The Same But Different:

How the Income Tax Affects Black and White Households

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ABSTRACT

The federal income tax does not explicitly discriminate on the basis of race but can still generate disparate outcomes when race correlates with factors that affect liability. Using Survey of Consumer Finances data and NBER's TAXSIM model, we find that untaxed forms of income accrue disproportionately to whites, on an overall basis and within most income groups. Black households face lower tax rates than whites in low-income groups due to differences in filing status and dependents but higher rates in high-income groups because of differences in income composition. We also examine the racial implications of historical and prospective policy changes.

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I. Introduction

A key issue for researchers and policy makers is the extent to which laws and institutions that are nominally race-blind are in fact race-neutral in their effects. For example, the federal income tax does not explicitly take race into account; two tax filing units with identical sources and level of income, deductions, and credits will face the same tax liability, regardless of race. Yet the income tax may still generate disparate outcomes by race because factors that affect liability may be correlated with race.[1] These factors include the well-documented and extensively studied differences between Black and white households in terms of household composition, labor earnings, wealth accumulation, and other measures of economic status (see, e.g., Aladangady et al. 2023; Altonji and Blank 1999; Derononcourt et al. 2024; Haskins and Sawhill 2009; Moynihan 1965).

In this paper, we investigate how the income tax – a central economic institution in the lives of almost all citizens – differentially affects Black and white households.[2] A prominent theme of our analysis is that the differences in economic status noted above are, in fact, among the primary determinants of tax liability and thus spill over into differences across races in income tax burdens. In turn, the resulting differential income tax treatment may have significant effects on the differences in economic status.

To carry out the analysis, we use data from nine waves of the Survey of Consumer

[1]Moran and Whitford (1996) and Brown (2021) provide several examples where the tax code favors the activities, resources, and behaviors more common among white than Black families. Gale (2021) provides examples where pre-existing discrimination in public policies, social practices, or economic conditions can cause policies that are race-neutral on the surface to nevertheless have disparate racial impacts.

[2] We fully recognize the importance of people of other races and ethnicities, but we believe there are compelling reasons to focus on Black-white tax differentials, given the extensive literature on the Black-white differences and the long history of discriminatory policies against Black individuals in the U.S. We are undertaking additional work examining tax issues regarding Asian-American households (Gale and Gnany 2024) and Hispanic households.

Finances (SCF), a public-use triennial household survey that contains information on demographics, income, wealth, and consistent measures of respondents' self-reported race. We split households into tax units using a methodology developed in Gale et al. (2022a, b) and develop measures of adjusted gross income (AGI), deductions, taxable income (TI), and eligibility for credits. We apply the data to the National Bureau of Economic Research's TAXSIM model, which allows users to specify which year's tax law to use to calculate tax liability.

To develop a reliable measure of households' economic status and to examine the racial implications of items that are *not* taxed in the current system, we construct a new, broad measure called "expanded income" (EI), which starts with adjusted gross income (AGI) and adds various forms of cash and non-cash income components.

We obtain several major results, all under 2018 law unless otherwise specified. First, the descriptive data show that Black and white tax filing units differ systematically. White units have higher average income and, because the income tax is progressive, face higher average tax rates (ATRs), defined as the ratio of income tax liability divided by EI. Even after controlling for EI, however, important differences remain: white units are more likely to file as married, less likely to file as head of household, less likely to claim dependents and receive a greater share of their income as tax-preferred or -exempt capital income. These descriptive findings are crucial because they reflect the underlying Black-white economic differences noted above and drive all the results that follow, in intuitive ways.

Second, the many differences between a comprehensive income tax and the current income tax accrue disproportionately to white households, on average. These differences include the non-taxation of items such as imputed rent from owner-occupied housing, unrealized capital

gains, and a substantial share of business income. This result holds in the aggregate, which is unsurprising because most untaxed income accrues to high-income households, where white units are disproportionately represented. It also holds, however, after controlling for EI, for middle- and high-income tax units, reflecting underling racial wealth differences and income tax preferences for capital income. In the lowest two EI deciles, the differences between a comprehensive income tax and the current system weigh toward Black households, who receive a disproportionate share of government transfers that are not taxed but would be under a comprehensive income tax.

Third, the relative taxation of Black versus white tax units varies over the income distribution. In the bottom five deciles of the EI distribution, controlling for EI, Black tax units face lower ATRs than white tax units. These results reflect differences in household composition and disappear after controlling for filing status and number of dependents.[3] In contrast, in the top five deciles of the EI distribution, and again controlling for EI, Black units generally face higher ATRs than white units. Controlling for filing status and dependents does not eliminate this difference. Instead, the difference arises because Black units receive a smaller share of their income as tax-preferred or tax-exempt capital income, again reflecting racial wealth differences, and a greater share in the form of wages, which are taxed as ordinary income.[4]

These results display both "vertical" and "horizontal" differences between Black and white households. Using a decomposition technique proposed in Slemrod (2022) and

[3]There is an issue as to whether to control for tax unit characteristics, as such characteristics themselves may be the results of racism. But, either way, the results cited in the text do not support the second Moran and Whitford (1996). We believe both types of comparisons – with and without controls – are informative. We control for tax unit characteristics here in order to explain the source of the differences in average tax rates, not to argue for the absence of racism in other parts of society. For further discussion, see Logan (2022) and Moran and Whitford (1996).

[4]Holtzblatt, et al. (2023) and Cronin et al. (2023) obtain similar results on the share of wage and capital income.

implemented in Lin and Slemrod (2023) for gender differences in taxes, we show that 56% of the overall difference in ATRs between Black and white units is due to group differences in average income coupled with the progressivity of the income tax. The remainder is due to "horizontal" differences within the same income deciles. Because the difference in ATRs by race changes sign as EI rises, we also decompose ATRs separately in the top and bottom halves of the income distribution and find that horizontal considerations dominate the difference in the bottom half while vertical (i.e., income) differences dominate in the top half. These results are consistent with the regression findings and show that many features of the tax system besides its basic progressivity affect relative tax burdens.

Fourth, we analyze prospective and recent tax reforms. Broadening the tax base by taxing capital income more fully reduces ATRs for Black units relative to white units; raising marginal tax rates, holding the base constant, has the opposite effect. Both results derive from the fact that, in every income decile, tax-preferred and tax-exempt capital income is a larger share of income for white units than Black units, again reflecting underlying wealth differences.

We apply these results to the Tax Cut and Jobs Act of 2017 (TCJA) and the American Rescue Plan of 2021 (ARP). Although TCJA was regressive on an overall basis, thus benefiting white tax units relative to Black tax units, we find that the individual income tax provisions did not have substantially different effects across races within EI deciles. In fact, the lower tax rates and increased child tax credit (CTC) in TCJA reduced taxes by slightly more for Black tax units relative to white units within each income group. The American Rescue Plan of 2021 reduced ATRs substantially for Black relative to white units in the bottom half of the EI distribution by substantially raising the CTC and the earned income tax credit (EITC).

Finally, we trace the evolution of racial differences in the income tax over the past fifty-

plus years. We replicate results in Strass and Gouveia (2023), who find no difference in ATRs between Black and white tax units using data from 1967 to 1973. We trace the effects of the various policy changes that have occurred since then and have led to a system where Black households face lower tax taxes than white households in the bottom half of the distribution but higher rates in the top half.

Our results help shed light on how the income tax can create, reinforce, or offset pre-existing disparities between Black and white individuals. Income tax liability depends on sources and levels of income, marital status, dependents, and other factors that have plausibly been affected by a history of racism and racist policies in the United States (Kawano 2022). We do not address why income tax rules might favor one group – for example, whether the differences are due to explicit or implicit racism, lack of representation in the legislature, or other causes (see Brown 2021, Moran and Whitford 1996, and Strand and Mirkay 2023). Regardless of the cause, however, the results should help policy makers and the public better understand the racial dimensions of the income tax.

Section II reviews previous literature. Section III discusses our data and methodology issues. Section IV provides descriptive data on Black and white tax units. Section V examines vertical and horizontal aspects of the current system, including econometric tests of racial differences in (a) the gap between a comprehensive tax base and the current tax base and (b) ATRs within income groups and reports a Lim-Slemrod decomposition. Section VI examines prospective and recent tax reforms. Section VII discusses the evolution of racial differences in income tax. Section VIII provides concluding remarks.

II. Previous Literature

In their classic paper, Moran and Whitford (1996) argue that although the income tax is

formally race-neutral, variations in circumstances and behavior across people of different races can result in disparate tax liabilities. They provide examples in support of two major hypotheses: First, that "… deviations from the ideal of a comprehensive income tax systematically favor whites over blacks;" second, that "… even if income is held constant, the Internal Revenue Code systematically disfavors the financial interests of Blacks … [which will] trigger different tax results." We test these propositions in section V below and find substantial, but not complete support for each. Brown (2021) offers further examples and supporting data on these two themes.

Most recent work on this topic, however, has focused on the racial disparities inherent in particular provisions of the income tax, rather than the tax as a whole. Cronin, DeFilippis, and Fisher (CDF, 2023), using the Treasury tax model and imputing taxpayer race from other data, find that several major tax expenditures (including those for realized capital gains and qualified dividends) disproportionately benefit white households. Likewise, Holtzblatt et al. (2023), using the Tax Policy Center simulation model and also imputing taxpayer race from outside the model, find that preferences for realized capital gains disproportionately benefit white households. Perhaps surprisingly, neither study finds a racial difference in use of the mortgage interest deduction. Our results are consistent with all these findings.

CDF (2023) find that refundable credits tend to disproportionately benefit Black (and Hispanic) households, but the difference disappears after controlling for income, filing status, and number of children (CDF, 2024). We find similar results in section V.

Alm et al. (2023a), with Current Population Survey data, and Holtzblatt et al. (2024), with SCF data, use NBER's TAXSIM model and find that marriage penalties are more prevalent and a larger share of income among Black than white couples, because Black couples generally have more equal spousal earnings and more dependents. Costello et al. (2024), however, using

the Treasury tax model and imputation procedures for taxpayer race, find different spousal earnings patterns and find that marriage penalties are not more likely among Black couples.

Other analyses of the racial differences created by specific aspects of the tax code include Choukhmane et al. (2024) on retirement saving; Hardy, Hokayem, and Ziliak (2022) and Alm et al. (2023b) on the EITC; Goldin and Michelmore (2021) on the CTC, and Elzayn et al. (2023) on audit rates.[5]

The disparities created by the income tax as a whole have received less attention. Strauss and Gouveia (2023) use a 1967-73 panel of income tax returns coupled with taxpayer race data from matching federal records. They find no significant difference in the ratio of income tax liability to AGI for Black compared to white tax units after controlling for income, tax unit size, and itemization and filing status. We replicate these findings in Section VII. Unlike our work, they estimate a single coefficient for all Black households, rather than allowing the coefficient to vary freely over the income distribution. In addition, they do not have access to an income measure that is substantially broader than AGI – which matters for reasons explained in Section III – and they use data that does not reflect any of the tax changes over the past 50 years.

Sullivan (2021) uses Census and IRS data from 2018 to show that a higher share of Black residents is associated with a lower ratio of income taxes to AGI in low-income ZIP codes, but a higher ratio in high-income ZIP codes. We obtain results consistent with these in section V. We also explore individual-level determinants of tax liability, income measures broader than AGI, and the effects of tax reforms and historical changes in tax rules.

[5] See Culp (1991) for an early discussion of race and taxes. In addition, for discussions of varying detail, see Moran and Whitford (1996), Hamilton and Darity (2010) and Brown (2021) on the tax treatment of gifts and inheritances; Moran and Whitford (1996) and Brown (1997, 1999, 2021) on the marriage penalty; Brown (2021) on the mortgage interest deduction; Davis et al. (2021) on the child tax credit; Davis and Schieder (2021) on the state and local income tax deduction; Moran and Whitford (1996) on the taxation of fringe benefits and capital gains; Rhee (2013) on retirement plans; Crawford and Gerzog (2020) on education benefits; and Neubig (2021) on tax expenditures;. Boddupalli et al. (2024) provide an overview of these issues.

III. Data and Methodology

No publicly available data set contains information about both race and taxes. To address this shortfall, we use survey data that includes respondent-reported race information, and we impute tax liabilities. Other analysts have chosen to use data sets that already include tax information, and then impute race. There are advantages and disadvantages of each approach.[6]

A. Converting Households to Tax Filing Units

We use data from nine waves (1998 to 2022) of the SCF. The SCF provides high-quality data on *household* income, wealth, and demographic characteristics. Tax liability, however, is based on *tax filing units* not households. A "tax filing unit" (or "tax unit") is an individual or married couple who is required to file a tax return, or who would be required to file a tax return if their income were high enough, along with all dependents of that individual or married couple.

To create tax filing units out of SCF households, we build on the methodology in Gale et al. (2022a, b) and employed in Holtzblatt et al. (2024). For households that generate the vast majority of income – including singles living alone and married couples with either no

[6] Our approach—imputing taxes onto a data set that already contains information about race—captures the respondents' self-reported race and, although it may not generate the exact liability a tax unit faces, the error is likely to be small. Other empirical strategies offer different strengths and weaknesses. For example, starting with a data set that has tax information would provide precise more information on taxes but requires imputations for race. If the analysis considered only Black and white tax units, for example, the costs of imputing race incorrectly would seem to be considerable. With access to confidential tax data, Treasury Department economists have imputed a variety of races and ethnicities to filing units in the Office of Tax Analysis's microsimulation model by using a set of explanatory variables, including the taxpayer's sex, first and last names, and zip code, to make inferences about the person's race and Hispanic origin and then applying Bayesian inference to estimate the probabilities that each taxpayer falls into a race or ethnic category (Cronin et al. 2023; Fisher 2023). Recently, CBO economists have published analysis of a similar procedure (Heller et al. 2024). For a critique of this procedure, see Derby, Dowd, and Mortenson (2023). Using household survey data, the Tax Policy Center has developed race imputations to apply to its microsimulation model (Khitatrakun, Mermin, Page, and Rohaly, 2023). Alternatively, linking data sets with information on race (e.g., the Census) and taxes (e.g., tax returns) would provide greater accuracies on both measures, but the amount of tax data provided by the IRS to the Census department is limited by law and regulations. Akee et al. (2017) and Chetty et al. (2020) follow this approach, although they do not exploit the tax information in the Treasury data. Further, combining tax and Census data would not provide the extensive information on household wealth that the SCF contains and that is helpful for constructing broader income measures.

dependents or with children younger than 18 – this process is simple. For other households, a variety of financial and demographic measures are used to estimate filing status. We supplement the SCF data with data on households in the Forbes 400, a group that the SCF is prohibited from interviewing (as explained further in the Online Appendix.)

B. Observing Race and Sample Size

Beginning with the 1998 survey, the SCF has provided consistent questions about race, asking respondents to describe themselves either as white, Black or African American, Hispanic or Latino, Asian, American Indian or Alaska Native, Native Hawaiian or Pacific Islander, or other. Each tax filing unit – single or married – has only one respondent. Respondents can report more than one race but are asked which race they identify with most strongly, which we use as the race classifier.[7] We assume that, if the respondent is married, the spouse and respondent are the same race, thus allowing us to define tax units as Black or white (or neither).[8]

Our overall sample includes all tax filing units for all races and pools the SCF survey waves since 1998. The SCF generates five "implicates" for each unit to account for missing data. We employ information on all five implicates for each tax unit, generating a data set, on an unweighted basis, with about 115,000 white tax units and 23,000 Black tax units (Table 1). We apply weights using the SCF's replicate weights (divided by the number of survey waves that we use). On a weighted basis, white units account for about 70% and Black units account for

[7] A relatively small number of people report multiple racial identifications—about 1.7 percent of the sample in the 2022 survey, down from 2.3 percent in 2004. The public-use version of the SCF only provides information about whether a respondent reported identifying as more than one race, not what the other races are. Because questions about ethnicity were only asked starting in the 2004 survey, our sample of those who identify most strongly as Black or white may also include a small proportion of respondents of Hispanic or Latino culture or origin. In 2019, 74.5 percent of those who identified their ethnicity as Hispanic or Latino also reported it as their racial identification.

[8] According to the 2010 Census, approximately 70.4 percent of married couples were comprised of two non-Hispanic white spouses and 6.2 percent were comprised of two non-Hispanic Black spouses. Black men are more likely to have a racial intermarriage than Black women (Lofquist et al. 2012).

about 14% of all tax units, with the share accounted for by white units falling from 76% in 1998 to 69% in 2022, while the share of Black units was approximately constant (the remainder being other racial categories). All dollar values are adjusted to 2018 dollars using the urban Consumer Price Index.

C. Constructing AGI

We construct AGI for each tax unit. The SCF income questions are generally written to capture income concepts that are consistent with AGI. The major components of AGI – accounting for almost all AGI – are available in the SCF. However, because the SCF's measures of income do not always align with tax concepts and because some variables – including net business income and respondent's age – are intentionally rounded or masked in the public version to avoid reidentification of the participants, we derive or estimate (using other variables in the data set) several items that are needed to determine AGI (see Gale et al. 2022 a, b).[9]

D. Calculating Taxes

To compute federal income tax – given the creation of tax units, the construction of AGI, and our imputations for dependents, deductions, and eligibility for credits – we apply the National Bureau of Economic Research TAXSIM microsimulation model (Feenberg and Coutts, 1993). TAXSIM can replicate U.S. federal tax rules for any year from 1960 to 2023. TAXSIM also makes it possible to run simulations with alternative tax rules.

[9] Our procedures build on the procedures in Gale et. al (2022a, b) in several ways. We (a) include data from the 2022 SCF, (b) include the micro-file on the Forbes 400, (c) separate the alimony and child support received using relevant demographic information from the survey, (d) include non-filers, and (e) incorporate new methods for imputing net operating losses and correcting for gross versus taxable wages and salaries. Specifically, we subtract pension contributions and an estimate of employee-paid health insurance premiums from SCF respondent-reported wages and salaries to bring those into line with the taxable wages and salaries measures that show up on tax forms. Note also that we do not scale or otherwise adjust SCF AGI components to align perfectly with either NIPA or SOI aggregates. As discussed in Gale et al, (2022b), our focus is on broadly capturing the incomes reported on tax forms, not an exhaustive accounting and reconciliation of income flows estimated by either BEA or the IRS.

E. Validating the Results

Validation of the SCF-TAXSIM model against published Statistics of Income (SOI) tables is a key part of our modeling strategy. The SCF is a relatively small sample—roughly 4,000 to 6,000 observations depending on the year—and the incomes reported by respondents are not always conceptually consistent with the incomes that taxpayers report on tax forms. In addition, our modeling exercise requires separating SCF households into tax filing units, assignment of dependents, and imputations for missing tax inputs such as itemized deductions.

Figure A1 shows that, for each SCF wave, our estimate of aggregate AGI (the blue line) is close to, and trends with, SOI's estimate of the same measure (the red line). In 6 of the 9 survey years, the estimates are within 2% of each other. Figure A2 shows that our estimates of aggregate tax revenues before credits (blue line) track published SOI values (red line) well. In 7 of the 9 survey years, our estimate is within 4.5% of the SOI figure.[10] Table A1 shows that we replicate the number of returns by filing status fairly closely and that our estimates of *eligibility* for the CTC and the EITC are slightly higher than SOI's reported *usage* of those credits.[11] This provides confidence in our simulation efforts since less-than-100% take-up rates imply that usage rates should be below eligibility rates.

[10] Comparing our simulation results to published SOI data on AGI and pre-credit liability is more conceptually consistent than comparing results for post-credit liability because we measure eligibility for credits rather than usage. Nevertheless, although not shown in the Figures, comparisons of tax liability after credits are similarly close – in 7 of the 8 waves before the 2022 SCF, our estimate is within 5 percent of the corresponding SOI figure. As of this writing, however, we do not have aggregate benchmark data for tax liability after credits in 2021 (which would correspond to the income data collected in the 2022 SCF). It is also worth noting that our estimates of aggregate taxable income track SOI estimates very closely (not shown), which is unsurprising since – as shown in the Figures – AGI and tax liability before credits match SOI estimates closely.

[11] We report eligibility for credits and itemized deductions – rather than attempting to estimate usage – because our focus is on how the tax code differentially affects people of different race. Take-up rates for the various provisions involve a variety of other variables beyond the tax rules themselves. See Goldin and Michelmore (2021) and Davis et al. (2021) on the CTC; Hardy, Hokayem, and Ziliak (2022) and Alm et al. (2023b) on the EITC; and Benzarti (2017) on itemized deductions.

F. Constructing Expanded Income

A distributional model must have a classifier by which to measure a tax unit's economic resources, compare and rank tax units, and use as a denominator for measuring average tax burdens. We sometimes use AGI as a classifier, because of its prominent role in the tax system and as a way to check the validity of our data. But AGI is not an ideal income classifier. AGI omits many forms of economic income, making it a poor measure of a tax unit's overall level of resources and well-being before taxes at a point in time. Moreover, changes in tax law often change the definition of AGI making it difficult to meaningfully compare values over time.

Recognizing these concerns, the Urban-Brookings Tax Policy Center (TPC) developed an income concept called "expanded cash income" (ECI), (Rosenberg 2013). In addition to AGI, ECI includes a variety of sources of cash income (e.g., employer and employee contributions to payroll tax and retirement plans, inside buildup in retirement plans, tax-exempt interest) as well as near-cash items such as SNAP (formerly food stamps) receipts, the cost of employer-provided health insurance, and an imputation of corporate tax liability. For similar reasons, the Congressional Budget Office, the Joint Committee on Taxation, and the Treasury Department have also developed income concepts that are broader than AGI.[12]

We construct a new measure of income, "Expanded Income" (EI), which is broader than ECI or the income concepts used by government agencies (See Gale and Sabelhaus 2024). We measure EI as the sum of our estimate of ECI plus our estimates of additional major income components, including (a) untaxed closely-held business income, (b) unrealized capital gains, (c)

[12] Refundable income tax credits and government transfer programs are equivalent in certain ways in that they both provide cash to the tax filing unit. However, we include government transfers, but not refundable credits, in the definition of EI because we intend EI to provide a measure of resources before applying the income tax and to examine the effects of the income tax, given EI. JCT, CBO, the Treasury Department, and the Urban-Brookings Tax Policy Center make a similar set of distinctions.

imputed rent on owner-occupied housing, (d) inheritance income, (e) net child support income, and (f) Medicare and Medicaid. The SCF is well-suited for estimating these income components because it contains details on businesses, the asset values that determine capital gains and rental income, and respondent-reported inheritance and child support flows.

The Online Appendix describes EI in detail. Two features of EI will play prominent roles in the analysis below. First, the *amount* of income excluded from AGI (or other existing distributional classifiers such as ECI) is substantial. Our estimates of aggregate EI are about 90 to 100% larger than aggregate AGI. Second, although EI is distributed more unequally than ECI or AGI, the ratio of EI to AGI is not monotonic; it is U-shaped over the income distribution when sorting tax units by either EI or AGI. Most of dollars accounted for by excluded incomes – such as untaxed business incomes and unrealized capital gains – skew towards the top of the income distribution, but some skew towards lower-income groups, such as untaxed government transfers.

IV. Descriptive Data

There are systematic differences between Black and white tax filing units, on an overall basis and even after controlling for EI. These differences reflect well-known Black-white differences in labor earnings, wealth, and household composition noted earlier and in turn will drive the results in subsequent sections. The differences imply that both "vertical" and "horizontal" differences can affect the relative tax liability of the two groups.

A. Differences on an Overall Basis

Table 1 shows that white and Black tax filing units differ substantially in several ways. The ratio of average EI across the groups is about 2.28 – $156,000 for White units compared to about $68,500 for Black units. This reflects underlying differences in AGI and taxable income

(TI). As noted earlier, EI is much broader than the other two income measures. AGI comprises 52% of EI for white units and 55% for Black units. For taxable income, the analogous figures are 39% and 35%.

We calculate ATRs in two ways. In all cases, the overall ATRs are higher for white tax units than Black units because white units have higher average income and the income tax is progressive. When calculated as ratio of aggregate income taxes to aggregate income measures for each racial group, the ATRs are 17.5% and 8.9% using TI as the denominator, 13.1% and 5.6% using AGI, and 6.8% compared to 3.1% using EI. When calculated as the mean of the distribution of each unit's tax liability divided by income, the ATRs are much lower.[13] The rates are -6.7% for white units and -34.2% for Black units using TI as the denominator, 3.2% and -2.1% using AGI, and 2.3% and -0.3% using EI.

Filing status also differs substantially across races. Among Black units, 25% claim head-of-household status and 19% claim married filing jointly. Among white units, the analogous figures are 10% and 42%, respectively. Black units are more likely to report having children – 38% versus 31% – but average tax unit size (a combination of filing status and number of dependents) is about the same for two groups. Due to these patterns combined with income differences, Black units are more likely to be eligible for the EITC but the two groups are equally likely to be eligible for the CTC. White units are more likely to be eligible for itemized deductions than are Black units.

White respondents are somewhat older than Black respondents, because a smaller share of the latter are 65 or older, reflecting differential mortality based on income (Chetty et al. 2016).

[13] Lin and Slemrod (2023), calculating average tax rates for single men and single women, also find that the ATRs calculated using aggregate tax and aggregate income figures were substantially higher than the ATRs calculated using the means of the distribution of each tax unit's ATR.

Table 2 reports the composition of EI by race. Only 43% of EI earned by whites is fully taxable, compared to 52% for Blacks. One substantial component of that difference is represented by wages, retirement plan withdrawals, and taxable social security benefits, which account for just over half of all EI for Black tax units but only 40% for white units. Fully taxed capital accounts for a small share of income for both groups.

In contrast, a substantial share of EI is either untaxed or lightly taxed. Tax-preferred and tax-exempt capital income accrues disproportionately to white units. Untaxed capital income accrues vastly disproportionately to white tax units, who receive 23% of EI in this form compared to 10% for Black units. Within that category, differences in unrealized capital gains stand out, accounting for 17% of EI for whites as opposed to 8% for Black units. Tax-preferred capital income also accrues disproportionately to white units, though it is substantially smaller than untaxed capital income. All told, White tax units obtain 33% of their income as returns to capital, compared to only 12% for Black tax units.

Untaxed labor income – chiefly fringe benefits and retirement contributions and build-up – constitute about 20% of EI for both groups. Reflecting differences in average income, Black tax units receive 13% of their EI in the form of government transfers (including Medicare and Medicaid) compared to just 4% for white units. Private transfers and implied corporate tax burdens do not vary significantly by group.

B. Differences After Controlling for Expanded Income

Several of the aggregate differences between Black and white units reflect differences in average income. To help clarify the nature of differences across the groups, we present data on how selected characteristics in Tables 1 and 2 vary by race and EI percentile.[14]

[14] Following conventional procedure (CBO 2024), the deciles rank persons (as opposed to tax units) within the overall population (as opposed to just Black and white persons). In each of the figures in the paper, we report results

Figure A3 shows the weighted distribution of tax units by EI decile and reflects the unequal levels of income between the two groups. Only 5% of Black individuals are in the top two EI deciles; 78% are in the bottom half of the EI distribution. Figure A4 shows that within EI deciles, average EI for white and Black units is close to equal, except in the top decile, where average EI for white units substantially exceeds that of Black units.[15]

Figure 1 provides details on household composition and demographic characteristics by EI decile. Relative to white tax filing units, in almost every EI decile, Black units are less likely to file as married filing jointly, are more likely to file as head of household, have larger average tax unit size, and are more likely to be eligible for the EITC and the CTC. These within-decile differences are sizable. For example, in the third to fifth EI deciles, white tax units are 7-13 percentage points more likely to file as married filing jointly, 17-19 percentage points less likely to file as head of household, and 9-15 percentage points more likely to be eligible for the EITC or the CTC. In contrast, controlling for EI, eligibility for itemized deductions does not vary much by race (i.e., by less than 3 percentage points in each category except one decile and the top 1 percent), consistent with earlier studies. (Table A2 reports the numbers shown in Figures 1-4.)

Figure 2 displays information on the composition of income by EI decile. Relative to white tax filing units, in almost every EI decile, Black units have a higher share of EI from wages, from labor income more generally (wages, taxable retirement withdrawals, and taxable social security), and a lower share of income from various measures of overall or tax-preferred

for the bottom 9 deciles, the 90-99th percentiles, and separately for the top 1 percentile. The EI decile break points are $25,361, $40,179, $54,523, $70,107, $88,611, $112,519, $142,984, $189,593, and $290,285 for the bottom nine deciles and $1,388,178 for the 99th percentile.

[15] The ratio of aggregate Black EI to aggregate white EI is between 99% and 100.2% in the second to ninth decile. It reaches 104% in the bottom decile and falls to 84% and 87%, respectively, in the 90-99th percentile and top percentile. For these reasons, in the regressions below, we not only separate sample observations by EI percentile but also control for EI level within each of those categories.

and tax-exempt capital income. These differences are especially noticeable in the 90-99th percentiles and the top percentile. Untaxed government transfers constitute a higher share of income for Blacks units relative to white units in the bottom half of the EI distribution but transfers are about the same share of EI for both groups in the top half.[16]

V. Analysis of Tax Differentials

In this section, we analyze various aspects of the tax treatment of Black and white households: Do deviations from a comprehensive income tax favor whites versus Blacks? Controlling for income, how does the income tax differentially affect Black and white households and why? To what extent are overall differences in average tax burdens due to differences in income versus differences in other factors?

A. Deviations from a Comprehensive Income Tax

Moran and Whitford (1996) hypothesize that deviations from a comprehensive income tax systematically favor white over Black tax units. In general, deviations between a comprehensive income tax base (which we approximate using EI) and the current income tax base (TI) can be divided into two forms: exclusions that never show up in AGI and those that are included in AGI but not TI. Those that do not show up in AGI in the first place can be further divided into two broad categories – market income and government transfers.

The descriptive data provide some clues about the hypothesis. AGI is a smaller share of EI for white tax units than Black tax units: 52% compared to 55%, suggesting that white units benefit more from untaxed components of EI. The difference arises because white units have more EI on average and most untaxed forms of private income accrue mainly to high-income households. But TI comprises a smaller share of EI for Black units (35%) than for white units

[16] Untaxed labor/retirement income, private transfers, and corporate tax burdens do not vary significantly by race, after controlling for EI decile.

(39%), mainly because the standard deduction is a much larger share of average AGI for Black units than for white units.

Figure 5 shows how these patterns play out by EI percentile. In the bottom two EI deciles, AGI and TI are higher for white tax units than Black tax units. This reflects the higher level of government transfers for Black relative to white tax units in these EI categories (and in the first decile, a higher share of labor income in EI for white units, as shown in Figure 4). From the fourth decile to the top of the income distribution, the result is reversed – in each EI category, AGI and TI are lower for white units than Black units. That is, in this income range, the deviations between a comprehensive income tax and the current system are larger for whites than Blacks. This result stems from several factors: as EI rises, the composition of EI changes, with government transfers declining, untaxed capital income and fully taxed labor/retirement income rising (until the top decile). All these trends raise AGI and TI for Black units relative to whites, holding EI constant.

To examine these issues more formally, in Table 3, we begin by regressing AGI/EI for each unit on EI and an indicator for race (and a constant and survey year controls). We run separate regressions for each EI decile to allow for heterogeneity in responses across the income distribution. The results show that, even after controlling for EI within EI classes, Black units have higher ratios of AGI to EI than white units from the fourth through the ninth decile of the income distribution. In those deciles, AGI is about 2.5-4.0 percentage points of EI higher for Black units, indicating that the deviations between a comprehensive income tax and the current tax base are larger for white tax units in that group. In the top decile, similar qualitative results occur, but they are not statistically significant. In contrast to the results above, in the bottom EI decile, AGI is lower for Black than white units, even after controlling for EI, due to the higher

share of government transfers in Black EI relative to white EI in that group.

Similar, though slightly weaker, results hold for when the dependent variable is the ratio of taxable income to EI, as shown in the second row of Table 3. In EI deciles four through eight, Black households face a higher ratio of TI/EI, by 2.0-4.5 percentage points. Second, similar differences occur at the top of the distribution but are not statistically significant. Third, the ratio of TI/EI is lower for Black units than whites at the bottom two deciles of the EI distribution.

The next two rows show the coefficient on the Black indicator in regressions that use the level of AGI or TI, respectively, rather than their size relative to EI, as the dependent variable. The results in the third row of Table 3 show that, controlling for EI, AGI is between about $1,900 and $5,700 higher for Black tax units relative to white tax units in the fourth through ninth EI deciles. In the top EI categories, AGI is far higher for Black tax units than white units with the difference reaching more than $500,000 in the top 1%. The results in the fourth row, for taxable income, are generally somewhat smaller but still sizable. These results indicate the extent to which tax preferences or exclusions relating to capital income benefit white households over Black households, even after controlling for EI. In contrast, in the bottom decile, both AGI and TI are lower for Black tax units than white units, because Black tax units receive substantially more government transfers.[17]

Taken together, the results suggest that middle- and high-income white tax units disproportionately benefit from excluded forms of capital income relative to Black units in the same EI percentiles, while Black units in the lowest EI deciles disproportionately benefit from the non-taxation of government transfers. Thus, the results provide substantial but not complete

[17] Tables A3-A6 report the full set of estimates for the regressions shown in Table 3. In all the regressions in the paper, adding controls for the age category of the household and for itemization status had virtually no impact on the results.

support for Moran and Whitford's hypothesis about the racial effects of differences between the income tax base and a comprehensive income tax; in particular, the findings support their proposition to the extent that the deviations considered focus on untaxed or tax-preferred forms of capital income.[18]

B. Differences in Income Taxes Within EI Categories

Moran and Whitford (1996) also hypothesize that, even after controlling for income, the income tax discriminates against Black tax units. We find support for that view in the upper five income deciles but not in the lower five income deciles, and we explain the divergences in terms of differences in household composition and income composition.

Figure 4 shows that in the bottom five EI deciles, Black units face lower ATRs (income tax liability divided by EI) than white units. The difference is about 2% of EI in the bottom three deciles and declines to 1.2% in the fourth decile and 0.7% in the fifth decile. In contrast, the Figure shows that in the top five deciles, the result is reversed. The difference in ATR is relatively small (between 0.3% and 0.5% of EI) in the sixth through ninth decile but rises to 1.2% in the 90-99th percentile and to 6.2% in the top 1%.

We use several regressions to account for these differences in ATRs. In Table 4, we first estimate a very simple specification, regressing the ATR for each unit on EI and an indicator for whether the respondent is Black (as well as a constant and a survey year indicator). We run separate regressions for each EI decile to allow for heterogeneity in responses across the income distribution and as a straightforward way to allow for the non-linearity of the income tax system

[18] The proposition that deviations from a comprehensive income tax favor white units over Black units could also be tested by flipping the ratios and examining EI/AGI and EI/TI by AGI category and TI category, respectively. Doing so provides unambiguous support for the view that deviations from the comprehensive income tax favor white tax units over Black units. The ratio EI/AGI is larger for white units than Black units in every AGI decile (and EI/TI is larger for white units than Black units in every TI decile). In the text, we specify the tests with EI in the denominator for consistency with the other sections of the paper.

without requiring a complicated specification.

The results confirm the descriptive findings in Figure 4. Controlling for EI, the coefficient on the Black indicator is negative and significant in the bottom five deciles. It is positive throughout the top half and significantly different from zero in decile 7 through the 90-99th percentile. The magnitudes are similar to those in Figure 4. Figure 5 plots the coefficients and standard error bounds for 95% confidence intervals for the results in Table 4 and subsequent regressions.

The second set of regressions in Table 4 expand on the simple specification to include basic demographic information – indicator variables for those filing as married filing jointly or as head of households (relative to single or married filing singly as the omitted categories) and the number of dependents. Controlling for these factors generally reduces or eliminates the impact of race on tax liability in the bottom half of the income distribution. The controls also weaken slightly the positive coefficients in the top half of the income distribution, as shown in Figure 5.

To help explain the remaining ATR differences in the top half of the income distribution, the third set of regressions in Table 4 add two items to the right-hand side – the share of EI that is in the form of fully taxable labor or capital income (as in Table 2) and the share of EI in the form of tax-preferred capital income. Adding these variables essentially eliminates the remaining racial differences in ATRs in the top half of the income distribution.

The last three rows of Table 4 present coefficients on the Black indicator in regressions that are the same as the first three except that the dependent variable is income tax liability rather than the average tax rate. Controlling only for EI, in the bottom five deciles, Black tax units face tax bills that average between $265 and $883 less than white units. In the top four deciles, Black tax units pay higher taxes than white units, with differences between $591 and $1406 in the 7th to

9th quintiles and rising dramatically in the top decile. The coefficients in the second row show that controlling for filing status and number of dependents essentially knocks out the difference in the bottom five deciles and reduces the impact in the top five. Finally, adding controls for the share of EI that is partially or fully taxed leads to essentially no racial differences in tax liability in the bottom 90% of the EI distribution. Coefficients in the top decile are substantial but not statistically different from zero.[19]

In summary, as shown in Figure 5, the results suggest some, but not complete, support for the second Moran and Whitford (1996) hypothesis – that controlling for income, the tax system is biased against Black units. Specifically, in the top half of the income distribution, Black tax units generally face higher ATRs than white units, controlling for EI. This is consistent with the Moran-Whitford hypothesis because the difference is due to the higher share of wages and the smaller share of lower-taxed capital income in the income of Black units. In the bottom half of the EI distribution, Black units face lower ATRs than white units, controlling for EI, due to the way the income tax treats filing status and dependents. These features favor low-income Black units over low-income white units, in contradiction to the hypothesis.[20]

C. Sensitivity Analysis

[19] Tables A7-A12 report the full set of estimates for the regressions reported in Table 4.

[20] We have analyzed the hypotheses put forth by Moran and Whitford (1996) in the context of the current tax system. But in fairness to them, they were analyzing the tax system as it existed in the 1990s and before. Thus, it is appropriate to look at racial differences in taxes as they arose under the law in effect at the time. While we cannot use earlier data to undertake this experiment, below we apply earlier years' tax laws to the data. For example, using 1992 tax law (before the EITC increase in 1993 and before the publication of their article), the qualitative pattern of ATRs by income is the same as under recent law – Black tax units face lower ATRs than white units in the bottom several quintiles and higher tax rates in the upper deciles. That said, the differences are less pronounced under 1992 law than under 2018 law – that is, the average tax rate on Black units relative to white units was higher in the bottom half of the income distribution and lower in the top 1 percent than under 2018 law. We conclude that our analysis of the Moran and Whitford's (1996) hypotheses under recent tax law seems justified, and that the results would have been similar qualitatively using prevailing tax law at the time they were formulating their ideas. We report more data on 1992 law in Section VII.

Figure 6 presents sensitivity analysis, with the basic conclusion that the patterns shown above are robust to several changes. Specifically, Figure 6 reports the *difference* between the ATR for Black units and white units under different scenarios. A negative entry means that Black tax units face lower ATRs than white tax units. In all the cases, we sort by EI.

The 2018 law line is simply a reconfiguration of the lines shown in Figure 4 and serves as a base case. In the first sensitivity analysis, we measure the ATR by the ratio of income tax liability to AGI, rather than to EI. The ATR differences follow the same qualitative pattern as in the base case but are larger (in absolute value) in the bottom half of the distribution and smaller at the top of the distribution. These results follow from the fact that Black units have more EI relative to AGI than whites at the bottom of the income distribution and less at the top, coupled the fact that the ATR difference using EI as the denominator is negative in the bottom half and positive in the top half of the income distribution.

In the second sensitivity analysis, we adjust EI for tax unit size by dividing EI by the square root of the number of people in the tax unit, an adjustment that has only a small effect on the results.[21] Finally, we exclude households aged 55 and above, to address any sample differences that arise from differing life expectancy across the races. These results are almost identical to the base case, except for the top 1%. The difference at the top arises because the difference in untaxed income (stocks, businesses, etc.) is much larger between middle-aged white tax units relative to middle-aged Black units than it is among their retirement-age counterparts.

D. Decomposing Differences in Group Average Tax Rates

As shown above, Black and white tax units differ in two ways – they have different levels of income and different characteristics holding income constant. How much does each factor

[21] See CBO (2024) Appendix A for a detailed explanation of adjusting income for household size.

contribute to the overall group difference in ATRs? To address this question, we employ a decomposition technique developed in Slemrod (2022) and applied to questions of gender differences in taxes by Lin and Slemrod (2023).[22] The technique separates the differences in the group average tax rate into components due to (a) the existence of an intentionally progressive tax system combined with differences in income levels between the groups and (b) differences in tax liability across the groups within income classes.[23] We apply the formula presented in Lin and Slemrod (2023).

Table 5 summarizes the results. In the overall sample, under 2018 law, about 56% of the difference in the ATR for Black units and white units is due to "vertical" concerns – the progressivity of the tax system combined with differences in the distribution of income between the two groups. The remaining 44% is due to horizontal considerations – namely, differences in taxes controlling for income.

Given that the horizontal differences change sign as income rises – that is, that ATRs for Black units are lower than for white units in the bottom half of the income distribution and higher in the top deciles – we also conduct the decomposition separately for each half of the income distribution. In the bottom five deciles, the predominant source – accounting for 87% – of group ATR differences has to do with differential taxation of Black and white units with the "same" income (i.e., within the same EI decile). This is consistent with the regression results showing that differences in filing status and number of dependents is the source of the difference

[22] In many contexts, a natural way to decompose differences between Black and white households would be to use a Kitagawa-Blinder-Oaxaca decomposition. In this case, however, it would not provide any useful information because the tax code does not vary explicitly by race. For example, if Black tax filing units were assigned the characteristics of white units, they would face exactly the same tax liability that white units face.

[23] Consistent with the approach taken in Lim and Slemrod (2023) the ATRs are calculated as the average across individuals, rather than tax units and so differ slightly from the data reported in Table 1. The average ATRs are 1.5 percent for white tax units and - 3.8 percent for Black tax units.

between the ATRs for Black and white tax units in the bottom half of the distribution. In contrast, in the top half, vertical concerns dominate, explaining 114% of the difference in group ATR while horizontal considerations work moderately in the opposite direction. This is consistent with the prevalence of white households in the top tail of the income distribution and with Black units having higher ATRs in the top deciles.

We also examine married and unmarried tax units separately. The results for married couples are similar to results for the top half of the income distribution – vertical considerations dominate, explaining in this case about 91% of the difference in group ATRs between Black and white couples. For singles or heads of households, the aggregate mix changes to mirror the results for the bottom half of the income distribution. Horizontal considerations explain 82% of the differences in group ATRs.[24]

These results are consistent with the regression results and emphasize the role of both horizontal and vertical differences in tax liability, which will prove important in analyzing both the effects of tax reform and the evolution of the tax system in the next two sections.

VI. Implications for Tax Reform

What can policy makers do to affect differences in ATR between Black and white tax units? The methodology and results above have several implications for the impact of prospective and recent tax policy changes on Black-white differences in taxes.

First, increases in statutory tax rates, holding the tax base constant, will raise taxes more for Black than white tax units in the top eight EI deciles. This follows directly from the fact that, in those deciles, the ratio of taxable income to EI is higher for Black units relative to white units. In principle, the opposite result occurs in the bottom two deciles, where Black units have lower

[24] All the results examining the Lin-Slemrod decomposition measure the ATR as income tax liability divided by EI. Similar results occur if AGI is substituted for EI.

taxable income relative to EI, but few households in those deciles face positive income tax liability, so the effect is small.

To examine this issue, Figure 7 shows that cutting all statutory income tax rates by 10 percent (not percentage points) would reduce the ATR for Black units relative to white units by slight amounts throughout most of the income distribution and by larger amounts in the top percentile. The effect is small both because the ratio of taxable income to EI does not vary substantially for Blacks compared to whites and because the ratio for both groups is relatively small (less than 0.4 on average).

In contrast, broadening the tax base to include more capital income would raise taxes for Black units by less than for white units because tax-preferred and tax-exempt capital income is a smaller share of EI for Black units than white units in every income category. For example, we estimate the impact of a policy that (a) removes preferential rates for realized capital gains and qualified dividends, (b) repeals the section 199A deduction, and (c) incorporates imputed rent, unrealized gains, untaxed business income, and tax-exempt interest into the tax base. We are not arguing that such a policy is plausible, just that it creates an upper bound on how much broader taxation of capital income could affect Black-white tax differences. Figure 7 shows that this base-broadening policy would reduce ATRs for Black units relative to white units throughout the EI distribution. The reduction would be about 0.2% of EI in the bottom eight deciles and would rise to 3.5% of EI among the top 1 percent.

These results help frame analysis of two recent tax changes, The Tax Cut and Jobs Act of 2017 (TCJA) and the American Rescue Plan of 2021 (ARP). TCJA altered taxes on individuals, estates, and corporations (Gale, Hoopes, Pomerleau 2024). We examine the changes to the individual income tax, where TCJA cut marginal tax rates, repealed personal exemptions,

expanded the standard deduction and the child credit, created a deduction for certain forms of pass-through income, and capped the deduction for state and local income taxes.[25] The TCJA was regressive on an overall basis (Gale, Hoopes, Pomerleau 2024), which benefits white units relative to Black units simply because white units have much more income. In particular, TCJA provided substantial benefits to the top 1 percent, where whites are quite disproportionately represented (see Figure A1).

Figure 8 shows, however, that under 2018 law relative to 2017 law, the relative ATR for Black and white units is virtually unchanged. This indicates that the individual income tax provisions of TCJA did not have a strong racial impact, after controlling for income differences. This result may be surprising but is due to the lower rates and the increase in the child credit, both of which tend to help Black tax filing units relative to white units through much of the income distribution. In contrast, the 199A deduction and the cap on the SALT deduction affect mainly the highest income households, most of whom are white, and had at least partially offsetting effects on affluent households. We also note that TCJA did not raise taxes on tax-preferred capital income such as dividends or capital gains and did not bring any of the major untaxed sources of capital income into the tax base, either of which would have raised taxes on white units relative to Black units.

The American Rescue Plan of 2021 (ARP) provided $1.9 trillion in economic stimulus (CBO 2021). The major individual income tax provisions included temporary increases (for 2021 only) in the CTC, the child and dependent care credit, and the EITC (CRS 2021a). Figure 8

[25] Bivens (2017) combines (1) TPC measures of the share of the tax cut going to different income groups and (2) SCF data of the share of households by race within each group to generate (rough) estimates of the allocation of the net tax cuts provided by the TCJA to different racial groups, by income level and overall. Wiehe et al. (2018), Huang and Taylor (2019), Hill et al. (2019), and Moran (2024) provide detailed discussions of how the various provisions of the TCJA affect racial disparities in the tax code. None of the studies estimates the impact on ATRs.

shows that under 2021 law compared to 2020 law, relative to white units, the ATR for Black units fell dramatically in the bottom half of the income distribution but did not change in the top half. This effect is attributable to the higher eligibility for the various credits among Black tax filing units – due to Black-white differences in filing status and the presence of dependents – combined with the higher credit amounts in ARP.

VII. Evolution of the Income Tax

Policy makers have changed the income tax in many ways over the last 50-60 years. In this section, we examine how those changes plausibly affected Black-white differences in taxes. To do so, we exploit the feature of TAXSIM that allows users to specify which year's tax law to apply to a data set.[26]

In prior work, Strauss and Gouveia (SG, 2023) use a sample of federal income tax returns from 1967-1973, coupled with tax filers' racial identification added from other federal administrative records and matched to the filer by social security number. Their basic finding is that ATRs (defined as income tax liability divided by AGI) did not vary between Black and white tax filing units, once income levels and other prominent features of tax filing (filing status, dependents, itemization status, etc.) are considered.

Figure 9 shows our estimates of the difference in Black and white ATRs in our data set under 1970 law.[27] To maximize comparability, we follow SG in calculating ATRs as income taxes divided by AGI and sort tax filing units by AGI.[28] We essentially replicate SG results.

[26] To be clear, we are using data from the 1995-2022 SCF and applying tax law from years outside that time range. We acknowledge that this is not the same thing as using data from the specific years in question, but we believe the results are nevertheless informative.

[27] Similar results, not shown, arises when using tax law from any year from 1967 to 1973, the range that SG employed.

[28] SG also report results using an income measure broader than AGI, which they call "economic income." Their measure, however, hues fairly closely to AGI. The ratio of their "economic income" measure to AGI is exactly 1.0

There is virtually no difference in ATRs across race except in the top 1 percent, a group whose income has changed very much relative to the rest of the population over the past 50 years.[29] In contrast, the results using 2018 law, but dividing by, and ranking by, AGI instead of EI, show a generally similar pattern as in Figure 6: lower ATRs for Black units relative to white units in the bottom half of the distribution and somewhat higher rates at the top, especially for the top 1%.

These findings suggest that racial differences in the income tax have evolved over time. Before examining that issue further, however, we again emphasize the problems associated with using AGI as a measure of household resources, either at a point in time or over time. Thus, we turn back to analysis using EI as the income classifier.

Figure 10 displays the evolution of racial differences in income taxation due to changes in tax law, starting in 1970, focusing on tax units in four parts of the income distribution: the 2nd decile (where income is low, but high enough to include substantial wages, so that we can capture the effects of introducing or expanding the EITC and the CTC); the 5th decile (to capture middle-income households); the 8th decile (to capture upper-income households) and the top 1 % (because the effects of rate and base changes can be seen most clearly in this group).

Focusing first on the 2nd decile, under 1970 law, Black tax units faced a slightly lower average tax rate than white units. This is slightly different than the AGI results in Figure 9, which show no racial difference in average tax rates. The reason is the higher share of untaxed

(i.e., there is zero broader income beyond AGI) for at least 75% of tax filers in their sample, and less than 1.17 for at least 95% of filers in their sample. We add substantially more income to AGI to obtain EI. As discussed in the Online Appendix, the EI/AGI ratio in our data is much larger – in 2019 for example, the ratio is 2.31 at its 75th percentile, and 7.30 at its 95th percentile.

[29] As one example that is consistent with the top 1 percent changing substantially over the past 50 years, we note that SG report that the ratio of average AGI for white units relative to Black units in their sample is about 1.40, about one-third lower than what we report in Table 1 for the 1995-2022 SCF sample. More generally, there has been substantial growth in income at the top (Piketty, Saez, and Zucman 2018; Auten and Splinter 2024).

government transfers in EI for Black units relative to white units.

This differential grows gradually with the introduction of EITC in 1975 and subsequent major expansions in 1990 and 1993, and the introduction of the child credit in 1997 and expansions in 2001 and during the Great Recession (Congressional Research Service 2018, 2021b). Although the CTC was expanded further in 2017, there is little impact of TCJA on the racial difference in ATRs in this group, as shown earlier, because of the net effect of a wide variety of enacted changes. In contrast, also as noted earlier, the EITC and CTC expansions in ARP had a very large effect on racial tax differences in this decile under 2021 law.

The ATR difference in the 5th decile has the same sign as in the 2nd decile and follows the same qualitative pattern over time, but the differences in general and effects of ARP in particular are more muted.

Moving to the 8th decile, the most obvious difference is that Black units consistently face (slightly) higher ATRs than white units over the past 50+ years, whereas Black units in the lower half of the distribution consistently faced lower ATRs than their white counterparts. However, the various changes in tax base and tax rates over the last several decades have had little impact on the racial difference in ATRs in this decile.

Finally, in the top 1%, Black units have consistently faced substantially higher ATRs than white units. In addition, the relative change in ATRs are more sensitive to historical policy changes in this group than the others. A straightforward way to interpret the results below is that lower marginal tax rates and expansions of the capital income tax base help Black units relative to white units. The reason is that in the top 1%, taxable forms of income are a greater share of EI and tax-preferred and tax-exempt capital income are a lower share of EI for Black units than white units (Figure 2).

For example, the Tax Reform Act of 1986 lowered marginal tax rates and expanded the capital income tax base, and both changes reduced ATRs for Black units relative to white units in the top 1% from 1984 to 1988. By way of comparison, the Economic Recovery and Tax Act of 1981 also reduced top rates but reduced the taxation of capital income. These effects are of opposite sign for the racial differences in ATRs, but the data suggest that the rate cut dominated and hence ATRs of Black units fell relative to white units from 1980 to 1984. In contrast, increases in the top income tax rate in 1990 (to 31% from 28%) and 1993 (to 39.6%) hurt Black taxpayers relative to white taxpayers.

The 2001 tax cut reduced rates over 5 years and thus helped Black taxpayers relative to white taxpayers. The 2003 tax cut is well-known for reducing taxes on realized capital gains and qualified dividends, changes which helped white taxpayers relative to Black taxpayers. But it also accelerated tax rate cuts enacted in 2001, weakened the AMT, and accelerated marriage penalty relief provisions. The net effect of these and other provisions was a slight reduction in taxation of Black relative to white tax units in the top 1%. As noted earlier, TCJA and ARP did not have substantial effects on the Black-white ATR differential in the highest income group.

VIII. Conclusion

Even in a tax system that explicitly avoids mention of race, differences in tax liability can arise because the various behaviors and circumstances that affect tax liability may be associated with race. Slemrod (2022) refers to this effect as "implicit discrimination." Alm and Lind (undated) call it "implicit bias." Both note that, given the complexity of the tax system and the large number of ways to divide the population, it is inevitable that such differences will occur. Nevertheless, knowing the nature, source, and magnitude of the differences can be an important input into tax analysis.

Our paper provides new evidence on the differential impact of the income tax on Black and white tax units and the factors behind those effects, with specific results summarized in the Introduction. Taken together, the findings suggest that, in income ranges where Black units face higher taxes than white units, the principal factor is the tax preferences or exemptions accorded to various forms of capital income. In addition, in income ranges where Black units face lower tax rates than white units, the reason is that the low-income credits, subsidies to heads-of-households relative to singles, and untaxed government transfers help Black tax units relative to white units.

These differences are directly related to – indeed, they stem from – well-known racial differences in household composition and wealth. Differences in family formation lead to differences in filing status. Differences in the level and composition of wealth affect the level of EI consisting of capital income and hence the share that is taxable.

Both Slemrod (2022) and Alm and Lind (undated) argue that it would be neither feasible nor desirable to eliminate all such differences, given the many goals of tax policy. Still, one notable implication of our results for tax reform is that standard arguments for moving to a system with a broader base (typically meant to imply removal of the exclusions and tax preferences related to capital and labor income) and lower rates would also have the effect of helping Black taxpayers, on average, relative to white taxpayers, relative to the current system.

Future research could constructively build on the results in this paper in at least three ways: by broadening the list of taxes considered; by examining differential tax effects for other racial and ethnic groups; and by examining how the differences in income tax liability in turn affect other factors, such as racial differences in wealth, household composition, and economic mobility.

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Table 1. Summary Statistics

	White	Black
SAMPLE SIZE		
Unweighted	206442	35259
Weighted (Thousands)	114927	23198
INCOME		
Average Taxable Income	60838	23655
Average AGI	81448	37438
Average EI	155958	68523
Average TI/Average EI	0.39	0.35
Average AGI/Average EI	0.52	0.55
TAX		
Average Income Tax Liability	10650	2104
Average Tax Rate (taxes/TI, aggregate)	0.175	0.089
Average Tax Rate (taxes/AGI, aggregate)	0.131	0.056
Average Tax Rate (taxes/EI, aggregate)	0.068	0.031
Average Tax Rate (taxes/TI, personal)	-0.067	-0.342
Average Tax Rate (taxes/AGI, personal)	0.032	-0.021
Average Tax Rate (taxes/EI, personal)	0.023	-0.003
FILING STATUS AND FAMILY CHARACTERISTICS		
Single	0.46	0.53
Head of Household	0.10	0.25
Married Filing Jointly	0.42	0.19
Married Filing Separately	0.01	0.03
Average Tax Unit Size	2.04	2.00
Has Children	0.31	0.38
Average Number of Dependents	0.63	0.81
EITC Eligibility	0.12	0.26
CTC Eligibility	0.27	0.27
Itemized Deductions Eligibility	0.20	0.10
AGE OF HEAD		
Average Age	49.6	45.8
Younger than 25	0.09	0.09
65 or Older	0.24	0.16

Table 2. Composition of Income

	White	Black
FULLY TAXABLE LABOR/RETIREMENT	**0.40**	**0.51**
Wage Income	0.35	0.45
Taxable Retirement Withdrawals	0.04	0.05
Taxable Social Security	0.01	0.01
UNTAXED LABOR/RETIREMENT	**0.16**	**0.21**
Employee-paid Benefits	0.01	0.01
Employer-paid Benefits	0.03	0.05
Employer-paid Payroll and UI Taxes	0.03	0.04
Non-taxable Social Security	0.02	0.04
Retirement Contributions and Buildup	0.07	0.06
FULLY TAXABLE CAPITAL	**0.03**	**0.01**
Taxable Interest	0.01	0.00
Net Operating Loss	0.00	0.00
Taxable Business Income	0.03	0.01
TAX-PREFERRED CAPITAL	**0.06**	**0.02**
Dividends	0.01	0.00
Realized Capital Gains	0.04	0.01
Section 199A	0.01	0.01
UNTAXED CAPITAL	**0.23**	**0.10**
Tax-exempt Interest	0.00	0.00
Unrealized Capital Gains	0.17	0.08
Untaxed Business Income	0.04	0.02
Imputed Rent on OOH	0.02	0.01
GOVERNMENT TRANSFERS	**0.04**	**0.13**
Unemployment Income	0.00	0.00
SSI, TANF, and Other Transfers	0.01	0.04
Medicare	0.02	0.04
Medicaid	0.01	0.05
PRIVATE TRANSFERS	**0.02**	**0.01**
Alimony Income	0.00	0.00
Net Child Support	0.00	0.00
Inheritance Income	0.02	0.01
CORPORATE TAX BURDEN	**0.02**	**0.02**

Table 3. Estimating Deviations from a Comprehensive Income Tax for Black and White Units

	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	P90-P99	P99-P100
Panel A. As a Percent of EI											
(1) AGI	-5.872***	-1.314	1.228	3.067**	3.538***	4.062***	3.534***	2.949***	2.540**	2.357	12.98
	(1.684)	(1.315)	(1.294)	(1.220)	(1.267)	(1.186)	(1.218)	(1.073)	(1.209)	(2.028)	(9.020)
(2) Taxable Income	-1.136***	-2.140***	-0.398	2.321**	2.850**	4.590***	4.241***	2.516**	2.006	2.082	13.32
	(0.366)	(0.800)	(0.992)	(1.078)	(1.140)	(1.146)	(1.178)	(1.087)	(1.292)	(1.980)	(9.888)
Panel B. In 2018 Dollars											
(4) AGI	-729.2***	-390.4	511.8	1,892**	2,938***	4,033***	4,554***	4,936***	5,745**	22,917*	509,574**
	(209.2)	(429.5)	(606.7)	(759.6)	(998.4)	(1,190)	(1,522)	(1,741)	(2,798)	(12,627)	(252,176)
(5) Taxable Income	-236.5***	-688.6**	-233.7	1,447**	2,389***	4,590***	5,426***	4,135**	4,607	23,055*	528,719*
	(80.64)	(270.2)	(462.9)	(670.7)	(897.3)	(1,147)	(1,472)	(1,776)	(2,962)	(12,438)	(276,661)

Robust standard errors in parentheses; *p<.1; **p<.05; ***p<.01. The table shows the coefficients on the indicator variable for Black tax units in regressions done separately for tax units in each expanded income (EI) decile, where the right-hand side variables include a constant, EI, the black indicator, and an indicator for SCF survey wave (with one excluded). The coefficients in the first two rows represent percentage differences. The coefficients in the last two rows represent (2018) dollars. The full set of regression estimates are shown in Appendix Tables 3-6.

Table 4. Estimating Differentials in Income Tax Liability Between Black and White Tax Units

	Income Controls	Demographic Controls	Income Comp. Controls	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	P90-P99	P99-P100
Panel A. Tax Rate Differentials (Percentage Points)														
(1)	X			-1.711***	-1.884***	-1.877***	-1.197***	-0.612**	0.351	0.453*	0.547**	0.592**	0.806*	5.708
				(0.271)	(0.272)	(0.298)	(0.279)	(0.261)	(0.231)	(0.247)	(0.240)	(0.297)	(0.467)	(3.887)
(2)	X	X		-0.290	-0.0908	-0.367*	0.0836	0.0596	0.313*	0.472**	0.357	0.531*	0.760	5.104
				(0.180)	(0.160)	(0.189)	(0.197)	(0.166)	(0.187)	(0.201)	(0.231)	(0.279)	(0.468)	(3.428)
(3)	X	X	X	-0.337*	0.0402	-0.316**	0.0776	-0.117	0.0591	0.242**	0.0420	0.112	0.0962	1.327
				(0.200)	(0.156)	(0.156)	(0.160)	(0.119)	(0.111)	(0.111)	(0.130)	(0.140)	(0.199)	(0.964)
Panel B. Tax Liability Differentials (2018 dollars)														
(4)	X			-267.0***	-612.2***	-921.7***	-666.1***	-485.6**	323.6	639.2**	918.3**	1,463**	9,393**	232,682*
				(43.10)	(87.43)	(138.9)	(154.9)	(195.0)	(233.8)	(292.0)	(364.7)	(695.1)	(3,808)	(122,033)
(5)	X	X		-32.58	-24.76	-187.4**	93.47	37.82	338.8*	633.8***	612.7*	1,271**	9,093**	205,044*
				(32.21)	(52.37)	(84.05)	(105.3)	(134.9)	(187.1)	(239.4)	(346.7)	(647.8)	(3,813)	(106,698)
(6)	X	X	X	-31.62	19.23	-154.0**	65.17	-76.33	104.3	318.4**	60.75	312.5	4,925*	68,612
				(32.47)	(50.04)	(71.87)	(88.24)	(92.45)	(119.1)	(145.9)	(222.1)	(336.0)	(2,725)	(50,717)

Robust standard errors in parentheses; *p<.1; **p<.05; ***p<.01. The table shows the coefficients on the indicator variable for Black tax units in regressions done separately for tax units in each expanded income (EI) decile. The coefficients in the first three rows represent percentage point differences in average tax rates (defined as income tax liability divided by AGI). The coefficients in the last three rows represent differences in income tax liability (in 2018 dollars). In the first and fourth rows, the right-hand side variables include a constant, EI, the indicator for Black tax units, and an indicator for SCF survey wave (with one excluded). In the second and fifth rows, controls are added for those units who file as married filing jointly, those who file as head of household, and the number of people in the tax unit. In the third and sixth row, the specification in the second and fifth rows is supplemented with two variables – the share of EI that is fully taxable and the share that is partially taxable. The full set of regression estimates are shown in Appendix Tables 7-12.

Table 5. Summary of Lin-Slemrod Decompositions, 2018

	Vertical Considerations	Horizontal Considerations
Panel A. Sorting by EI		
All deciles	56%	44%
Bottom half	13%	87%
Top half	114%	-14%
Married taxpayers	91%	9%
Unmarried taxpayers	18%	82%
Panel B. Sorting by AGI		
All deciles	52%	48%
Bottom half	8%	92%
Top half	95%	5%
Married taxpayers	84%	16%
Unmarried taxpayers	18%	82%

Figure 1. Filing Status and Household Composition by EI Percentile

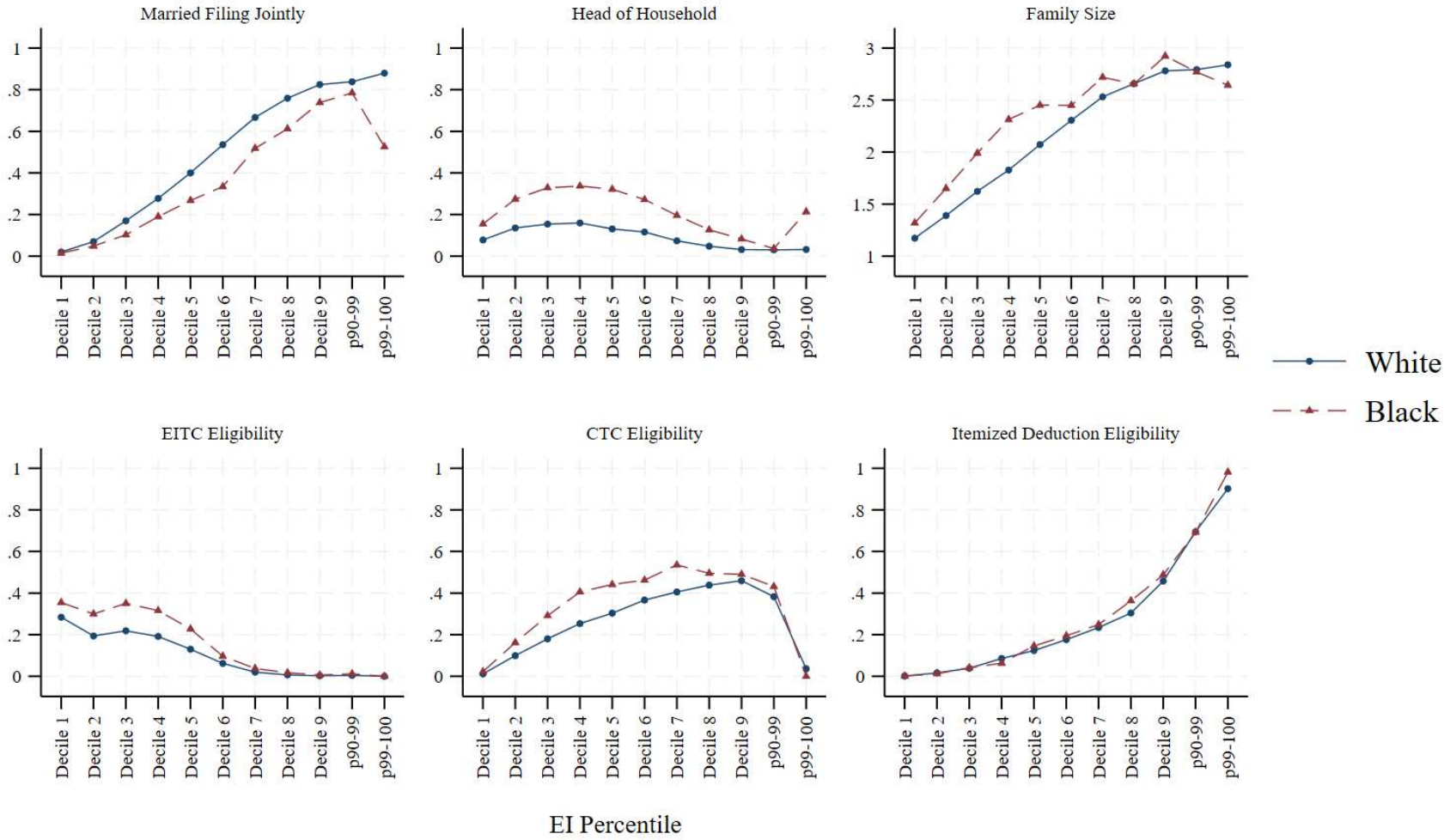


Figure 2. Composition of Income by EI Percentile

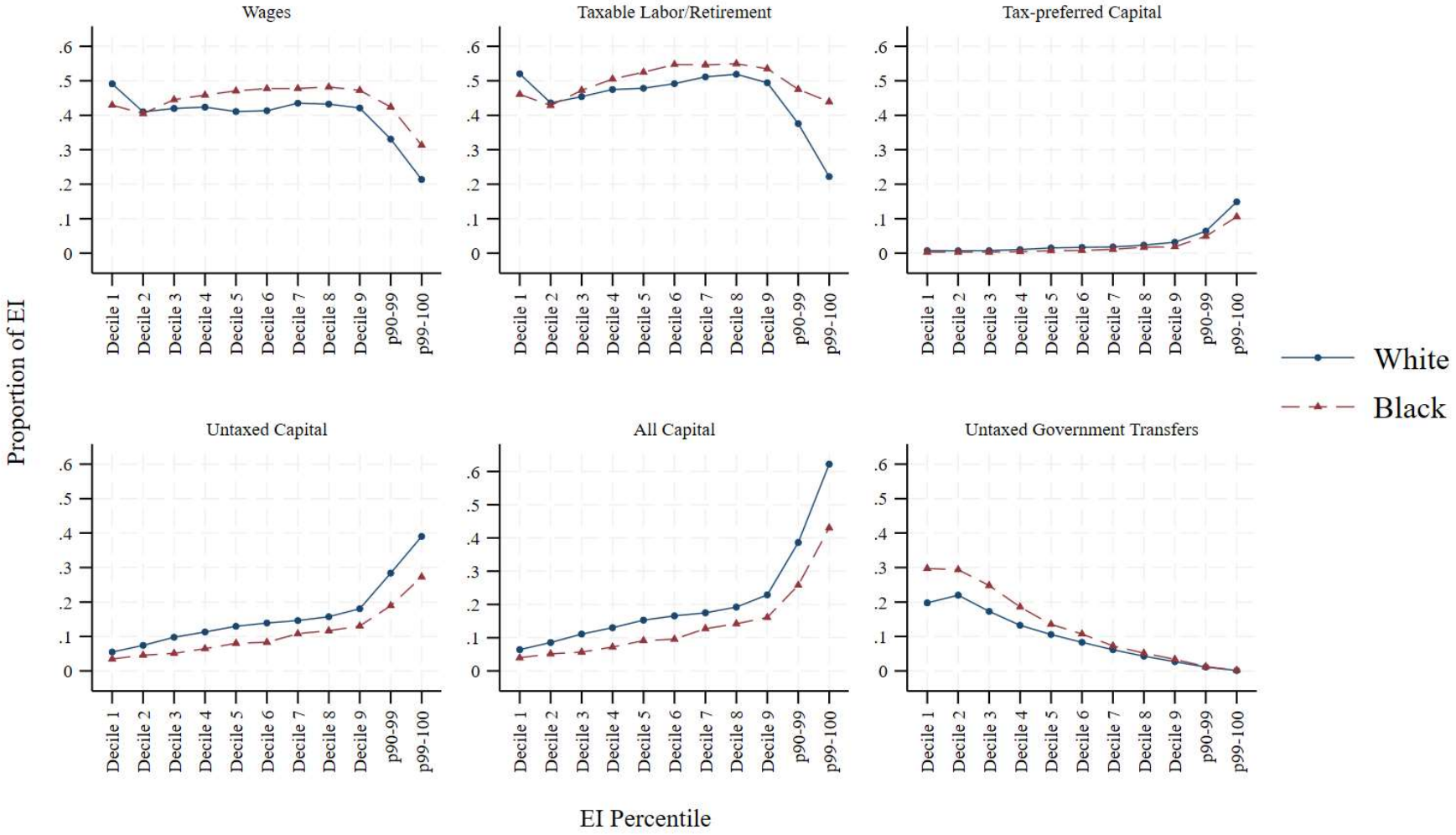


Figure 3. AGI/EI and TI/EI by EI Decile

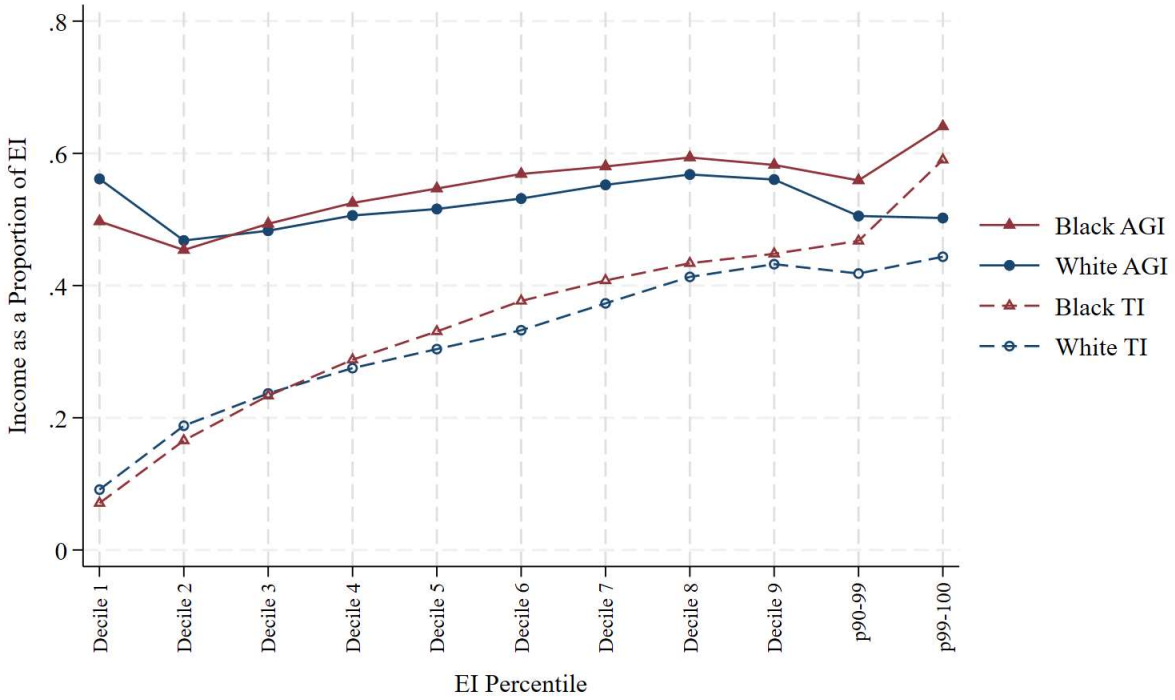


Figure 4. Taxes/EI by EI Percentile

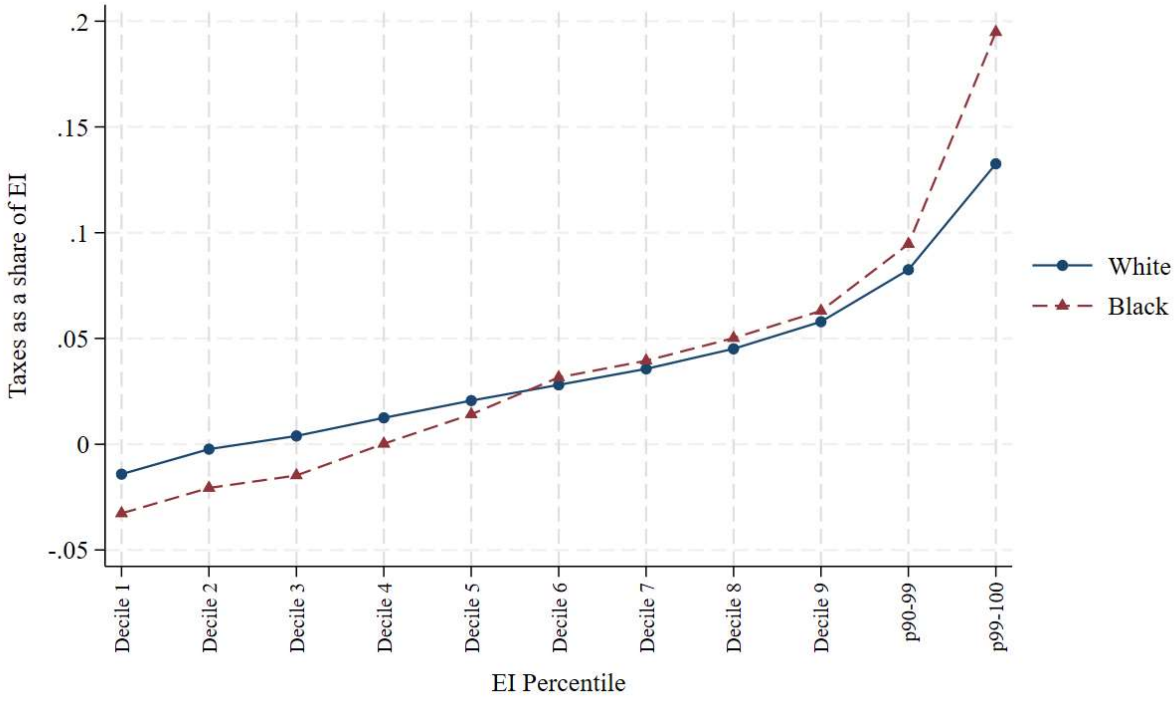
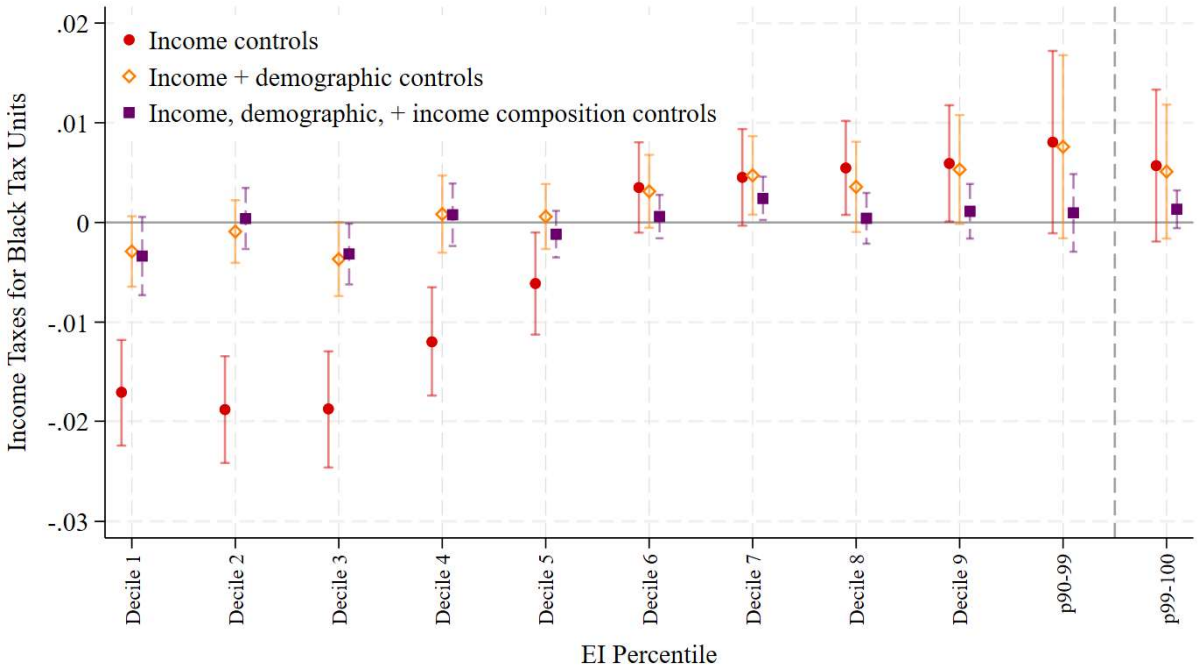


Figure 5. Coefficients and 95% Confidence Intervals from Tax Rate Regressions (Table 4)



Note: Coefficients and 95% CIs divided by 10 in the top 1%

Figure 6. Sensitivity Analysis

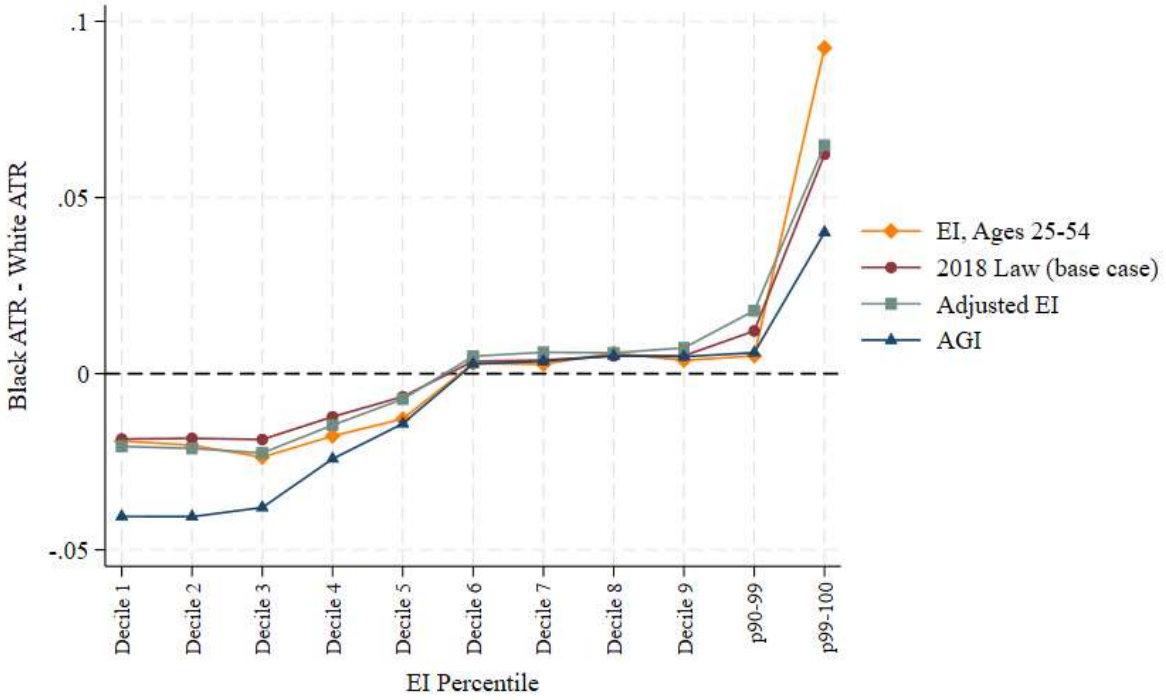


Figure 7. Effects of Different Tax Reforms

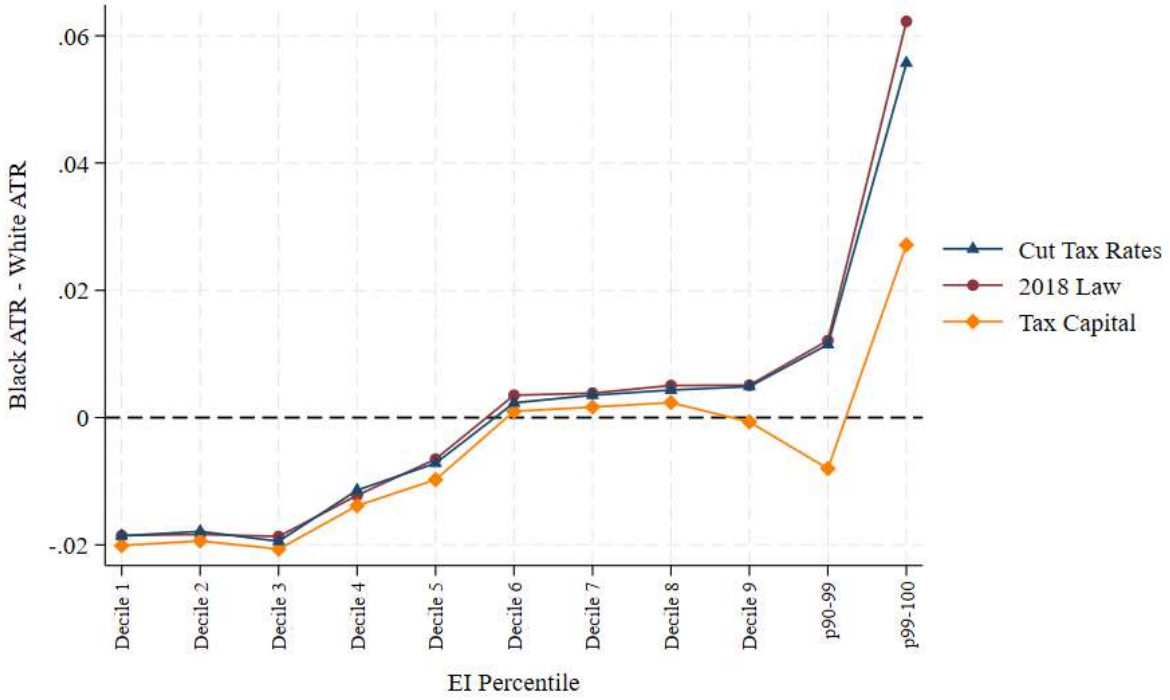


Figure 8. Effects of the TCJA and ARP

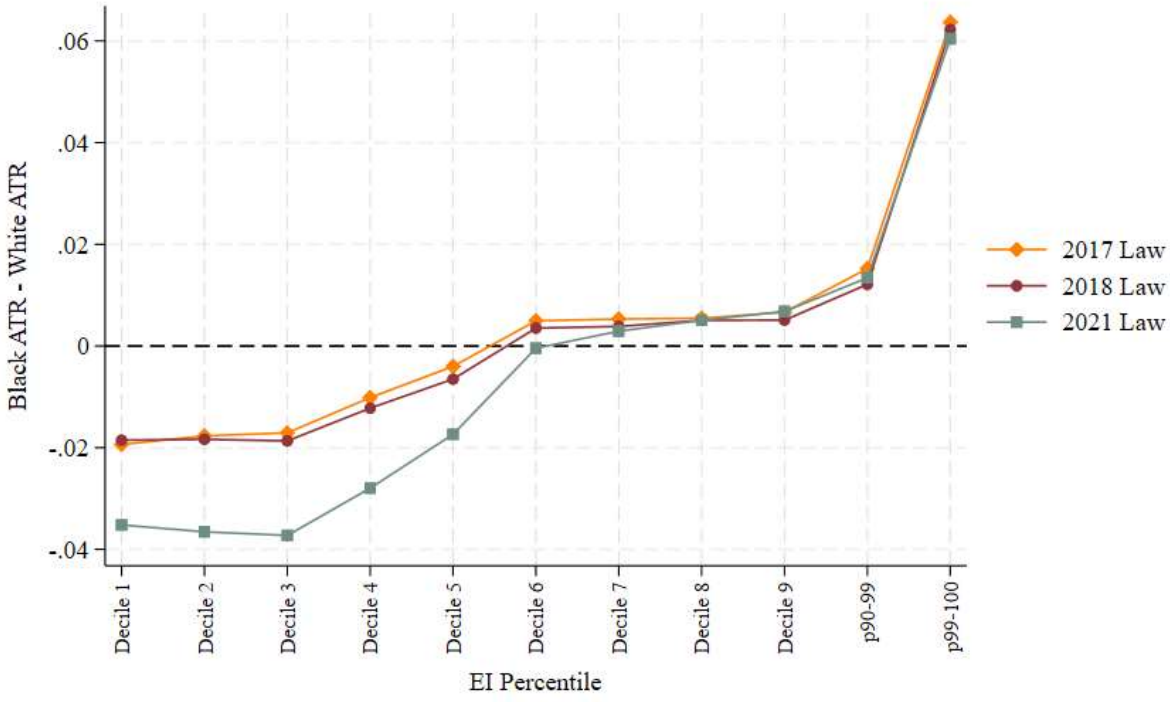


Figure 9. 1970 Law and 2018 Law, Sorted by AGI

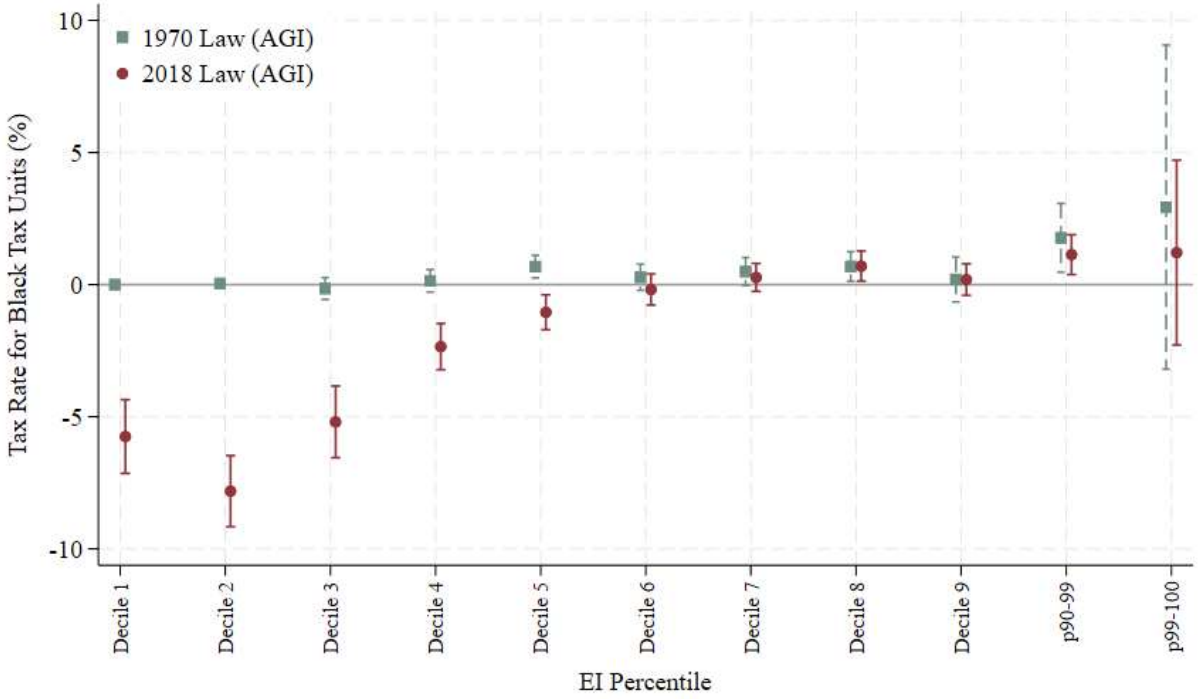


Figure 10. Deciles 2, 5, 8, and the Top 1 over time

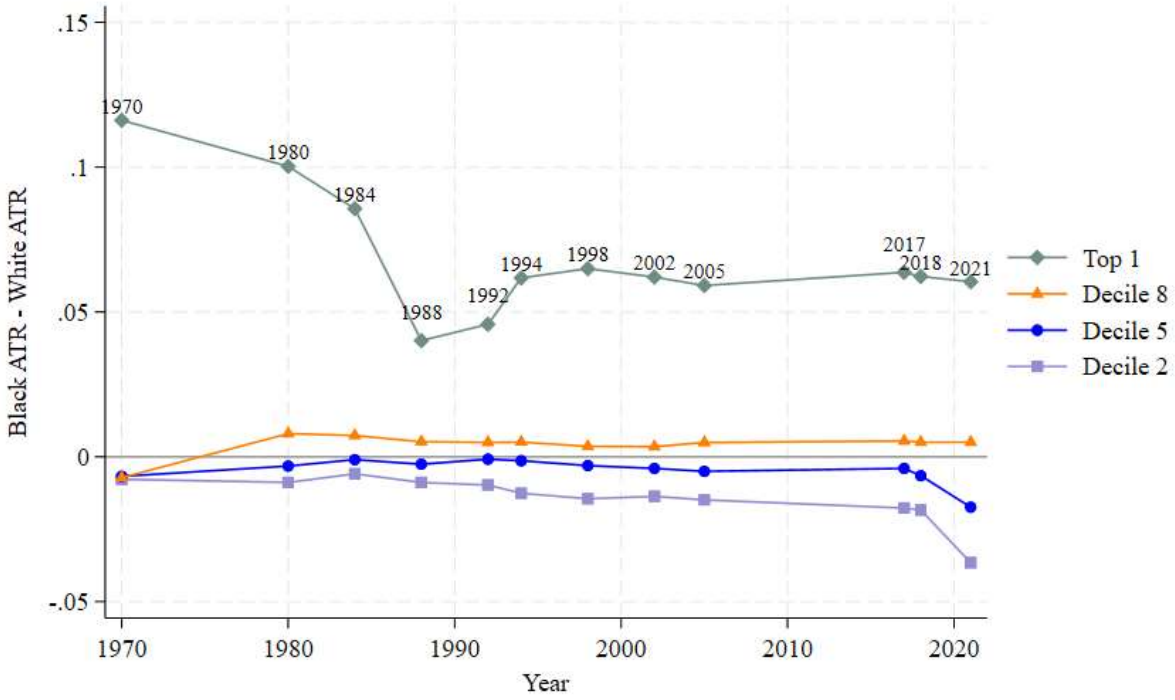


Table A1: Benchmarking: Number of Returns (millions)

	Model	SOI	Model/SOI
Panel A. Filing Status			
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%
Panel B. Credits			
Child Tax Credit	45.9	39.4	117%
EITC	27.4	26.5	104%
Panel C. Deductions			
Itemized Deductions	28.2	17.5	161%
All Returns	**163.9**	**153.8**	**107%**

Table A2: Descriptive Statistics by Expanded Income Decile

Panel A. Demographics (Figure 1)

	Married Filing Jointly		Head of Household		EITC Eligibility		Family Size		CTC Eligibility		Itemized Deduction Eligibility	
EI Percentile	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black
Decile 1	0.020	0.015	0.078	0.155	0.284	0.355	1.173	1.319	0.012	0.022	0.002	0.001
Decile 2	0.070	0.049	0.136	0.274	0.195	0.300	1.390	1.651	0.100	0.162	0.017	0.013
Decile 3	0.170	0.103	0.154	0.329	0.219	0.351	1.623	1.991	0.180	0.292	0.039	0.041
Decile 4	0.278	0.190	0.160	0.337	0.192	0.316	1.828	2.314	0.254	0.406	0.086	0.063
Decile 5	0.401	0.268	0.131	0.322	0.130	0.228	2.073	2.452	0.304	0.442	0.124	0.146
Decile 6	0.536	0.335	0.116	0.272	0.062	0.097	2.306	2.450	0.367	0.463	0.177	0.195
Decile 7	0.667	0.519	0.074	0.196	0.020	0.038	2.532	2.720	0.406	0.536	0.235	0.249
Decile 8	0.759	0.612	0.048	0.127	0.007	0.018	2.658	2.656	0.439	0.495	0.304	0.363
Decile 9	0.825	0.738	0.032	0.083	0.003	0.006	2.782	2.924	0.460	0.490	0.458	0.488
p90-p99	0.839	0.785	0.030	0.037	0.005	0.012	2.793	2.771	0.383	0.432	0.695	0.692
Top 1	0.880	0.526	0.032	0.214	0.000	0.000	2.839	2.644	0.036	0.000	0.902	0.982

Panel B. Income Composition (Figure 2)

	Wages		Untaxed Labor/Retirement		Tax-preferred Capital		Untaxed Capital		All Capital		Untaxed Govt. Transfers	
EI Percentile	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black
Decile 1	0.491	0.430	0.520	0.461	0.008	0.003	0.055	0.035	0.064	0.040	0.198	0.297
Decile 2	0.410	0.405	0.436	0.428	0.007	0.003	0.074	0.046	0.086	0.052	0.220	0.294
Decile 3	0.420	0.445	0.454	0.472	0.008	0.003	0.098	0.051	0.111	0.057	0.173	0.248
Decile 4	0.424	0.459	0.475	0.505	0.010	0.004	0.113	0.065	0.130	0.072	0.133	0.186
Decile 5	0.411	0.471	0.478	0.525	0.015	0.007	0.130	0.080	0.153	0.091	0.106	0.135
Decile 6	0.413	0.478	0.492	0.548	0.017	0.008	0.139	0.083	0.166	0.096	0.083	0.107
Decile 7	0.435	0.478	0.512	0.546	0.018	0.011	0.146	0.108	0.175	0.128	0.062	0.073
Decile 8	0.433	0.482	0.519	0.550	0.023	0.017	0.158	0.117	0.192	0.142	0.043	0.052
Decile 9	0.421	0.472	0.494	0.535	0.032	0.019	0.181	0.131	0.229	0.161	0.027	0.034
p90-p99	0.331	0.424	0.376	0.475	0.064	0.049	0.284	0.189	0.386	0.258	0.011	0.013
Top 1	0.214	0.313	0.222	0.439	0.149	0.106	0.390	0.273	0.622	0.430	0.002	0.002

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

	Taxable Income/EI		AGI/EI		Taxes/EI	
EI Percentile	White	Black	White	Black	White	Black
Decile 1	0.091	0.071	0.561	0.497	-0.014	-0.033
Decile 2	0.188	0.166	0.468	0.454	-0.002	-0.021
Decile 3	0.237	0.233	0.483	0.494	0.004	-0.015
Decile 4	0.275	0.288	0.506	0.525	0.012	0.000
Decile 5	0.304	0.331	0.516	0.547	0.021	0.014
Decile 6	0.332	0.377	0.532	0.569	0.028	0.032
Decile 7	0.373	0.408	0.552	0.580	0.036	0.039
Decile 8	0.413	0.434	0.568	0.594	0.045	0.050
Decile 9	0.432	0.448	0.560	0.583	0.058	0.063
p90-p99	0.418	0.467	0.505	0.559	0.082	0.095
Top 1	0.444	0.590	0.502	0.641	0.133	0.195

Table A3: Regressing AGI as a % of EI on Race and EI by EI Decile

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	-5.872***	-1.314	1.228	3.067**	3.538***	4.062***	3.534***	2.949***	2.540**	2.357	12.98
	(1.684)	(1.315)	(1.294)	(1.220)	(1.267)	(1.186)	(1.218)	(1.073)	(1.209)	(2.028)	(9.020)
EI	-0.000413	9.09e-05	0.000388***	0.000171	6.50e-05	-5.49e-05	9.10e-05**	2.47e-05	-1.46e-05	-7.76e-06***	2.04e-07**
	(0.000299)	(0.000149)	(0.000148)	(0.000147)	(0.000114)	(6.73e-05)	(4.55e-05)	(2.75e-05)	(1.38e-05)	(1.45e-06)	(9.88e-08)
Constant	64.76***	44.64***	36.61***	45.18***	53.15***	66.28***	51.48***	59.05***	63.90***	59.84***	53.79***
	(12.24)	(5.446)	(7.099)	(9.675)	(8.771)	(6.886)	(5.789)	(4.679)	(3.109)	(1.734)	(2.663)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,930	5,018	4,262	3,789	3,421	3,265	3,185	3,298	3,701	6,182	5,579
R-squared	0.005	0.003	0.034	0.028	0.024	0.040	0.064	0.029	0.027	0.021	0.035

Robust standard errors in parentheses
*p<0.1; **p<.05; ***p<.01

Table A4: Regressing AGI on Race and EI by EI Decile

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	-729.2***	-390.4	511.8	1,892**	2,938***	4,033***	4,554***	4,936***	5,745**	22,917*	509,574**
	(209.2)	(429.5)	(606.7)	(759.6)	(998.4)	(1,190)	(1,522)	(1,741)	(2,798)	(12,627)	(252,176)
EI	0.489***	0.498***	0.673***	0.616***	0.579***	0.480***	0.669***	0.612***	0.530***	0.458***	0.625***
	(0.0128)	(0.0494)	(0.0724)	(0.0892)	(0.0889)	(0.0669)	(0.0577)	(0.0441)	(0.0354)	(0.0144)	(0.0373)
Constant	303.1	-689.3	-5,739*	-3,525	458.5	12,735*	-4,860	3,032	17,089**	48,089***	-270,282*
	(272.7)	(1,741)	(3,430)	(5,855)	(6,783)	(6,798)	(7,304)	(7,345)	(7,732)	(10,065)	(142,684)
Observations	5,930	5,018	4,262	3,789	3,421	3,265	3,185	3,298	3,701	6,182	5,579
R-squared	0.253	0.035	0.067	0.055	0.052	0.062	0.115	0.105	0.163	0.489	0.745

Robust standard errors in parentheses
*p<0.1; **p<.05; ***p<.01

Table A5: Regressing TI as a % of EI on Race and EI by EI Decile

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	-1.136***	-2.140***	-0.398	2.321**	2.850**	4.590***	4.241***	2.516**	2.006	2.082	13.32
	(0.366)	(0.800)	(0.992)	(1.078)	(1.140)	(1.146)	(1.178)	(1.087)	(1.292)	(1.980)	(9.888)
EI	0.000722***	0.000509***	0.000483***	0.000267**	0.000136	4.12e-05	0.000171***	7.13e-05***	1.44e-05	-2.61e-06*	2.28e-07**
	(2.61e-05)	(9.40e-05)	(0.000111)	(0.000116)	(9.26e-05)	(6.24e-05)	(4.29e-05)	(2.76e-05)	(1.42e-05)	(1.46e-06)	(1.04e-07)
Constant	-5.567***	1.465	5.436	14.34*	25.03***	34.74***	22.33***	35.62***	44.15***	47.31***	47.68***
	(0.445)	(3.250)	(5.373)	(7.705)	(7.267)	(6.387)	(5.552)	(4.677)	(3.173)	(1.682)	(2.605)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,930	5,018	4,262	3,789	3,421	3,265	3,185	3,298	3,701	6,182	5,579
R-squared	0.191	0.016	0.025	0.022	0.018	0.028	0.060	0.027	0.020	0.012	0.033

Robust standard errors in parentheses
*p<0.1; **p<.05; ***p<.01

Table A6: Regressing TI on Race and EI by EI Decile

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	-236.5***	-688.6**	-233.7	1,447**	2,389***	4,590***	5,426***	4,135**	4,607	23,055*	528,719*
	(80.64)	(270.2)	(462.9)	(670.7)	(897.3)	(1,147)	(1,472)	(1,776)	(2,962)	(12,438)	(276,661)
EI	0.162***	0.347***	0.470***	0.443***	0.422***	0.378***	0.592***	0.533***	0.470***	0.406***	0.559***
	(0.00604)	(0.0328)	(0.0548)	(0.0701)	(0.0723)	(0.0629)	(0.0544)	(0.0449)	(0.0365)	(0.0148)	(0.0422)
Constant	-1,334***	-5,336***	-8,721***	-8,221*	-4,899	1,119	-19,137***	-9,828	1,112	26,604***	-240,145
	(99.91)	(1,097)	(2,612)	(4,654)	(5,622)	(6,384)	(6,986)	(7,461)	(7,905)	(9,912)	(155,626)
Observations	5,930	5,018	4,262	3,789	3,421	3,265	3,185	3,298	3,701	6,182	5,579
R-squared	0.204	0.047	0.048	0.040	0.035	0.044	0.097	0.082	0.130	0.431	0.679

Robust standard errors in parentheses
*p<0.1; **p<.05; ***p<.01

Table A7: Regressing Tax Rate on Race and EI by EI Decile

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	-1.711***	-1.884***	-1.877***	-1.197***	-0.612**	0.351	0.453*	0.547**	0.592**	0.806*	5.708
	(0.271)	(0.272)	(0.298)	(0.279)	(0.261)	(0.231)	(0.247)	(0.240)	(0.297)	(0.467)	(3.887)
EI	5.80e-05***	5.23e-05**	3.31e-05	5.44e-05**	4.66e-05***	2.73e-05**	2.89e-05***	2.52e-05***	1.66e-05***	4.46e-06***	1.08e-07***
	(1.54e-05)	(2.57e-05)	(2.54e-05)	(2.20e-05)	(1.60e-05)	(1.16e-05)	(7.68e-06)	(4.56e-06)	(2.74e-06)	(4.17e-07)	(2.92e-08)
Constant	-3.189***	-2.465***	-0.882	-2.050	-0.948	0.496	0.490	1.022	2.497***	6.276***	14.15***
	(0.374)	(0.923)	(1.272)	(1.418)	(1.263)	(1.231)	(1.001)	(0.787)	(0.609)	(0.387)	(0.890)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,926	5,027	4,268	3,772	3,423	3,276	3,183	3,290	3,700	6,187	5,577
R-squared	0.013	0.026	0.022	0.020	0.017	0.019	0.023	0.024	0.036	0.065	0.040

Robust standard errors in parentheses
*p<0.1; **p<.05; ***p<.01

Table A8: Regressing Tax Rate on Race, EI and Demographic Controls by EI Decile

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	-0.290	-0.0908	-0.367*	0.0836	0.0596	0.313*	0.472**	0.357	0.531*	0.760	5.104
	(0.180)	(0.160)	(0.189)	(0.197)	(0.166)	(0.187)	(0.201)	(0.231)	(0.279)	(0.468)	(3.428)
EI	0.000162***	0.000130***	0.000145***	0.000118***	9.16e-05***	4.49e-05***	4.32e-05***	2.84e-05***	1.73e-05***	4.48e-06***	1.06e-07***
	(1.11e-05)	(2.07e-05)	(1.87e-05)	(1.49e-05)	(1.27e-05)	(8.98e-06)	(6.63e-06)	(4.13e-06)	(2.62e-06)	(4.14e-07)	(2.93e-08)
Married Filing Jointly	-7.673***	-6.407***	-5.021***	-4.124***	-3.615***	-3.365***	-2.856***	-2.192***	-1.843***	-0.646	1.374
	(1.137)	(0.438)	(0.254)	(0.157)	(0.137)	(0.147)	(0.178)	(0.205)	(0.281)	(0.403)	(1.107)
Head of Household	-12.98***	-8.475***	-4.046***	-1.799***	-1.530***	-1.556***	-0.802***	-0.233	-0.417	1.342	5.339**
	(0.906)	(0.485)	(0.353)	(0.259)	(0.225)	(0.238)	(0.293)	(0.479)	(0.530)	(0.872)	(2.191)
Number of Dependents	-3.061***	-2.425***	-2.692***	-2.227***	-1.590***	-1.119***	-0.902***	-0.603***	-0.292***	0.186***	0.579***
	(0.499)	(0.245)	(0.171)	(0.110)	(0.0866)	(0.0583)	(0.0525)	(0.0504)	(0.0519)	(0.0657)	(0.180)
Constant	-2.619***	-2.056***	-3.019***	-2.493***	-1.644*	2.045**	1.688**	2.914***	4.278***	6.570***	12.37***
	(0.273)	(0.697)	(0.877)	(0.937)	(0.985)	(0.942)	(0.845)	(0.741)	(0.642)	(0.519)	(1.376)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,926	5,027	4,268	3,772	3,423	3,276	3,183	3,290	3,700	6,187	5,577
R-squared	0.551	0.599	0.583	0.542	0.483	0.412	0.356	0.184	0.110	0.072	0.064

Robust standard errors in parentheses
*p<0.1; **p<.05; ***p<.01

Table A9: Regressing Tax Rate on Race, EI, Demographic, and Income Composition Controls by EI Decile

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	-0.337*	0.0402	-0.316**	0.0776	-0.117	0.0591	0.242**	0.0420	0.112	0.0962	1.327
	(0.200)	(0.156)	(0.156)	(0.160)	(0.119)	(0.111)	(0.111)	(0.130)	(0.140)	(0.199)	(0.964)
EI	0.000162***	0.000128***	0.000122***	0.000101***	7.29e-05***	4.54e-05***	3.45e-05***	2.52e-05***	2.07e-05***	6.55e-06***	8.75e-08***
	(1.09e-05)	(1.95e-05)	(1.63e-05)	(1.10e-05)	(8.19e-06)	(5.04e-06)	(3.53e-06)	(2.28e-06)	(1.14e-06)	(2.16e-07)	(1.36e-08)
Married Filing Jointly	-7.773***	-6.110***	-4.116***	-2.856***	-2.340***	-2.359***	-2.447***	-2.465***	-2.419***	-2.085***	-0.864**
	(1.132)	(0.472)	(0.282)	(0.183)	(0.118)	(0.0799)	(0.0890)	(0.120)	(0.147)	(0.141)	(0.426)
Head of Household	-13.09***	-8.722***	-4.007***	-1.580***	-1.183***	-1.166***	-0.645***	-0.393	-0.538*	0.980***	0.0265
	(0.900)	(0.511)	(0.365)	(0.234)	(0.209)	(0.149)	(0.184)	(0.257)	(0.300)	(0.338)	(0.742)
Number of Dependents	-2.961***	-2.557***	-2.945***	-2.530***	-1.870***	-1.508***	-1.245***	-0.971***	-0.595***	-0.320***	0.106
	(0.514)	(0.258)	(0.184)	(0.121)	(0.0993)	(0.0567)	(0.0455)	(0.0342)	(0.0320)	(0.0358)	(0.0766)
Fully Taxed Income as a % of EI	-0.00655	0.0383***	0.0625***	0.0789***	0.0932***	0.110***	0.119***	0.144***	0.163***	0.214***	0.306***
	(0.0108)	(0.00192)	(0.00180)	(0.00230)	(0.00197)	(0.00180)	(0.00224)	(0.00901)	(0.00244)	(0.00282)	(0.00640)
Partially Taxed Income as a % of EI	-0.00634	0.0425**	0.0512***	0.0506***	0.0744***	0.0878***	0.105***	0.138***	0.147***	0.192***	0.238***
	(0.0230)	(0.0199)	(0.0164)	(0.0132)	(0.00835)	(0.0104)	(0.00924)	(0.0149)	(0.00836)	(0.00437)	(0.00789)
Constant	-2.271***	-3.719***	-5.346***	-5.981***	-5.856***	-4.837***	-4.482***	-4.809***	-5.174***	-3.504***	1.782**
	(0.552)	(0.649)	(0.767)	(0.722)	(0.642)	(0.535)	(0.457)	(0.660)	(0.309)	(0.240)	(0.699)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,926	5,027	4,268	3,772	3,423	3,276	3,183	3,290	3,700	6,187	5,577
R-squared	0.553	0.636	0.681	0.714	0.750	0.811	0.803	0.766	0.787	0.807	0.835

Robust standard errors in parentheses
*p<0.1; **p<.05; ***p<.01

Table A10: Regressing Taxes on Race and EI by EI Decile

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	-265.9***	-614.8***	-883.6***	-735.1***	-452.7**	375.6	591.9*	927.6**	1,406**	8,454**	210,610*
	(43.66)	(88.55)	(137.1)	(174.6)	(204.2)	(233.6)	(310.1)	(389.4)	(693.5)	(3,419)	(109,971)
EI	-0.0103***	0.0112	0.0167	0.0440***	0.0564***	0.0548***	0.0723***	0.0877***	0.0982***	0.116***	0.165***
	(0.00267)	(0.00855)	(0.0121)	(0.0136)	(0.0129)	(0.0114)	(0.00967)	(0.00751)	(0.00703)	(0.00465)	(0.00955)
Constant	-179.7***	-591.3**	-443.8	-1,903**	-2,286**	-2,245*	-3,897***	-5,868***	-7,951***	-12,753***	-44,160
	(58.61)	(295.6)	(601.2)	(869.4)	(1,002)	(1,205)	(1,250)	(1,277)	(1,503)	(2,808)	(39,185)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,926	5,027	4,268	3,772	3,423	3,276	3,183	3,290	3,700	6,187	5,577
R-squared	0.014	0.026	0.023	0.021	0.021	0.028	0.038	0.058	0.128	0.441	0.708

Robust standard errors in parentheses
*p<0.1; **p<.05; ***p<.01

Table A11: Regressing Taxes on Race, EI and Demographic Controls by EI Decile

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	-30.07	-27.22	-174.6**	57.83	71.74	334.9*	617.0**	618.8	1,263*	8,170**	186,570*
	(31.95)	(52.13)	(87.83)	(122.6)	(130.7)	(189.7)	(253.3)	(376.6)	(651.7)	(3,426)	(96,591)
EI	0.00730***	0.0370***	0.0698***	0.0837***	0.0922***	0.0723***	0.0904***	0.0928***	0.0997***	0.117***	0.165***
	(0.00168)	(0.00686)	(0.00894)	(0.00899)	(0.0101)	(0.00910)	(0.00855)	(0.00686)	(0.00677)	(0.00462)	(0.00956)
Married Filing Jointly	-1,384***	-2,125***	-2,378***	-2,558***	-2,851***	-3,352***	-3,600***	-3,575***	-4,195***	-3,267	43,672
	(210.9)	(148.4)	(119.5)	(97.60)	(109.0)	(149.1)	(220.8)	(330.7)	(664.8)	(2,397)	(53,292)
Head of Household	-2,103***	-2,717***	-1,877***	-1,091***	-1,172***	-1,545***	-996.4***	-415.8	-964.2	9,746*	201,271*
	(167.0)	(158.6)	(167.4)	(160.6)	(175.2)	(235.0)	(370.6)	(781.4)	(1,231)	(5,535)	(105,812)
Number of Dependents	-538.4***	-824.8***	-1,277***	-1,387***	-1,256***	-1,109***	-1,143***	-973.4***	-649.3***	1,539***	15,049**
	(94.63)	(81.84)	(80.81)	(68.53)	(66.99)	(56.84)	(65.23)	(81.42)	(129.4)	(427.5)	(6,115)
Constant	-82.80*	-463.8**	-1,454***	-2,184***	-2,852***	-706.9	-2,387**	-2,790**	-3,914**	-11,973***	-97,668*
	(45.02)	(229.0)	(417.9)	(565.2)	(778.0)	(939.6)	(1,073)	(1,185)	(1,538)	(3,481)	(58,888)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,926	5,027	4,268	3,772	3,423	3,276	3,183	3,290	3,700	6,187	5,577
R-squared	0.561	0.600	0.584	0.544	0.487	0.416	0.365	0.209	0.191	0.446	0.710

Robust standard errors in parentheses
*p<0.1; **p<.05; ***p<.01

Table A12: Regressing Taxes on Race, EI, Demographic, and Income Composition Controls by EI Decile

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	-28.93	16.71	-150.1**	54.25	-67.18	82.45	326.7**	102.6	289.8	4,255*	61,835
	(32.24)	(50.23)	(72.87)	(99.68)	(92.63)	(113.2)	(140.4)	(216.9)	(338.4)	(2,436)	(45,942)
EI	0.00737***	0.0362***	0.0585***	0.0728***	0.0774***	0.0728***	0.0794***	0.0877***	0.108***	0.129***	0.163***
	(0.00167)	(0.00638)	(0.00757)	(0.00676)	(0.00663)	(0.00537)	(0.00459)	(0.00392)	(0.00325)	(0.00356)	(0.00950)
Married Filing Jointly	-1,382***	-2,023***	-1,949***	-1,769***	-1,846***	-2,350***	-3,084***	-4,022***	-5,531***	-11,860***	-34,137
	(211.1)	(159.3)	(131.6)	(111.9)	(94.96)	(81.09)	(115.3)	(191.7)	(362.1)	(1,308)	(40,112)
Head of Household	-2,096***	-2,800***	-1,858***	-954.8***	-898.4***	-1,156***	-798.5***	-680.2	-1,244*	7,709**	7,927
	(168.6)	(166.7)	(172.2)	(145.4)	(163.5)	(148.2)	(236.1)	(416.6)	(703.3)	(3,471)	(65,025)
Number of Dependents	-543.8***	-869.8***	-1,397***	-1,576***	-1,477***	-1,496***	-1,577***	-1,575***	-1,356***	-1,535***	-386.5
	(97.36)	(86.03)	(87.05)	(76.51)	(78.10)	(55.53)	(56.28)	(55.38)	(83.76)	(289.7)	(4,300)
Fully Taxed Income as a % of EI	0.111	13.04***	29.66***	49.09***	73.40***	109.4***	150.0***	235.8***	381.0***	1,307***	10,825***
	(0.399)	(0.611)	(0.835)	(1.447)	(1.560)	(1.781)	(2.878)	(14.35)	(6.180)	(32.04)	(485.0)
Partially Taxed Income as a % of EI	1.170	12.94**	24.90***	31.72***	59.07***	87.65***	132.7***	224.9***	345.0***	1,228***	10,519***
	(1.274)	(6.368)	(7.541)	(8.057)	(6.583)	(10.46)	(11.96)	(24.03)	(19.26)	(42.30)	(805.0)
Constant	-91.22*	-1,028***	-2,558***	-4,353***	-6,172***	-7,559***	-10,167***	-15,413***	-25,982***	-73,918***	-503,000***
	(47.36)	(215.0)	(357.5)	(452.3)	(515.3)	(566.6)	(604.0)	(1,078)	(840.8)	(2,850)	(53,929)
Survey Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,926	5,027	4,268	3,772	3,423	3,276	3,183	3,290	3,700	6,187	5,577
R-squared	0.561	0.640	0.684	0.717	0.753	0.812	0.803	0.768	0.790	0.764	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

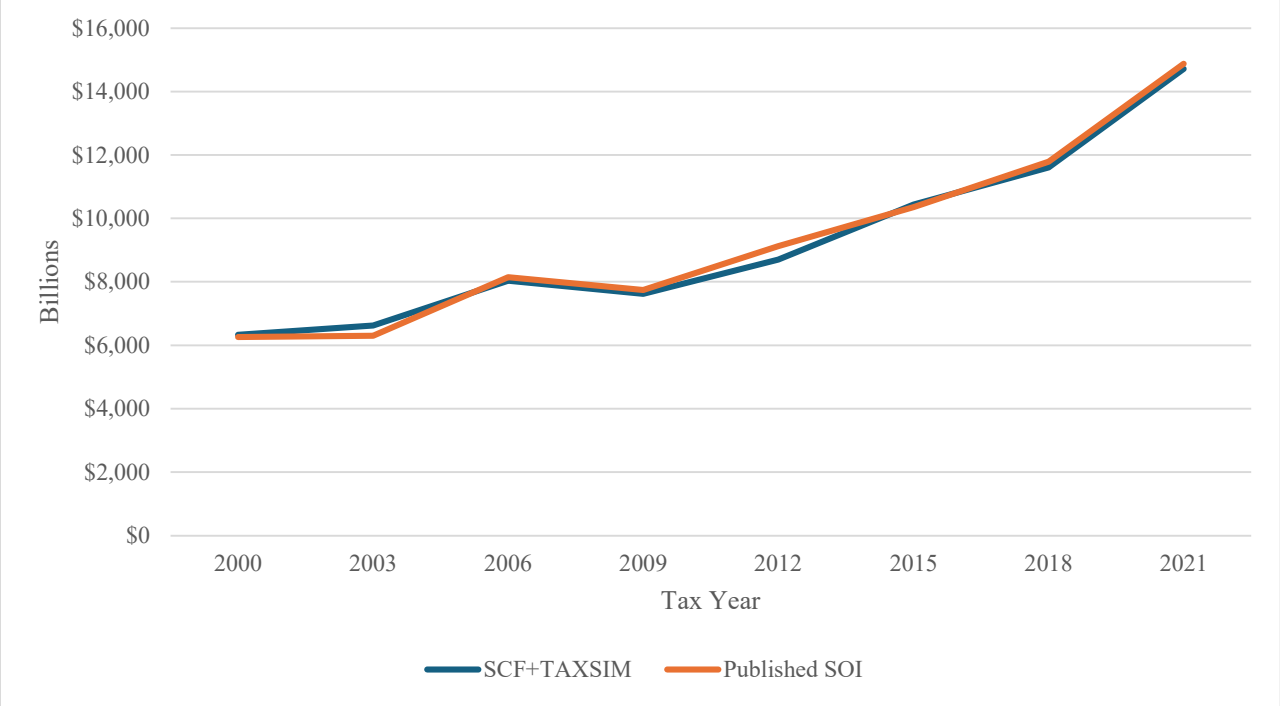


Figure A2. Tax Liability Before Credits in Our Data and IRS SOI

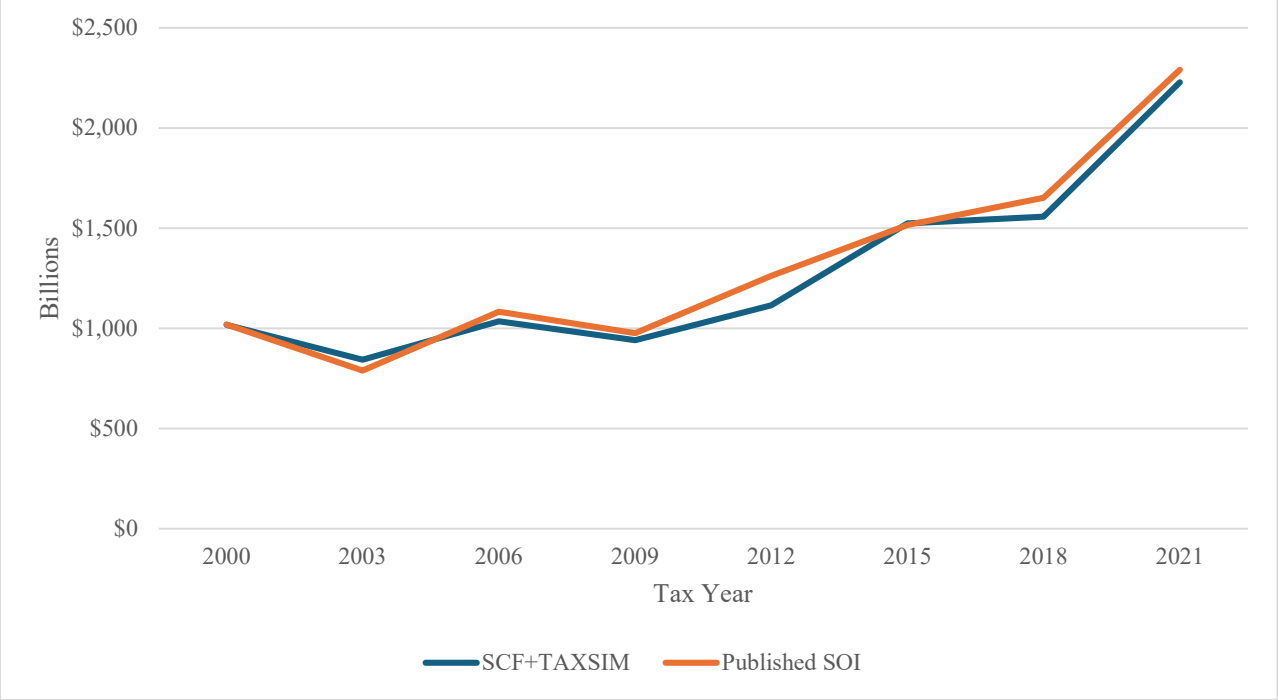


Figure A3. Distribution of Tax Units Across EI Deciles

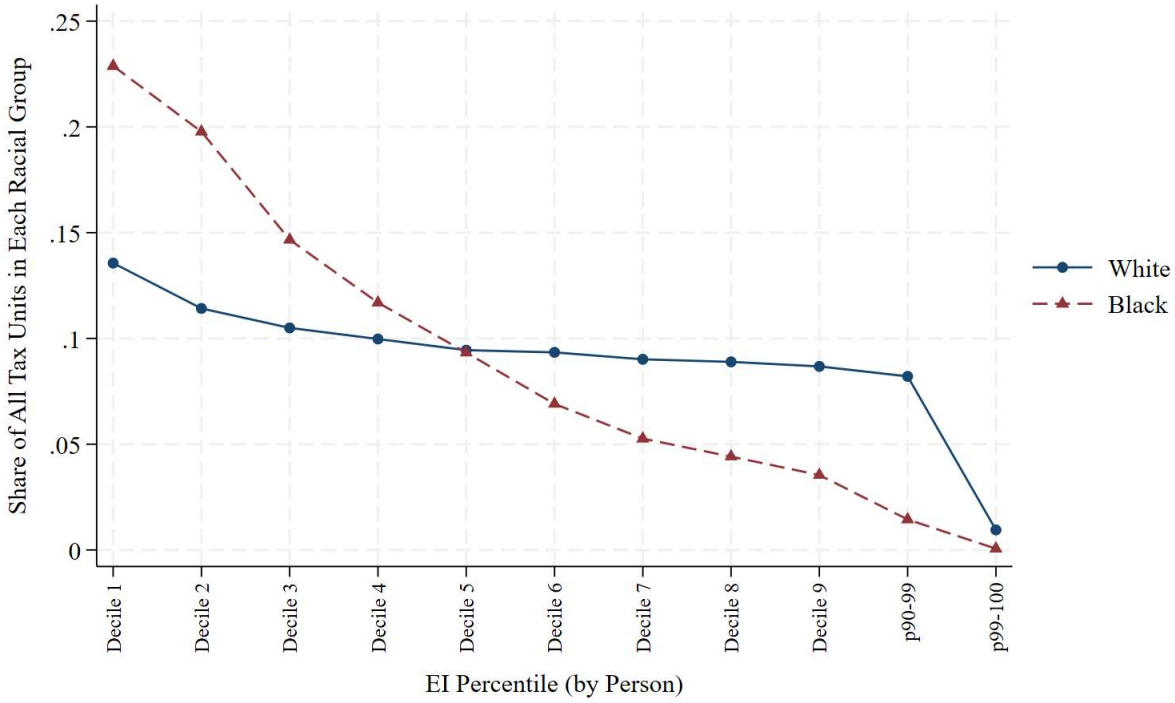


Figure A4. Average EI by EI Percentile

