (458.6)	1,446** (677.3)	2,415** (1,009)	3,596*** (1,200)	5,911*** (1,681)	2,979 (2,317)	5,653* (3,241)	3,930 (11,344)	269,526 (298,147)
EI	0.168*** (0.00542)	0.356*** (0.0286)	0.460*** (0.0475)	0.432*** (0.0643)	0.424*** (0.0647)	0.385*** (0.0593)	0.595*** (0.0521)	0.519*** (0.0419)	0.474*** (0.0344)	0.406*** (0.0145)	0.556*** (0.0423)
Constant	-1,377*** (95.98)	-5,543*** (947.1)	-8,210*** (2,258)	-7,648* (4,249)	-4,521 (5,102)	462.4 (5,978)	-19,527*** (6,659)	-7,106 (7,023)	-252.0 (7,626)	28,183*** (9,557)	-237,263 (156,923)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,430	6,041	5,051	4,391	3,885	3,664	3,474	3,536	3,907	6,347	5,632
R-squared	0.211	0.051	0.045	0.038	0.039	0.048	0.098	0.081	0.131	0.430	0.678

Robust standard errors in parentheses

*p<0.1; **p<.05; ***p<.01

Table A7. Regression Estimates: Differences in Average Tax Rate by Race/Ethnicity and Expanded Income Percentile

VARIABLES	(1) Decile 1	(2) Decile 2	(3) Decile 3	(4) Decile 4	(5) Decile 5	(6) Decile 6	(7) Decile 7	(8) Decile 8	(9) Decile 9	(10) P90-P99	(11) P99-P100
Black	-1.693*** (0.270)	-1.896*** (0.267)	-1.953*** (0.303)	-1.085*** (0.246)	-0.643*** (0.248)	0.311 (0.232)	0.496** (0.233)	0.554** (0.225)	0.615** (0.297)	0.833* (0.479)	5.661 (3.885)
Hispanic	-2.992*** (0.345)	-4.188*** (0.398)	-3.566*** (0.349)	-2.564*** (0.317)	-1.988*** (0.315)	-0.642** (0.263)	-0.357 (0.287)	-0.265 (0.271)	0.182 (0.278)	0.323 (0.518)	3.196 (2.638)
EI	3.44e-05** (1.53e-05)	6.77e-05*** (2.61e-05)	6.36e-05*** (2.38e-05)	4.02e-05* (2.19e-05)	05*** (1.52e-05)	2.66e-05** (1.06e-05)	05*** (8.21e-06)	05*** (4.73e-06)	05*** (2.61e-06)	06*** (4.14e-07)	07*** (2.94e-08)
Constant	-2.836*** (0.382)	-3.145*** (0.952)	-2.327** (1.176)	-1.259 (1.426)	-1.461 (1.243)	0.586 (1.118)	0.272 (1.063)	0.829 (0.803)	2.474*** (0.590)	6.343*** (0.376)	14.08*** (0.918)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,430	6,041	5,051	4,391	3,885	3,664	3,474	3,536	3,907	6,347	5,632
R-squared	0.023	0.055	0.047	0.034	0.036	0.019	0.026	0.024	0.033	0.063	0.040

Robust standard errors in parentheses

*p<0.1; **p<.05; ***p<.01

Table A8. Regression Estimates: Differences in Average Tax Rate by Race/Ethnicity and Expanded Income Percentile, Including Demographic Controls

VARIABLES	(1) Decile 1	(2) Decile 2	(3) Decile 3	(4) Decile 4	(5) Decile 5	(6) Decile 6	(7) Decile 7	(8) Decile 8	(9) Decile 9	(10) P90-P99	(11) P99-P100
Black	-0.199 (0.184)	-0.0444 (0.163)	-0.358** (0.181)	0.174 (0.170)	0.0544 (0.169)	0.340* (0.183)	0.493*** (0.191)	0.373* (0.210)	0.537* (0.276)	0.794 (0.484)	5.074 (3.468)
Hispanic	-0.964*** (0.200)	-0.600*** (0.226)	-0.140 (0.217)	0.214 (0.206)	0.283 (0.206)	0.385** (0.191)	0.640*** (0.224)	0.265 (0.239)	0.336 (0.278)	0.190 (0.532)	2.430 (2.343)
EI	0.000173*** (1.03e-05)	0.000161*** (2.01e-05)	0.000167*** (1.64e-05)	0.000118*** (1.40e-05)	9.11e-05*** (1.25e-05)	4.34e-05*** (8.71e-06)	4.33e-05*** (6.00e-06)	2.85e-05*** (4.33e-06)	1.71e-05*** (2.57e-06)	4.42e-06*** (4.12e-07)	1.06e-07*** (2.94e-08)
Married Filing Jointly	-10.24*** (1.094)	-7.886*** (0.410)	-5.279*** (0.239)	-4.120*** (0.140)	-3.627*** (0.134)	-3.351*** (0.145)	-2.900*** (0.171)	-2.233*** (0.199)	-1.783*** (0.284)	-0.674* (0.400)	1.317 (1.107)
Head of Household	-12.75*** (0.817)	-8.082*** (0.435)	-4.040*** (0.302)	-1.666*** (0.232)	-1.544*** (0.211)	-1.554*** (0.229)	-0.778*** (0.273)	-0.316 (0.436)	-0.314 (0.520)	1.223 (0.846)	5.018** (2.189)
Number of Dependents	-3.924*** (0.460)	-2.880*** (0.222)	-2.822*** (0.138)	-2.328*** (0.0942)	-1.645*** (0.0772)	-1.167*** (0.0539)	-0.915*** (0.0473)	-0.627*** (0.0495)	-0.309*** (0.0479)	0.176*** (0.0618)	0.669*** (0.189)
Constant	-2.497*** (0.278)	-2.884*** (0.665)	-3.889*** (0.762)	-2.575*** (0.886)	-1.422 (0.992)	2.255** (0.900)	1.727** (0.778)	2.940*** (0.763)	4.253*** (0.640)	6.674*** (0.507)	12.27*** (1.391)
Survey Round											
FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,430	6,041	5,051	4,391	3,885	3,664	3,474	3,536	3,907	6,347	5,632
R-squared	0.588	0.636	0.610	0.569	0.508	0.426	0.370	0.196	0.107	0.070	0.066

Robust standard errors in parentheses

*p<0.1; **p<.05; ***p<.01

Table A9. Regression Estimates: Differences in Average Tax Rate by Race/Ethnicity and Expanded Income Percentile, Including Demographic and Income Composition Controls

VARIABLES	(1) Decile 1	(2) Decile 2	(3) Decile 3	(4) Decile 4	(5) Decile 5	(6) Decile 6	(7) Decile 7	(8) Decile 8	(9) Decile 9	(10) P90-P99	(11) P99-P100
Black	-0.259 (0.199)	0.0657 (0.160)	-0.324** (0.154)	0.108 (0.141)	-0.129 (0.116)	0.0755 (0.115)	0.235** (0.116)	0.0328 (0.130)	0.122 (0.137)	0.125 (0.202)	1.319 (0.991)
Hispanic	-0.925*** (0.200)	-1.111*** (0.222)	-0.726*** (0.208)	-0.318* (0.176)	-0.256 (0.156)	0.0312 (0.126)	0.299** (0.147)	0.312** (0.132)	-0.0755 (0.130)	0.395 (0.246)	2.344* (1.398)
EI	0.000174*** (1.10e-05)	0.000162*** (1.92e-05)	0.000145*** (1.45e-05)	0.000101*** (1.07e-05)	05*** (7.77e-06)	05*** (5.34e-06)	05*** (3.50e-06)	05*** (2.32e-06)	05*** (1.11e-06)	06*** (2.17e-07)	08*** (1.35e-08)
Married Filing Jointly	-10.34*** (1.087)	-7.749*** (0.439)	-4.603*** (0.257)	-2.972*** (0.151)	-2.441*** (0.117)	-2.425*** (0.0803)	-2.490*** (0.0894)	-2.505*** (0.122)	-2.415*** (0.145)	-2.094*** (0.139)	-0.880** (0.415)
Head of Household	-12.85*** (0.808)	-8.295*** (0.452)	-4.001*** (0.303)	-1.443*** (0.210)	-1.195*** (0.178)	-1.185*** (0.147)	-0.664*** (0.178)	-0.414* (0.240)	-0.520* (0.296)	0.855** (0.347)	-0.0379 (0.738)
Number of Dependents	-3.819*** (0.464)	-3.000*** (0.230)	-3.017*** (0.150)	-2.603*** (0.103)	-1.888*** (0.0883)	-1.488*** (0.0513)	-1.231*** (0.0405)	-0.965*** (0.0310)	-0.604*** (0.0311)	-0.314*** (0.0354)	0.140* (0.0782)
Fully Taxed Income as a % of EI	-0.00874 (0.0117)	0.0370*** (0.00195)	0.0607*** (0.00183)	0.0784*** (0.00216)	0.0941*** (0.00185)	0.110*** (0.00174)	0.119*** (0.00194)	0.142*** (0.00760)	0.164*** (0.00244)	0.214*** (0.00280)	0.305*** (0.00648)
Partially Taxed Income as a % of EI	-0.00456 (0.0218)	0.0354* (0.0182)	0.0454*** (0.0150)	0.0561*** (0.0137)	0.0769*** (0.00896)	0.0953*** (0.0111)	0.110*** (0.00944)	0.141*** (0.0149)	0.149*** (0.00813)	0.194*** (0.00447)	0.239*** (0.00798)
Constant	-2.061*** (0.554)	-4.600*** (0.629)	-6.215*** (0.685)	-6.016*** (0.706)	-6.125*** (0.626)	-4.943*** (0.555)	-4.501*** (0.462)	-4.858*** (0.671)	-5.257*** (0.294)	-3.485*** (0.245)	1.741** (0.700)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,430	6,041	5,051	4,391	3,885	3,664	3,474	3,536	3,907	6,347	5,632
R-squared	0.591	0.662	0.690	0.723	0.759	0.809	0.803	0.767	0.788	0.806	0.829

Robust standard errors in parentheses

*p<0.1; **p<.05; ***p<.01

Table A10. Regression Estimates: Differences in Taxes by Race/Ethnicity and Expanded Income Percentile

VARIABLES	(1) Decile 1	(2) Decile 2	(3) Decile 3	(4) Decile 4	(5) Decile 5	(6) Decile 6	(7) Decile 7	(8) Decile 8	(9) Decile 9	(10) P90-P99	(11) P99-P100
Black	-262.6*** (43.23)	-618.8*** (87.08)	-924.0*** (139.7)	-672.0*** (154.6)	-473.7** (194.8)	327.8 (233.7)	636.8** (292.2)	927.1** (365.6)	1,460** (694.6)	8,635** (3,543)	210,400* (110,653)
Hispanic	-510.3*** (61.77)	-1,353*** (129.8)	-1,647*** (161.5)	-1,606*** (196.5)	-1,531*** (246.2)	-616.6** (261.9)	-413.9 (355.7)	-430.9 (454.1)	498.9 (641.6)	1,288 (2,869)	109,462 (105,277)
EI	-0.0168*** (0.00283)	0.0103 (0.00838)	0.0271** (0.0111)	0.0320** (0.0136)	0.0620*** (0.0120)	0.0537*** (0.0106)	0.0743*** (0.0103)	0.0899*** (0.00782)	0.0979*** (0.00676)	0.116*** (0.00456)	0.164*** (0.00966)
Constant	-88.77 (61.92)	-640.4** (298.4)	-930.4* (543.9)	-1,204 (881.4)	-2,563*** (972.3)	-2,117* (1,108)	-4,152*** (1,322)	-6,205*** (1,306)	-7,949*** (1,463)	-12,421*** (2,714)	-43,580 (39,859)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,430	6,041	5,051	4,391	3,885	3,664	3,474	3,536	3,907	6,347	5,632
R-squared	0.028	0.053	0.046	0.035	0.040	0.027	0.040	0.057	0.126	0.439	0.707

Robust standard errors in parentheses

*p<0.1; **p<.05; ***p<.01

Table A11. Regression Estimates: Differences in Taxes by Race/Ethnicity and Expanded Income Percentile, Including Demographic Controls

VARIABLES	(1) Decile 1	(2) Decile 2	(3) Decile 3	(4) Decile 4	(5) Decile 5	(6) Decile 6	(7) Decile 7	(8) Decile 8	(9) Decile 9	(10) P90-P99	(11) P99-P100
Black	-13.77 (33.22)	-15.24 (52.97)	-176.7** (83.29)	110.5 (105.3)	69.91 (133.9)	352.4* (185.4)	633.7*** (239.4)	630.0* (346.2)	1,280** (647.4)	8,391** (3,551)	187,397* (98,555)
Hispanic	-159.0*** (36.30)	-166.5** (72.68)	-33.28 (100.7)	121.7 (126.4)	254.8 (161.0)	402.6** (188.2)	845.3*** (277.0)	427.8 (400.1)	839.0 (650.1)	200.6 (2,945)	88,375 (98,665)
EI	0.00678*** (0.00166)	0.0414*** (0.00616)	0.0757*** (0.00779)	0.0806*** (0.00853)	0.0901*** (0.00987)	0.0704*** (0.00894)	0.0904*** (0.00765)	0.0932*** (0.00720)	0.0991*** (0.00672)	0.116*** (0.00454)	0.164*** (0.00967)
Married Filing Jointly	-1,853*** (209.0)	-2,597*** (134.3)	-2,493*** (111.0)	-2,547*** (86.33)	-2,860*** (106.5)	-3,337*** (146.4)	-3,656*** (212.9)	-3,646*** (325.0)	-4,056*** (678.0)	-3,379 (2,342)	46,590 (54,004)
Head of Household	-2,036*** (150.7)	-2,560*** (141.2)	-1,873*** (141.4)	-1,002*** (144.2)	-1,195*** (164.9)	-1,536*** (229.8)	-977.5*** (346.6)	-516.0 (731.7)	-724.2 (1,220)	9,139* (5,318)	194,710* (105,877)
Number of Dependents	-704.7*** (86.15)	-975.9*** (73.78)	-1,332*** (64.94)	-1,455*** (58.89)	-1,294*** (60.29)	-1,157*** (53.20)	-1,157*** (59.70)	-1,016*** (80.93)	-683.4*** (117.5)	1,499*** (406.2)	18,592*** (6,488)
Constant	-32.16 (45.71)	-568.2*** (204.5)	-1,667*** (356.5)	-2,027*** (538.8)	-2,542*** (776.9)	-461.6 (912.7)	-2,316** (978.1)	-2,769** (1,224)	-3,928** (1,534)	-11,490*** (3,365)	-102,798* (58,875)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,430	6,041	5,051	4,391	3,885	3,664	3,474	3,536	3,907	6,347	5,632
R-squared	0.593	0.640	0.611	0.571	0.511	0.429	0.378	0.217	0.189	0.444	0.709

Robust standard errors in parentheses

*p<0.1; **p<.05; ***p<.01

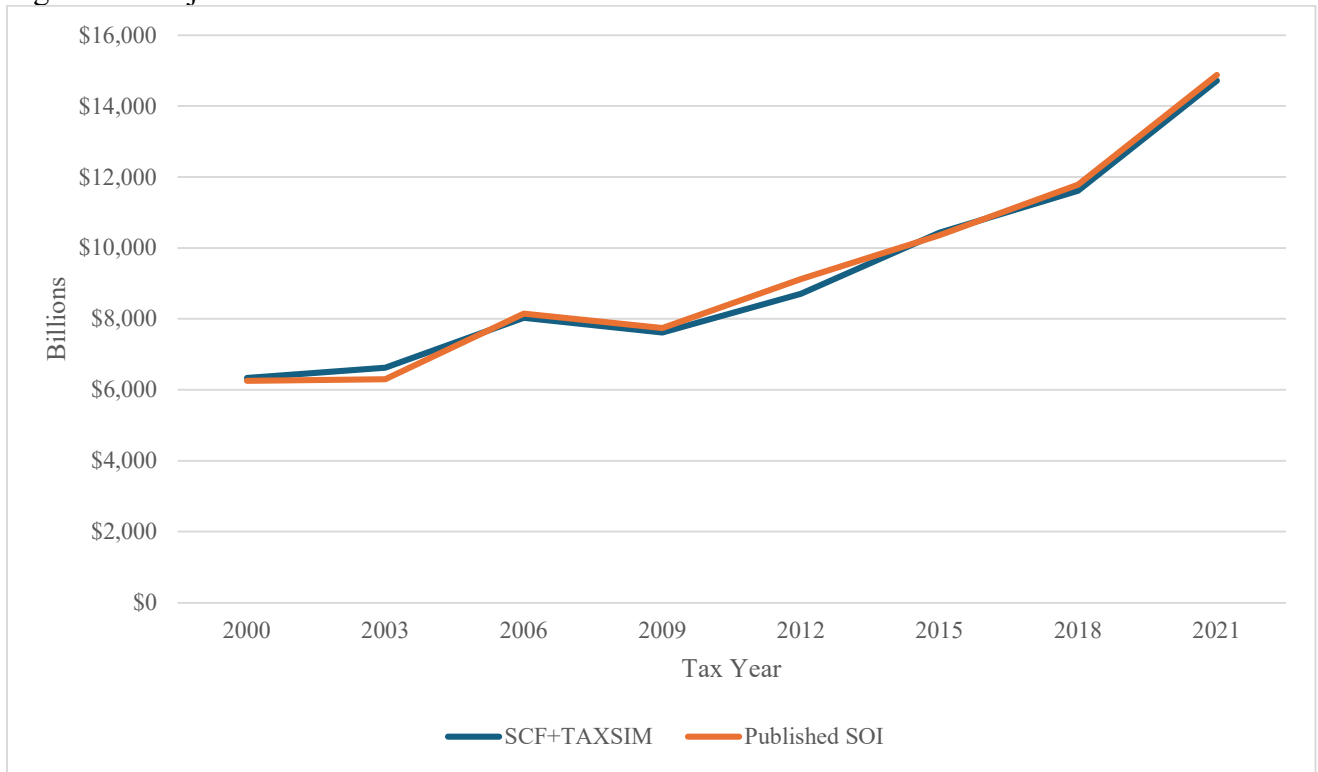
Table A12. Regression Estimates: Differences in Taxes by Race/Ethnicity and Expanded Income Percentile, Including Demographic and Income Composition Controls

VARIABLES	(1) Decile 1	(2) Decile 2	(3) Decile 3	(4) Decile 4	(5) Decile 5	(6) Decile 6	(7) Decile 7	(8) Decile 8	(9) Decile 9	(10) P90-P99	(11) P99-P100
Black	-13.57 (33.40)	21.93 (51.07)	-160.4** (71.91)	69.46 (87.60)	-74.27 (92.10)	90.12 (117.2)	308.7** (146.8)	70.61 (218.3)	314.2 (334.6)	4,457* (2,483)	62,826 (46,183)
Hispanic	-158.3*** (35.80)	-341.6*** (70.83)	-311.9*** (95.82)	-208.8* (108.3)	-169.2 (121.3)	49.81 (126.1)	414.4** (179.9)	505.9** (230.7)	-118.4 (321.0)	1,474 (1,878)	98,494 (69,145)
EI	0.00682*** (0.00168)	0.0415*** (0.00577)	0.0654*** (0.00672)	0.0698*** (0.00657)	0.0794*** (0.00628)	0.0733*** (0.00577)	0.0797*** (0.00446)	0.0892*** (0.00402)	0.108*** (0.00322)	0.129*** (0.00351)	0.162*** (0.00958)
Married Filing Jointly	-1,854*** (209.1)	-2,550*** (143.5)	-2,171*** (119.3)	-1,833*** (93.20)	-1,926*** (92.26)	-2,415*** (81.91)	-3,137*** (117.9)	-4,092*** (198.4)	-5,522*** (367.5)	-11,813*** (1,295)	-30,263 (41,340)
Head of Household	-2,034*** (151.3)	-2,632*** (146.4)	-1,855*** (141.6)	-863.3*** (130.1)	-920.2*** (138.9)	-1,168*** (147.2)	-834.1*** (230.0)	-675.8* (408.5)	-1,205* (702.6)	7,088** (3,287)	10,665 (65,017)
Number of Dependents	-706.4*** (87.46)	-1,017*** (76.48)	-1,425*** (70.04)	-1,626*** (65.21)	-1,485*** (69.08)	-1,477*** (50.38)	-1,555*** (50.08)	-1,574*** (52.37)	-1,370*** (80.02)	-1,463*** (280.0)	1,058 (4,330)
Fully Taxed Income as a % of EI	-0.0306 (0.608)	12.64*** (0.617)	28.87*** (0.857)	48.74*** (1.365)	74.04*** (1.459)	109.6*** (1.736)	149.8*** (2.487)	234.6*** (13.62)	383.0*** (6.086)	1,299*** (31.46)	10,846*** (481.6)
Partially Taxed Income as a % of EI	1.529 (1.413)	11.10* (5.789)	22.23*** (7.091)	35.17*** (8.490)	60.84*** (7.004)	95.69*** (11.14)	138.6*** (12.17)	233.4*** (25.41)	349.5*** (18.95)	1,236*** (42.29)	10,572*** (809.3)
Constant	-32.71 (48.84)	-1,154*** (194.6)	-2,772*** (316.9)	-4,167*** (444.3)	-6,245*** (500.8)	-7,626*** (600.8)	-10,171*** (587.8)	-15,612*** (1,180)	-26,110*** (792.9)	-73,753*** (2,791)	-507,708*** (54,188)
Survey Round FE											
Observations	7,430	6,041	5,051	4,391	3,885	3,664	3,474	3,536	3,907	6,347	5,632
R-squared	0.593	0.669	0.692	0.726	0.762	0.809	0.802	0.763	0.792	0.763	0.787

Robust standard errors in parentheses

*p<0.1; **p<.05; ***p<.01

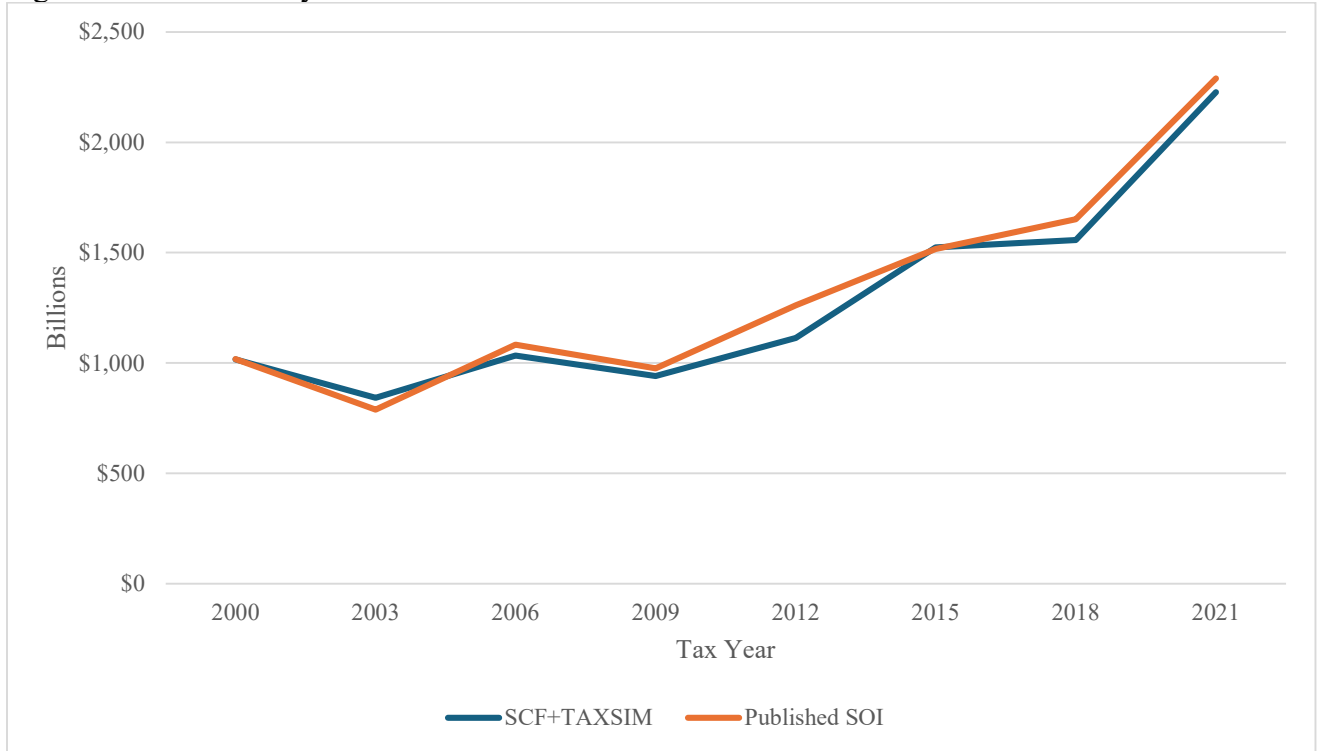
Figure A1. Adjusted Gross Income in Our Data and IRS SOI



Notes: The Figure shows aggregate Adjusted Gross Income estimated in our model and reported by the IRS Statistics of Income.

Source: Surveys of Consumer Finances, authors' calculations, and SOI Table 1.1: All Returns: Selected Income and Tax Items.

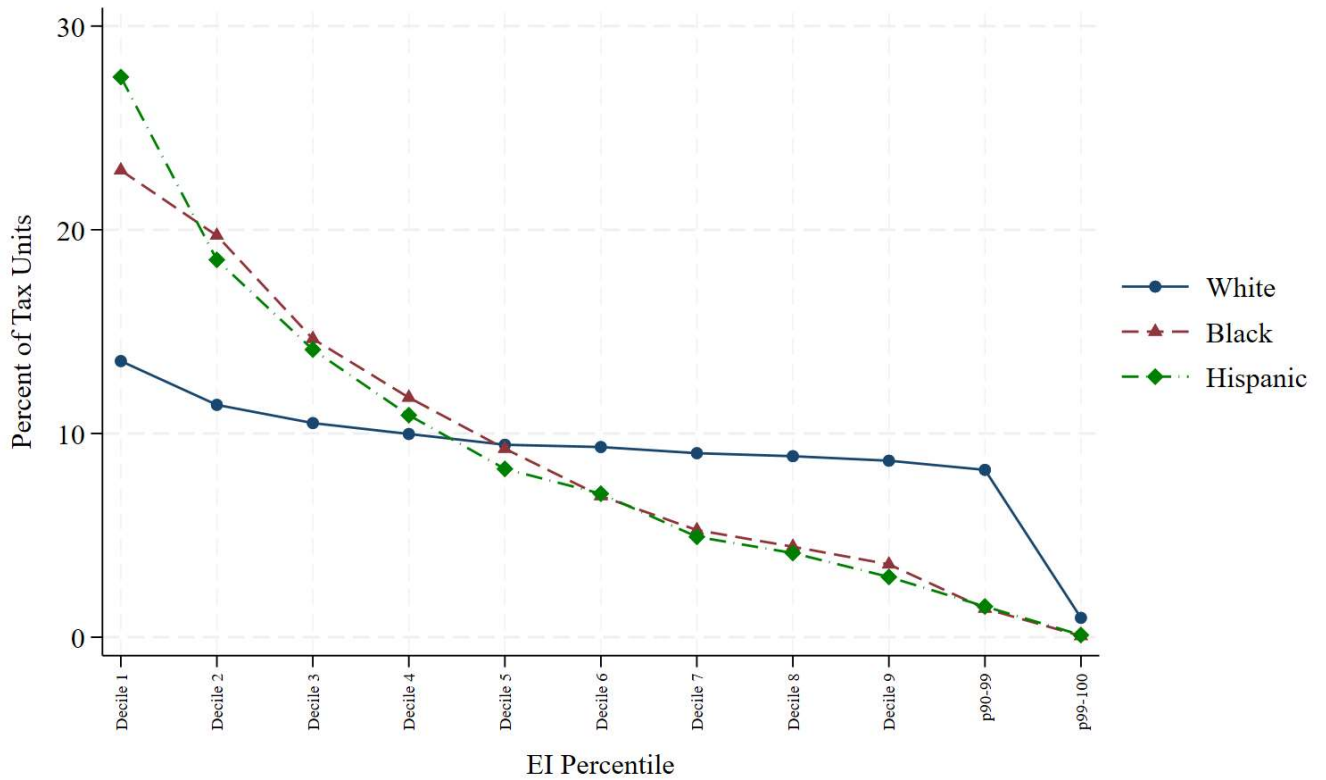
Figure A2. Tax Liability Before Credits in Our Data and IRS SOI



Notes: The Figure shows aggregate tax liability before credits estimated in our model and reported by the IRS Statistics of Income.

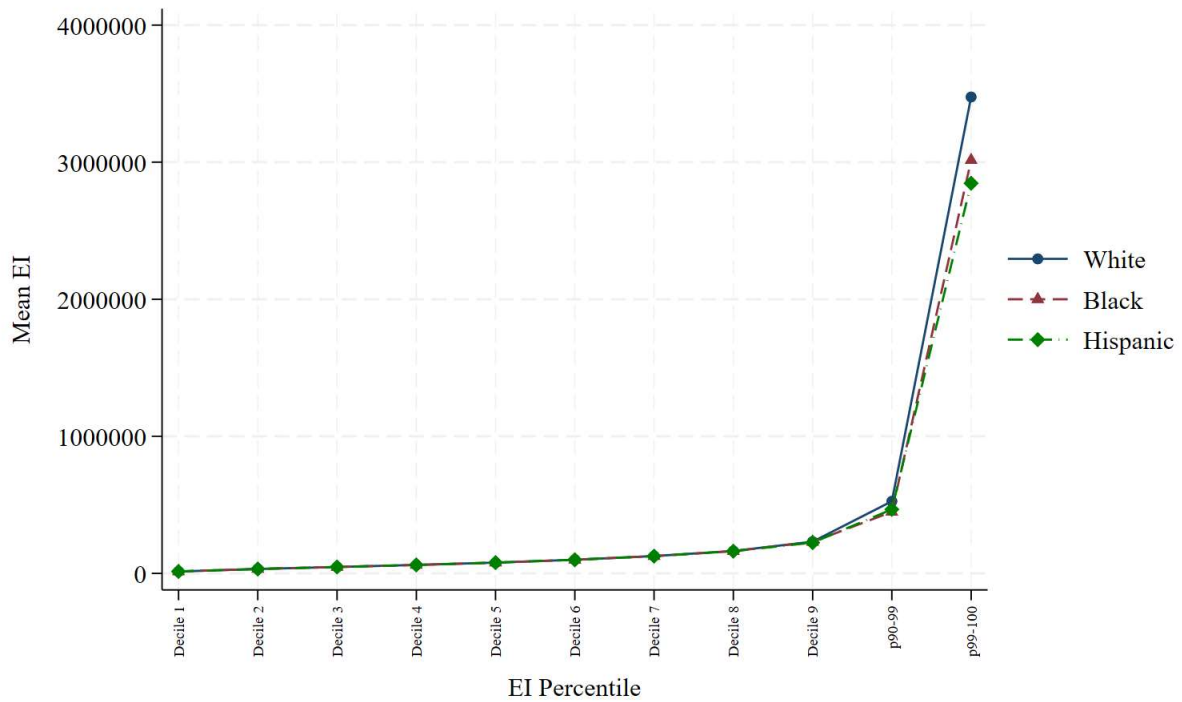
Source: Surveys of Consumer Finances, authors' calculations, and SOI Table 1.1: All Returns: Selected Income and Tax Items.

Figure A3. Distribution of Tax Units by EI Percentile



Notes: The Figure reports the distribution of Black, Hispanic, and white tax units across Expanded Income categories. Distributional breaks are calculated using population weights.
Source: Survey of Consumer Finances and authors' calculations.

Figure A4. Average EI by EI Percentile



Notes: The Figure reports average Expanded Income (EI) levels by EI category for Black, Hispanic, and white tax units. Distributional breaks are calculated using population weights, and average income levels are calculated using tax unit weights. Data are in 2018 dollars.
Source: Survey of Consumer Finances and authors' calculations.