Auburn University
Department of Economics
Working Paper Series

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AUWP 2026-07

The Divide among the Rich: Within-Group Inequality at the Top of the U.S. Income Distribution*

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September 2026

Abstract

We employ an alternative decomposition framework to assess group-level contributions to economic inequality. Using microdata from 1962 to 2019, we show that the rise in U.S. inequality has been driven primarily by increasing within-group dispersion among top earners rather than by differences in average income across groups. Although inequality growth slowed after 2000, partly reflecting a moderation in the growth of within-top-decile dispersion, the dominant share of post-2000 pre-tax income inequality remains attributable to within-top-decile variation, with the top 1% playing a particularly important role. Post-tax measures exhibit a weaker but similar pattern. Further decomposition by income source identifies rising dispersion in labor income within top-income groups as a key driver of the increase in U.S. inequality.

Keywords: Inequality; Generalized Entropy; Within-Group Inequality; Between-Group Inequality; Factor Labor Income; Factor Capital Income

JEL Classification: D31; E25; C43

*We extend our gratitude to David Splinter, Sunghyun Kim, Sihwan Yang, Chiaki Moriguchi, Orsetta Causa, Gregorio Caetano, Peng Shao, and participants at the World Inequality Conference 2026, the 20^{th} International Symposium on Econometric Theory and Applications Conference, the 99^{th} WEAI Annual Conference, and the 96^{th} SEA Annual Meeting for valuable suggestions. Special thanks go to Gabriel Zucman for providing crucial insights on the use of the U.S. DINA microfiles.

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1 Introduction

Economic inequality has garnered significant attention in recent decades. Since the influential work of Piketty and Saez (2003), the profession has intensely debated the rise of income inequality in the United States, with the income share of top earners commonly used as a key measure of this disparity.

Using official Internal Revenue Service (IRS) tax return data, Piketty and Saez (2003) document a rapid increase in top income shares since the late 1970s, although more recent evidence for the post-2000 period is mixed when based on refined data or alternative statistical analyses, including our own, which shows a moderation in the distribution of income within the top decile and, consequently, a slowdown in the rise of overall economic inequality since around 2000.

In a related contribution, Saez and Zucman (2016) document a pronounced concentration of wealth at the very top of the distribution. Proposing a novel concept of distributional incomes that account for 100% of national income, Piketty et al. (2018) confirm the upsurge of top incomes in the distribution of both pre-tax and post-tax income.[1] See Frank (2009) for state-level evidence of significant upward trends since the 1980s in top income shares, based on state-level tax return data.[2] See also Alvaredo et al. (2016) for the construction of distributional income-based inequality measures applied to international data.

Although there is broad consensus that economic inequality in the U.S. has worsened since the late 1970s, the magnitude of this increase has been questioned. Auten and Splinter (2024), for instance, report lower levels and more modest increases in top income shares than those reported by Piketty and Saez (2003) and Piketty et al. (2018).[3] Similar evidence of a weaker increase in economic inequality has been presented by Fixler et al. (2019), Bricker et al. (2016), and Burkhauser et al. (2012), among others.

While we recognize the importance of accurately measuring inequality, our objective is not to refine inequality metrics based on top income or wealth shares.[4] Although these

[1] Saez and Zucman (2020) point out that the fraction of individual income reported on tax return data as a share of national income has declined from 70% in the late 1970s to about 60% in 2018.

[2] Frank (2009) also presented panel evidence of a positive (cointegrating) relationship between inequality and economic growth using state-level top income share data. However, Gueye et al. (2017) show that this result disappears once cross-sectional dependence across U.S. states is properly accounted for.

[3] See Piketty et al. (2024) for a response to the critique by Auten and Splinter (2024).

[4] See Online Appendix A for a detailed discussion of the key properties of existing inequality measures.

measures are intuitive and useful for tracking trends in inequality, they do not provide a sufficiently rigorous foundation for quantitative analysis because they are based primarily on first moments (averages). To address this limitation, we introduce a statistically robust decomposition framework that quantifies both within-group and between-group variations across income groups, thereby identifying the key factors driving changes in overall inequality across different segments of the U.S. income distribution. It should be noted, however, that while our analysis focuses on comparing income distributions over time, we do not examine mobility across income groups.[5]

We apply our decomposition framework to a comprehensive set of micro-file income and wealth data series from 1962 to 2019, including pre-tax and post-tax national income, obtained from the updated 2020 dataset based on the work of Piketty et al. (2018). Our analysis reveals that the primary driver of recent trends in all income and wealth series is the widening inequality within the top decile of income earners. Specifically, at least until 2000, the increase in within-group inequality among the top 10% accounts for a substantial portion of the rise in inequality in the United States. On the other hand, the relative contribution of between-group inequality within the top decile, relative to inequality in the entire population, has been declining, exhibiting an inverse relationship with the contribution of within-group inequality across all the income and wealth series we consider.

We further decompose within-group inequality among top earners by income source, distinguishing between labor and capital factor income and highlighting the growing importance of dispersion in labor income as a key driver of U.S. income inequality. This decomposition helps place our findings in the context of the broader literature on the sources of U.S. inequality. In particular, our analysis relates to the extensive literature on changes in labor income and returns to skill (see, among others, Goldin and Katz 2007, Acemoglu and Autor 2011, Autor and Dorn 2013, Caines et al. 2017, Autor 2019, Autor et al. 2020, Acemoglu and Restrepo 2020, Hoffmann et al. 2020, and Fortin et al. 2021). Our income-source decomposition complements this literature by quantifying the contributions of different income sources to the dynamics of inequality through both within- and between-group components, with particular attention to the role of top-income households.[6]

The rest of the paper is organized as follows. Section 2 introduces the subgroup decom-

[5]Using panel data, Auten et al. (2013) report that only about 40% of individuals remain in the top 1% income group over the subsequent three years. See also Auten and Gee (2009), Larrimore et al. (2020), and Splinter (2022) for related studies on income mobility.

[6]Kim and Rhee (2022) investigate a number of social and economic determinants of the Gini index using linear regression.

position framework based on the squared coefficient of variation (SCV), which belongs to the generalized entropy family of inequality measures. We also discuss the properties of the SCV in comparison with other measures of inequality, such as the top income share and the Theil index. Section 3 describes the microdata used in this study and presents the main empirical findings, highlighting within-group inequality among the top decile as the primary driver of U.S. economic inequality. In Section 4, we further decompose within-group inequality among top earners into the respective contributions of labor and capital income. Section 5 concludes.

2 Inequality Measurement and Decomposition

This section discusses statistical issues and limitations associated with using existing measures of inequality to study inequality dynamics and decompose inequality into within- and between-group components. We then describe our decomposition framework based on the squared coefficient of variation (SCV), which belongs to the generalized entropy class of inequality measures.

2.1 Caveats to the Top Income Share as a Measure of Inequality

We first discuss caveats to using the top-decile income share as a measure of economic inequality, which has been widely used since the influential work of Piketty and Saez (2003). While this measure provides an intuitive representation of income concentration among the rich and non-rich, it does not capture inequality across the entire income distribution. In particular, its ability to characterize overall inequality depends on the choice of percentile cutoff and the distribution of income across groups. For example, the top 10% income share may remain stable or fluctuate even as the top 5% share increases steadily, indicating that changes in income concentration within the top decile can be obscured by the broader top-decile measure.

More generally, a top-income share can fully characterize changes in overall inequality only under restrictive conditions, such as when income shares across different segments of the distribution move proportionally over time. Such a stable pattern of income dispersion is unlikely to hold in practice. A mean-preserving spread provides a simple illustration of this limitation: it can increase inequality by spreading income further away from the mean while leaving mean income unchanged, yet it need not alter the top-decile income share.

For instance, if the spread occurs primarily within the top decile or below the top-decile cutoff, the share of income accruing to the top 10% can remain unchanged even though the underlying income distribution, hence overall inequality has changed substantially. Thus, the top-decile income share captures changes in income concentration at a particular point of the distribution but does not, by itself, provide a complete characterization of changes in the overall distribution of income.

Denote $Y_{i,t}$ the level of income of the i^{th} agent in the population N_t at time t. Without loss of generality, arrange $Y_{i,t}$ in ascending order such that $Y_{1,t} \leq \cdots \leq Y_{N_t,t}$. Then $\mathcal{Z}_{j,t}$, the top j% ($J = j/100$) income share at time t, can be defined as follows.

$$\begin{aligned} \mathcal{Z}_{j,t} &= \frac{\sum_{i=(1-J)N_t+1}^{N_t} Y_{i,t}}{\sum_{i=1}^{N_t} Y_{i,t}} \\ &= J\frac{\mu_{j,t}}{\mu_t} < 1, \end{aligned} \tag{1}$$

where $\mu_{j,t}$ and μ_t denote the top j% group average income and the overall average income, respectively. The bottom j% income share can be similarly defined as $\mathcal{Z}_{Bj,t} = \sum_{i=1}^{JN_t} Y_{i,t} / \sum_{i=1}^{N_t} Y_{i,t}$. Note that the top j% income share, $\mathcal{Z}_{j,t}$, is primarily driven by between-group inequality as reflected in these *first moments*, $\mu_{j,t}$ and μ_t. As shown in (1), $\mathcal{Z}_{j,t}$ rises when $\mu_{j,t}$ increases faster than μ_t, indicating worsening income inequality, which is a valid conclusion.

It should be noted, however, that $\mathcal{Z}_{j,t}$ does not capture income dispersion dynamics through changes in *second moments*, potentially leading to misleading conclusions by ignoring within-group income dispersion. In particular, within the top j% income group, inequality may worsen over time even if $\mu_{j,t}$ remains constant while the group variance, $\sigma_{j,t}^2$, increases, as in a *mean-preserving spread*. In this case, $\mathcal{Z}_{j,t}$ remains unchanged because $\mu_{j,t}/\mu_t$ is unchanged for a given P, failing to reflect the growing inequality within the top j%. Thus, by being agnostic about within-group inequality, $\mathcal{Z}_{j,t}$ may provide misleading information about overall economic inequality.

To illustrate this point, consider the following example of an economy with 100 individuals, where the income distribution shifts from period t to period $t+1$ under scenarios A and B, denoted as $(t+1)^A$ and $(t+1)^B$, respectively.

$$t : Y_1 = \cdots = Y_{90} = 1,\ Y_{91} = \cdots = Y_{100} = 3$$

$$(t+1)^A : Y_1 = \cdots = Y_{90} = 1,\ Y_{91} = \cdots = Y_{95} = 2, Y_{96} = \cdots = Y_{100} = 4$$
$$(t+1)^B : Y_1 = \cdots = Y_{90} = 2,\ Y_{91} = \cdots = Y_{95} = 5, Y_{96} = \cdots = Y_{100} = 7$$

Note that μ_t and $\mu_{10,t}$ remain unchanged when the economy transition from t to $(t+1)^A$. As a result, $\mathcal{Z}_{10,t+1}$ also remains the same as $\mathcal{Z}_{10,t}$, staying at 0.25, even though inequality has clearly worsened at time $t+1$.

As an alternative to $\mathcal{Z}_{j,t}$, we consider the half of the squared coefficient of variation (SCV), which belongs to the generalized entropy family of inequality measures:

$$\mathcal{S}_t = \frac{1}{2}\frac{\sigma_t^2}{\mu_t^2}, \tag{2}$$

where σ_t^2 is the cross-section variance of $Y_{i,t}$ for N_t at time t.[7,8] Note that $\mathcal{S}_t$ utilizes both first and second moments, thereby capturing increases in inequality even under a mean-preserving spread in the upper tail of the income or wealth distribution.

In the above example, the inequality measure $\mathcal{S}_t$ increases from 0.126 to 0.161 when the economy transition to $(t+1)^A$, correctly reflecting the worsening inequality. A similar event occurs when the economy transitions from t to $(t+1)^B$ with positive growth: $\mathcal{Z}_{10,t}$ remains constant at 0.25, while $\mathcal{S}_t$ increases from 0.126 to 0.135, correctly signaling a rise in inequality.

In what follows, we demonstrate that $\mathcal{S}_t$ can provide useful information on both within-group and between-group inequality by introducing a group-level decomposition of $\mathcal{S}_t$, which enables further breakdowns into group-specific within-group and between-group inequality.

2.2 Subgroup Decomposition of the Inequality

In this subsection, we provide a subgroup decomposition of SCV and discuss its advantages relative to decompositions based on other measures, such as the top-decile income share $\mathcal{Z}_{j,t}$, the Gini index, and the Theil index.

[7] The generalized entropy measure of inequality is defined, $GE_t(\alpha) = \frac{1}{\alpha(\alpha-1)}\left\{\frac{1}{N_t}\sum_{i=1}^{N_t}\left(\frac{Y_{i,t}}{\mu_t}\right)^{\alpha} - 1\right\}$, where α is a sensitivity parameter. SCV corresponds to the case of $GE_t(2)$, while $GE_t(1)$ is the well-known Theil index, $\mathcal{T}_t = \frac{1}{N_t}\sum_{i=1}^{N_t}\left[\frac{Y_{i,t}}{\mu_t}\ln\left(\frac{Y_{i,t}}{\mu_t}\right)\right]$.

[8] Higher values of α greater than 1 put more weight on incomes at the upper end of the distribution, whereas lower values make $GE_t(\alpha)$ more sensitive to changes at the lower end of income distribution. See Online Appendix A for more discussions.

2.2.1 Subgroup Decomposition of the Squared Coefficient of Variation

As shown earlier, $\mathcal{Z}_{j,t}$ is primarily driven by between-group inequality, given prior information on the dominant group in the economy, for example, the top 10% relative to the rest of the population. In this section, we derive and introduce a unified statistical tool designed to assess the group-specific contributions to overall inequality based on $\mathcal{S}_t$, which utilizes both first and second moments.[9]

Our work is closely related to the following decomposition by Rosenbluth (1951) in his note on Schutz (1951).[10]

$$\mathcal{S}_t = \sum_{j=1}^{R} n_{j,t} \left\{ \lambda_{j,t}^2 \mathcal{S}_{j,t} + \frac{1}{2} \left(\lambda_{j,t} - 1\right)^2 \right\}, \tag{3}$$

where $\mathcal{S}_t$ is decomposed into R sub-indices $\mathcal{S}_{j,t} = \sigma_{j,t}^2/(2\mu_{j,t}^2)$ and their mean deviations $\lambda_{j,t} = \mu_{j,t}/\mu_t$.[11] We modify Rosenbluth's decomposition to make the subgroups' contributions easier to interpret via quantitative assessments of group-specific within-group and between-group inequality.

Assume that there are R groups, $\mathcal{G}_{j,t}$, each consisting of $N_{j,t}$ individuals for $j = 1, \ldots, R$,, that together make up the total population N_t at time t, that is, $N_t = \sum_{j=1}^{R} N_{j,t}$. We propose the following subgroup decomposition of $\mathcal{S}_t$.

$$\mathcal{S}_t = \sum_{j=1}^{R} \mathcal{C}_{j,t}, \;\; j = 1, ..., R, \tag{4}$$

where, for each group $\mathcal{G}_{j,t}$,

$$\mathcal{C}_{j,t} = \mathcal{C}_{j,t}^{\sigma} + \mathcal{C}_{j,t}^{\mu}, \tag{5}$$

$$\mathcal{C}_{j,t}^{\sigma} = n_{j,t} \frac{\sigma_{j,t}^2}{2\mu_t^2}, \qquad \mathcal{C}_{j,t}^{\mu} = n_{j,t} \frac{\left(\mu_{j,t} - \mu_t\right)^2}{2\mu_t^2},$$

and $n_{j,t} = N_{j,t}/N_t$ denotes the population share, while $\sigma_{j,t}^2$, and $\mu_{j,t}$ are the variance and mean of group $\mathcal{G}_{j,t}$, respectively. Note that $\mathcal{C}_{j,t}$ denotes the contribution of group $\mathcal{G}_{j,t}$ to $\mathcal{S}_t$. Each component can be further decomposed into within-group inequality (dispersion among

[9] We also present a similar subgroup decomposition method for the Theil Index, corresponding to $GE_t(1)$ among the generalized entropy family of inequality measures. See Online Appendix B.2 for detailed derivations.

[10] See also Das and Parikh (1982) for the decomposition work for the Gini and the Theil Index.

[11] See Online Appendix B.1.1 for a detailed derivation.

the group members), $\mathcal{C}^{\sigma}_{j,t}$, and between-group inequality (mean difference across groups), $\mathcal{C}^{\mu}_{j,t}$.[12]

As a simple illustration, consider the case of two groups, $R = 2$, representing the top 10% and the bottom 90% of the population. In this case, $\mathcal{S}_t$ is decomposed as follows.

$$\mathcal{S}_t = \underbrace{\mathcal{C}_{\mathrm{B90},t}}_{\text{Contribution of the bottom 90\%}} + \underbrace{\mathcal{C}_{10,t}}_{\text{Contribution of the top 10\%}}, \tag{6}$$

where

$$\mathcal{C}_{10,t} = \underbrace{0.1\frac{\sigma^2_{10,t}}{2\mu^2_t}}_{\text{Top 10\% within-group inequality}} + \underbrace{0.1\frac{(\mu_{10,t} - \mu_t)^2}{2\mu^2_t}}_{\text{Top 10\% between-group inequality}}, \tag{7}$$

and $\mathcal{C}_{\mathrm{B90},t}$ is similarly defined.

Unlike the work by Rosenbluth (1951), our decomposition in (4) and (5) clearly identifies the contribution of each group to overall inequality through the within-group (variance, $\mathcal{C}^{\sigma}_{j,t}$) effect and the between-group (mean, $\mathcal{C}^{\mu}_{j,t}$) effect, without relying on subgroup indices, $\mathcal{S}_{j,t} = \sigma^2_{j,t}/2\mu^2_{j,t}$. Note that $\mathcal{S}_{j,t}$ does not separately identify the dispersion effect from the mean effect because it utilizes both the first and the second moments for each group.

To illustrate this, suppose that the mean income of the top 10% ($\mu_{10,t}$), grows twice as fast as μ_t over time. If the income dispersion within the top 10%, $\sigma^2_{10,t}$, grows three times faster than μ^2_t, then the contribution of the top 10% to overall inequality, $\mathcal{C}_{10,t}$, increases over time. However, if the income dispersion within the top 10%, $\sigma^2_{10,t}$, decreases over time even though $\mu_{10,t}$ increases faster than μ_t, then $\mathcal{C}^{\sigma}_{10,t}$ decreases, leading to a possible decline in the contribution of the top 10% to overall inequality. Hence the four-way decomposition in (6) and (7), $(\mathcal{C}^{\sigma}_{10,t}, \mathcal{C}^{\sigma}_{B90,t}, \mathcal{C}^{\mu}_{10,t}, \mathcal{C}^{\mu}_{B90,t})$, provides a useful tool for identifying the main drivers of inequality dynamics over time.

We also introduce the share of inequality (SI, $\gamma_{j,t}$), as the *normalized* contribution of each group $\mathcal{G}_{j,t}$ to $\mathcal{S}_t$ as follows. By dividing both sides of (4) by $\mathcal{S}_t$ in (2), we obtain:

$$1 = \sum_{j=1}^{R} \gamma_{j,t}, \ \ j = 1, ..., R, \tag{8}$$

where

$$\gamma_{j,t} = \gamma^{\sigma}_{j,t} + \gamma^{\mu}_{j,t}, \quad \gamma^{\sigma}_{j,t} = n_{j,t}\frac{\sigma^2_{j,t}}{\sigma^2_t}, \quad \gamma^{\mu}_{j,t} = n_{j,t}\frac{(\mu_{j,t} - \mu_t)^2}{\sigma^2_t}$$

[12]See Online Appendix B.1.2 for the detailed derivations.

$\gamma_{j,t} = \mathcal{C}_{j,t}/\mathcal{S}_t$ represents the normalized share (summing to 100%) of inequality contributed by $\mathcal{G}_{j,t}$ to $\mathcal{S}_t$, while $\gamma^{\sigma}_{j,t}$ and $\gamma^{\mu}_{j,t}$ represent normalized within-group and between-group inequality for $\mathcal{G}_{j,t}$, respectively, relative to the overall variance, σ^2_t.

2.2.2 Subgroup Decomposition of Alternative Measures of Inequality

Our main empirical findings are based on the subgroup decomposition using the SCV, although other decomposition approaches are also feasible. In what follows, we compare these alternative methods with ours and highlight some of their limitations.

Top-Decile Income Share By construction, the top-income share measures $\mathcal{Z}_{j,t}$ can be used to draw statistical inferences about between-group inequality, but they do not permit a direct decomposition of within-group inequality. Specifically, these measures capture income concentration across selected population groups but do not account for income dispersion within those groups. Note that $\mathcal{C}^{\mu}_{j,t}$ in (5) can be written as

$$\mathcal{C}^{\mu}_{j,t} = \frac{1}{2n_{j,t}} \left(\mathcal{Z}_{j,t} - n_{j,t}\right)^2 \propto \mathcal{Z}_{j,t}$$

Thus, the between-group component associated with group $\mathcal{G}_j$ is proportional to $\mathcal{Z}_{j,t}$. Consequently, $\mathcal{Z}_{j,t}$ is informative about between-group inequality but not within-group inequality unless $\mathcal{C}^{\mu}_{j,t}$ is proportional to $\mathcal{C}^{\sigma}_{j,t}$.

However, $\mathcal{Z}_{j,t}$ can still be used to draw statistical inferences about the dispersion of the income distribution. To see this, define $\mathcal{V}_{p\backslash q,t} = \mathcal{Z}_{p,t} - \mathcal{Z}_{q,t}$, where $p > q$. Using (1), we obtain the following.

$$\mathcal{V}_{p\backslash q,t} = (P - Q)\frac{\mu_{(p\backslash q),t}}{\mu_t},$$

where

$$\mu_{(j\backslash q),t} = \frac{1}{(P - Q)N_t} \sum_{i=(N_t - N_{j,t})+1}^{N_t - N_{q,t}} Y_{i,t}$$

Since $\mathcal{V}_{p\backslash q,t}$ is similar to the quantile difference, this quantity may access to within-group inequality; A decline in $\mathcal{V}_{p\backslash q,t} = \mathcal{Z}_{p,t} - \mathcal{Z}_{q,t}$ may indicate increasing within-group inequality, as it implies that the income share of the top q% rises relative to that of the top p%. It should be noted, however, that this measure does not provide quantitative information on the extent to which such within-group inequality contributes to overall income dispersion, as our decomposition framework does.

GINI Index The Gini coefficient is based on pairwise absolute income differences:

$$G_t = \frac{\sum_{i=1}^{N_t} \sum_{j=1}^{N_t} |Y_{i,t} - Y_{j,t}|}{2N_t^2 \mu_t} \tag{9}$$

As pointed out by Das and Parikh (1982), decompositions of the Gini coefficient (G_t) cannot generally be regarded as proper statistical decompositions because the Gini coefficient is not additive. In particular, the absolute-value terms complicate subgroup decomposition because pairwise income differences incorporate both within-group and between-group differences.

An additional complication arises when income takes negative values. Although (9) can still be calculated when $Y_{s,t} < 0$ for some $s \in 1, ..., N$ provided that the mean income μ_t is positive, the resulting statistic does not necessarily retain all of the standard properties and interpretations of the Gini coefficient as an inequality measure. This issue is relevant for our analysis because the microdata we use contain a non-negligible number of observations with negative income, as is also the case with the Current Population Survey (CPS) data. It is not clear how negative incomes should be treated in applying the Gini coefficient and, in particular, how they should be incorporated into a meaningful subgroup decomposition of inequality.

Bhattacharya and Mahalanobis (1967) derive a between-group Gini coefficient (G_t^B) for R groups and obtain the within-group component (G_t^W) as the residual from subtracting the between-group component from the overall Gini coefficient. Specifically,

$$G_t^B = \frac{\sum_{i=1}^{R} n_{i,t} \sum_{j=1}^{R} n_{j,t} |\mu_{i,t} - \mu_{j,t}|}{2\mu_t},$$

and

$$G_t^W = G_t - G_t^B.$$

Nevertheless, as pointed out by Das and Parikh (1982), this residual component cannot generally be interpreted as a genuine within-group component because the Gini coefficient is not additively decomposable into independent within-group and between-group components.

Theil Index Compared with the SCV, the Theil index places less weight on dispersion in the upper tail of the income distribution, which is a desirable feature for our analysis. However, the Theil index has some disadvantages for assessing the contributions of between-and within-group inequality to overall inequality, as we show below.

Cowell (1980) shows that the Theil index, $\mathcal{T}_t = \frac{1}{N_t}\sum_{i=1}^{N_t}\left[\frac{Y_{i,t}}{\mu_t}\ln\left(\frac{Y_{i,t}}{\mu_t}\right)\right]$, can be decomposed as follows. Assuming there are R groups as before,

$$\mathcal{T}_t = \sum_{j=1}^{R} n_{j,t}\lambda_{j,t}\left[\mathcal{T}_{j,t} + \ln\lambda_{j,t}\right], \tag{10}$$

where $\mathcal{T}_{j,t} = \frac{1}{N_{j,t}}\sum_{i\in\mathcal{G}_j}\left[\frac{Y_{i,t}}{\mu_{j,t}}\ln\left(\frac{Y_{i,t}}{\mu_{j,t}}\right)\right]$ is the local Theil index for $\mathcal{G}_{j,t}$, and $\lambda_{j,t} = \frac{\mu_{j,t}}{\mu_t}$ measures the gross deviation of the group mean relative to the overall mean. See Online Appendix B.2 for detailed derivations.

One may interpret $\mathcal{T}_{j,t}$ as the within-group inequality component for group $\mathcal{G}_j$, while $\ln\lambda_{j,t}$ captures the between-group component. However, it is not clear how between- and within-group inequality can be distinguished in the index, as both components are combined rather than separately identified. In contrast, our decompositions in (4) and (8) explicitly incorporate the first and second moments, providing clear quantitative assessments of the contributions of within-group and between-group inequality to overall inequality dynamics.

More seriously, (10) is not ideal for assessing group-wise contributions to overall inequality because the between-group component, $\ln\lambda_{j,t}$, is *negative* whenever the average income of group $\mathcal{G}_j$ ($\mu_{j,t}$) falls below the overall average income (μ_t). This makes the resulting group-wise contributions difficult to interpret. Thus, although the Theil index has been widely used in the literature, it is not ideally suited to our main objective.

Alternatively, the following decomposition can be derived.

$$\mathcal{T}_t = \sum_{j=1}^{R} n_{j,t}\mathcal{T}^*_{j,t},$$

where $\mathcal{T}^*_{j,t} = \frac{1}{N_{j,t}}\sum_{i\in\mathcal{G}_j}\left[\frac{Y_{i,t}}{\mu_t}\ln\left(\frac{Y_{i,t}}{\mu_t}\right)\right]$ denotes the local *quasi*-Theil index, in which individual incomes are expressed relative to the overall mean μ_t, rather than the group-specific mean $\mu_{j,t}$. Detailed derivations are provided in Online Appendix B. Although this formulation permits a group-wise decomposition of the overall Theil index, it does not allow the decomposition to be further separated into within-group and between-group inequality components.

2.3 Adjusting for Population-Weighted Observations

As will be explained later, we use microdata files consisting of synthetic observations for adult individuals, designed to match the income distributions observed in highly confidential tax and survey data. These micro-files replicate actual income distributions by assigning appropriate population weights to each synthetic observation. As we show in Online Appendix B.3, all results carry over with minor modification.

Denote $W_{i,t}$ the weighting parameter of agent i among $\tilde{N}_t$ synthetic agents at time t. The sum of these weights corresponds to the actual population N_t at time t, that is, $N_t = \sum_{i=1}^{\tilde{N}_t} W_{i,t}$. The relative weight $\omega_{i,t}$ is defined as follows.

$$\omega_{i,t} = \frac{W_{i,t}}{\sum_{i=1}^{\tilde{N}_t} W_{i,t}}, \tag{11}$$

where the cumulative sum of the relative weights equals one, $\sum_{i=1}^{\tilde{N}_t} \omega_{i,t} = 1$. It is straightforward to show that the weighted mean ($\tilde{\mu}_t$) and the weighted variance ($\tilde{\sigma}_t^2$) are as follows.

$$\tilde{\mu}_t = \sum_{i=1}^{\tilde{N}_t} \omega_{i,t} Y_{i,t}, \;\; \tilde{\sigma}_t^2 = \sum_{i=1}^{\tilde{N}_t} \omega_{i,t} \left(Y_{i,t} - \tilde{\mu}_t\right)^2 \tag{12}$$

The group moments $\tilde{\sigma}_{j,t}^2$ and $\tilde{\mu}_{j,t}$ of group $\mathcal{G}_{j,t}$ are similarly defined.

Note that all previous results are preserved by replacing all averages and variances with these weighted moments, while substituting $\tau_{j,t} = \sum_{i \in \mathcal{G}_{j,t}} W_{i.t} / \sum_{i=1}^{\tilde{N}_t} W_{i.t}$ for the population weights $n_{j,t}$.[13] Note that $\tau_{j,t}$ coincides with $n_{j,t}$ only if population weights are uniformly distributed, which is generally not the case. In what follows, we omit the tilde notation ($\tilde{x}$), as all data used in this manuscript consist of synthetic observations.

3 U.S. Income Inequality Dynamics

3.1 Data Descriptions

3.1.1 Data Sources and Key Features

We employ the distributional national accounts (DINA) micro-file data obtained from Gabriel Zucman's webpage for Piketty et al. (2018). Among their broad range of income data, we

[13] See Online Appendix B.3 for detailed derivations.

primarily use the following five income and wealth series from their updated dataset in 2020: Fiscal Income (fiinc), Personal Pre-Tax Income (ptinc), Pre-Tax National Income (peinc), Post-Tax National Income (poinc), and Net Personal Wealth (hweal). In what follows, we also use Personal Factor Income (fainc) and its two subcomponents, Personal Factor Labor Income (flinc) and Personal Factor Capital Income (fkind), to conduct an income source-based inequality decomposition analysis.[14]

Observations are annual frequency and span from 1962 through 2019, with the exception of 1963 and 1965, when individual income tax return data were not publicly available. Income and wealth variables are measured in nominal terms. Following Piketty et al. (2018), we employed the national income deflator (NID, NIPA Table 1.7.4), obtained from the Federal Reserve Economic Data (FRED, A027RG3A086NBEA), to convert the data into real 2017 dollars when necessary. Tables A1 through A5 in Online Appendix D report detailed descriptive statistics, including average real income and wealth, the inequality index (SCV) $\mathcal{S}_t$, and various $\mathcal{Z}_{j,t}$ series from the bottom 90% to the top 0.1%.

The micro-files consist of synthetic observations for adult individuals that replicate the actual distributions of income and wealth from sources such as Internal Revenue Service (IRS) tax records, the Current Population Survey (CPS), and the Survey of Consumer Finances (SCF). These micro-files are weighted using population weights (dweight) so that their weighted aggregates align with national accounts totals, thereby preserving the distributions observed in these highly confidential data sources.[15]

We note that the DINA micro-file data include a small number of extremely large synthetic records created to match total income reported to the IRS for the period 1996–2008. This adjustment is necessary because the Statistics of Income (SOI) division of the IRS excluded some extreme records from the Individual Public-Use Microdata Files (PUF), leading to substantial discrepancies at the very top of the income distribution during that period.[16] These outliers were removed to ensure consistent estimation of the SCV using the projection depth approach (For related discussions, see, among others, Lee and Sul 2022; Zuo 2003; Zuo and Serfling 2000) prior to computing sample moments.[17] See Online Appendix C for a

[14]See Zucman's data webpage (https://gabriel-zucman.eu/usdina/) for detailed information. The abbreviations are from their codebook.

[15]Alternatively, tax unit weights (dweghttaxu) may be used, consistent with the work by Piketty and Saez (2003).

[16]For more details, see the data appendix of Piketty et al. (2018).

[17]We conducted robustness checks using a wide range of projection-depth threshold values, from 0.0001 to 0.01. The results are qualitatively similar and are available upon request. Our baseline

detailed explanation of this procedure.

3.1.2 A Brief Overview of the Data

Figure 1 reports two measures of inequality, $\mathcal{S}_t$ and $\mathcal{Z}_{10,t}$, both of which exhibit similar dynamics across all five series. Inequality, as measured by $\mathcal{S}_t$, appears to have slightly improved until the late 1970s, followed by a prolonged period of rapid worsening in economic distributions, with the upward trend slowing after 2000.[18] $\mathcal{Z}_{10,t}$ also exhibits an overall U-shaped dynamics across all series, but does not show a clear slowdown in the trend shown in $\mathcal{S}_t$.

As shown in Figure 1, inequality based on fiscal income (fiinc) has been more pronounced since the late 1970s than other measures of income inequality, underscoring the importance of income components that are not captured in tax returns. Inequality measured by post-tax national income (poinc) is lower than that measured by pre-tax income concepts (ptinc and peinc), confirming the redistributive effects of taxation, although debate remains regarding the extent of these effects. Consistent with the findings of Saez and Zucman (2016), wealth inequality in the U.S. is more severe than income inequality and has risen rapidly since the 1980s.

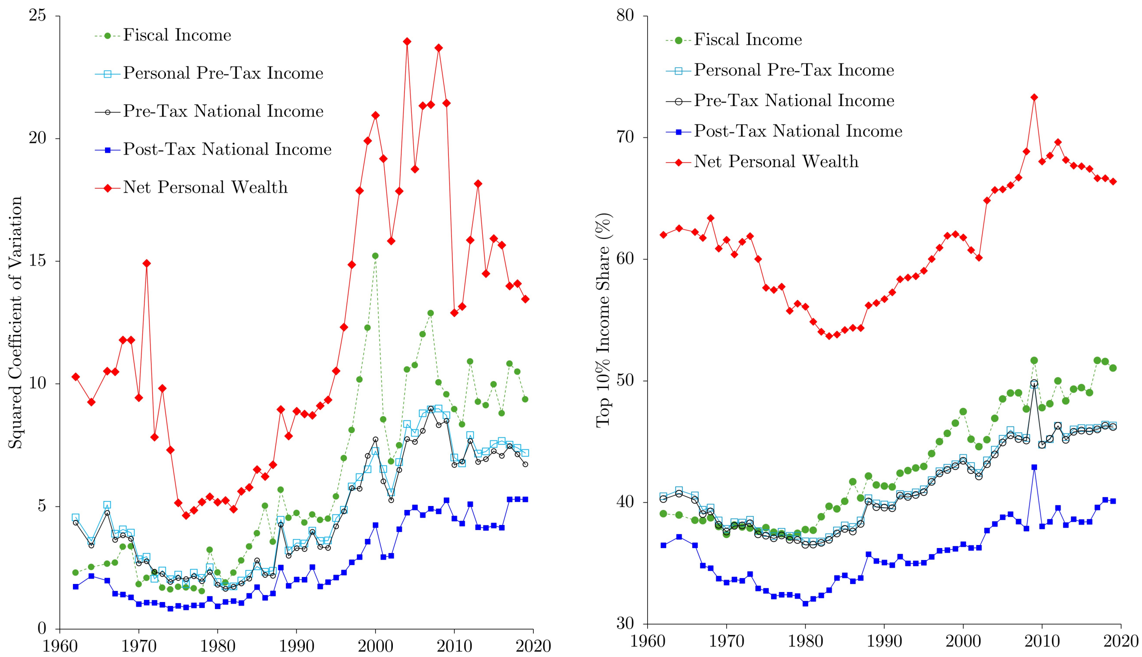
We note that worsening income and wealth inequality in the U.S. is primarily a post-1980 phenomenon, regardless of the income or wealth series considered. To illustrate this, Figure 2 presents normalized pre-and post-tax real national income series, deflated by NID, using 1980 as the base year. Although real incomes have risen across all groups since 1962, the bottom 50% income group, $\mathcal{G}_{B50,t}$, exhibits the fastest income growth prior to 1980 compared to higher-income groups such as $\mathcal{G}_{10,t}$ and $\mathcal{G}_{1,t}$. However, since 1980, the bottom 50% has seen the slowest income growth. In contrast, the income growth rates of high-income groups have accelerated significantly since 1980, following a period of relatively modest growth. These patterns are further supported by the descriptive statistics as follows.

We contrast $\mathcal{S}_t$ in (2) with $\mathcal{Z}_t$ in (1) using descriptive statistics for the pre-tax national income dynamics of two groups: the bottom 90% ($\mathcal{G}_{B90,t}$) and the top 10% ($\mathcal{G}_{10,t}$). As shown in Table 1, the average income ($\mu_{j,t}$) growth rate for $\mathcal{G}_{B90,t}$ during the pre-1980 period was 231%, surpassing the 187% growth rate for $\mathcal{G}_{10,t}$. Income dispersion, as measured by variances $\sigma^2_{j,t}$ exhibited similar patterns. Both inequality measures, $\mathcal{S}_t$ and $\mathcal{Z}_{10,t}$, decreased during this period, implying an improvement of income inequality.

results use a projection-depth threshold of 0.001.

[18] Auten and Splinter (2024) also document this slow-down during the 2000-2019 period.

Figure 1: Measures of U.S. Income Inequality



(a) Squared Coefficient of Variation

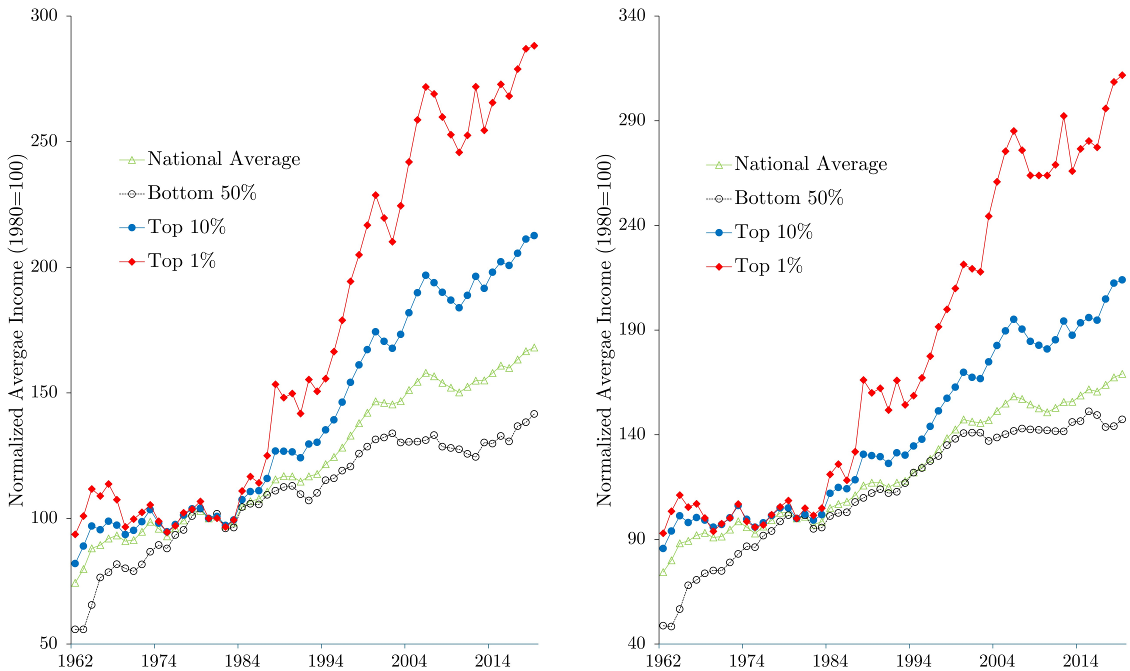
(b) Top 10% Income/Wealth Share

Note: We report half of the squared coefficient of variation (SCV, $\mathcal{S}t$) in panel (a) and the dynamics of the top 10% income and wealth share ($\mathcal{Z}10, t$) in the U.S. in panel (b). We analyze five income and wealth series from 1962 to 2019: Fiscal Income (fiinc), Personal Pre-Tax Income (ptinc), Pre-Tax National Income (peinc), Post-Tax National Income (poinc), and Net Personal Wealth (hweal). These series are obtained from Gabriel Zucman's website, which provides the updated dataset of Piketty et al. (2018) released in 2020. See their data appendix for detailed variable descriptions. Net Personal Wealth exhibits the highest level of economic inequality, consistent with the findings of Saez and Zucman (2016), whereas Post-Tax National Income displays the lowest level of income inequality, reflecting the redistributive role of government taxation policies.

However, this trend reversed during the 1980-1999 period, where the growth rate of $\mu_{10,t}$ (212%) exceeded that of $\mu_{B90,t}$ (138%). The percent change in $\sigma^2_{10,t}$ during this time period was shockingly high at 3,361%, compared with 481% for $\mathcal{G}_{B90,t}$. Both $\mathcal{S}_t$ and $\mathcal{Z}_{10,t}$ increased, signaling a worsening of income distribution in the U.S. during this period.

We note mixed results during the post-2000 period. While $\mathcal{Z}_{10,t}$ shows a slight increase of 2.78%p, $\mathcal{S}_t$ indicates a mild improvement in inequality. This is because the increase in $\sigma^2_{10,t}$ was smaller than that in $\sigma^2_{B90,t}$, although the increase in $\mu^2_{10,t}$ exceeded that in $\mu^2_{B90,t}$. These contrasting patterns demonstrate that the top-decile income share largely reflects changes in the first moments of the income distribution, whereas $\mathcal{S}_t$ captures both first- and

Figure 2: Normalized Average Income Dynamics



(a) Pre-Tax National Income (b) Post-Tax National Income

Note: We report average real incomes of the bottom 50%, top 10%, and top 1% in addition to the national average income, all normalized based on the values in 1980, for the real Pre-Tax National Income (peinc) in panel (a) and the real Post-Tax National Income (poinc) data in panel (b). Following Piketty et al. (2018), we deflated the nominal income data by the national income deflator (FRED series ID, A027RG3A086NBEA) to obtain real incomes.

second-moment dynamics.

In the following section, we further investigate the driving forces behind U.S. inequality dynamics through decomposition of $\mathcal{S}_t$ by top 10% and bottom 90%, exploring the underlying cause of U.S. income inequality.

3.2 Decoding the Driver of Worsening U.S. Inequality

In this section, we assess the contribution of each group $\mathcal{G}_{j,t}$ to $\mathcal{S}_t$ using (6), with a primary focus on the case of two groups ($R = 2$), the top 10% and the bottom 90%. We present the results based on Pre-Tax National Income (peinc) as the benchmark, since analyses utilizing other income and wealth series yield qualitatively similar findings.[19]

[19] See Tables A6 (Fiscal Income, fiinc) through A10 (Net Personal Wealth, hweal) in Online Appendix D for detailed results.

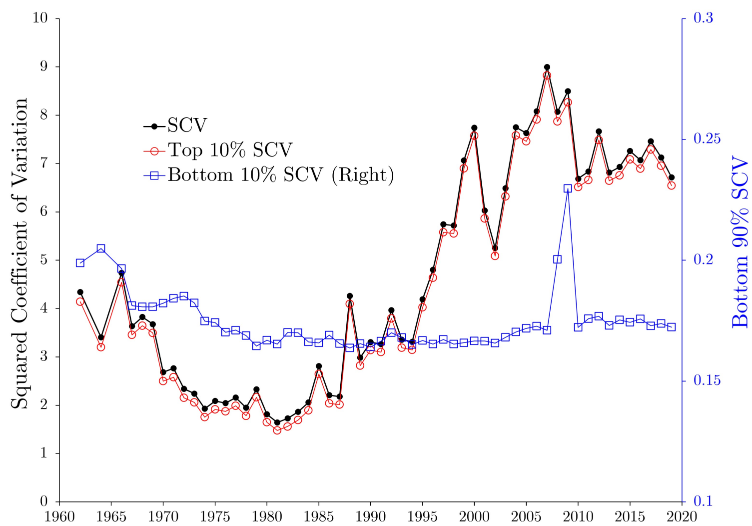
Table 1: Overview of Inequality Dynamics

	Average$\times 10^{-3}$			*Variance*$\times 10^{-6}$			*Inequality*	
	μ_t	$\mu_{B90,t}$	$\mu_{10,t}$	σ^2_t	$\sigma^2_{B90,t}$	$\sigma^2_{10,t}$	$\mathcal{S}_t$	$\mathcal{Z}_{10,t}$
1962	5	3	19	191	7	1622	4.34	40.28
1979	15	10	54	1,008	60	7,797	2.33	36.91
$\text{Avg}_{1962-79}$	9	6	33	421	25	3,260	2.88	38.28
$\text{Chg}_{1962-79}$	213%	231%	187%	427%	726%	381%	-2.01	-3.37
1980	16	11	57	878	69	6,271	1.81	36.52
1999	41	26	178	24,128	400	217,023	7.07	42.98
$\text{Avg}_{1980-99}$	27	18	109	6,675	204	56,587	3.41	39.44
$\text{Chg}_{1980-99}$	165%	138%	212%	2,647%	481%	3,361%	5.25	6.46
2000	44	27	189	29,506	443	267,377	7.74	43.42
2019	73	44	337	71,487	1,177	626,703	6.72	46.20
$\text{Avg}_{2000-19}$	56	34	254	47,123	847	418,418	7.27	45.17
$\text{Chg}_{2000-19}$	67%	59%	78%	142%	166%	134%	-1.03	2.78

Note: The statistics are based on Pre-Tax National Income (peinc) from Gabriel Zucman's website for Piketty et al. (2018), updated in 2020. μ_t is the average income of the entire population. $\mu_{B90,t}$ and $\mu_{10,t}$ denote the average income of the bottom 90% and the top 10% groups, respectively. σ^2_t, $\sigma^2_{B90,t}$, and $\sigma^2_{10,t}$ are similarly defined. $\mathcal{S}_t$ is the half of the squared coefficient of variation (SCV). $\mathcal{Z}_{10,t}$ denotes the top 10% income share. 'Avg' refers to the average over the period, while 'Chg' indicates the percentage change for the period (or %p change for inequality measures) for each sub-period.

We decompose the squared coefficient of variation, $\mathcal{S}_t$, into two components: $\mathcal{C}_{B90,t}$ and $\mathcal{C}_{10,t}$, as previously defined. Figure 3 presents this two-way decomposition, based on pre-tax national income, highlighting the dominant contribution of $\mathcal{C}_{10,t}$ to $\mathcal{S}_t$. The two series exhibit virtually identical dynamics due to the negligibly weak contribution from the bottom 90% ($\mathcal{C}_{B90,t}$). Putting it differently, U.S. income inequality from 1962 to 2019 is primarily driven by changes in income distribution within the top decile. We also observe that $\mathcal{C}_{10,t}$ increased from the late 1970s to 2000, while $\mathcal{C}_{B90,t}$ remained stable after experiencing a similar decline prior to the late 1970s.

Figure 3: Two-Way Decomposition of Inequality: Pre-Tax National Income

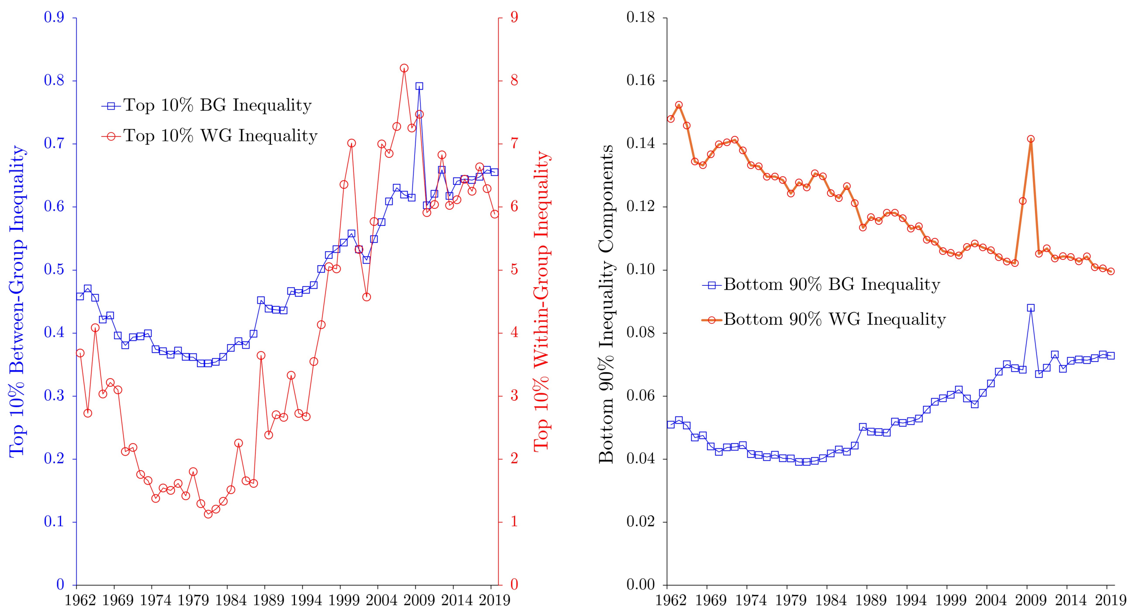


Note: We consider a two-income group decomposition: Top 10% versus Bottom 90%, based on Pre-Tax National Income (peinc) as the benchmark case. From (5), $\mathcal{S}_t$ can be decomposed as the following two components, $\mathcal{S}_t = \mathcal{C}_{B90,t} + \mathcal{C}_{10,t}$ where $\mathcal{C}_{10,t} = 0.1 \times [\sigma^2_{10,t} + (\mu_{10,t} - \mu_t)^2]/2\mu_t^2$ and $\mathcal{C}_{B90,t} = 0.9 \times [\sigma^2_{B90,t} + (\mu_{B90,t} - \mu_t)^2]/2\mu_t^2$. The high peak observed in 2008 is due to a significant number of income earners who reported negative income during that year.

We further decompose $\mathcal{C}_{10,t}$ and $\mathcal{C}_{B90,t}$ into two components each, based on (7): the within-group dispersion (variance) effect and the between-group mean deviation effect. This allows us to investigate the driving forces behind the dynamics of U.S. economic inequality by performing a four-way decomposition of $\mathcal{S}_t$. The results based on pre-tax national income are reported in Figure 4.

We note that the dominant effect of $\mathcal{C}_{10,t}$ is primarily driven by $\mathcal{C}^{\sigma}_{10,t}$, which shows a rapidly rising trend from the late 1970s until stabilizing in the late 2000s. Income inequality within the bottom 90% explains only a negligible portion of U.S. income inequality dynamics. The between-group mean deviation effect, $\mathcal{C}^{\mu}_{10,t}$, which is closely related to the top 10% income share ($\mathcal{Z}_{10,t}$) provides more explanatory power than that of the bottom 90%, although its effect is still overshadowed by $\mathcal{C}^{\sigma}_{10,t}$, especially during the post-1980 period. In other words, the rising relative variance within the top 10% income earners ($\mathcal{C}^{\sigma}_{10,t}$) is identified as the dominant factor behind the worsening U.S. economic inequality.

Figure 4: Four-Way Decomposition of Inequality (Pre-Tax National Income)



(a) Top 10% Contribution

(b) Bottom 90% Contribution

Note: We consider a two-income group decomposition: Top 10% versus Bottom 90%, based on Pre-Tax National Income (peinc) as the benchmark case. From (5), $\mathcal{S}_t$ can be decomposed into the following four parts. $\mathcal{S}_t = \mathcal{C}^{\sigma}_{B90,t} + \mathcal{C}^{\mu}_{B90,t} + \mathcal{C}^{\sigma}_{10,t} + \mathcal{C}^{\mu}_{10,t}$, where $\mathcal{C}^{\sigma}_{B90,t} = 0.9 \times \sigma^2_{B90,t}/2\mu_t^2$, $\mathcal{C}^{\mu}_{B90,t} = 0.9 \times (\mu_{B90,t} - \mu_t)^2/2\mu_t^2$, $\mathcal{C}^{\sigma}_{10,t} = 0.1 \times \sigma^2_{10,t}/2\mu_t^2$, and $\mathcal{C}^{\mu}_{10,t} = 0.1 \times (\mu_{10,t} - \mu_t)^2/2\mu_t^2$.

Note that Figures 3 and 4 present group-level decomposition of $\mathcal{S}_t$ without any scale adjustments. Our normalized decomposition approach in (8) offers a more intuitive framework for quantifying group-level contributions to overall economic inequality. Table 2 reports these normalized inequality share estimates, $\gamma_{j,t}$, for each component.

As shown in the table, the top 10% group's contribution ($\gamma_{10,t}$) to $\mathcal{S}_t$ continues to dominate that of $\gamma_{B90,t}$, consistently accounting for more than 90% of inequality dynamics in pre-tax national income throughout the sample period. Among the top decile income earners, the within-group inequality share ($\gamma^{\sigma}_{10,t}$) substantially exceeds the between-group inequality

Table 2: Shares of Contributions to Inequality: Pre-Tax National Income

		Shares of Inequality		*Bottom 90%*		*Top 10%*	
	$\mathcal{S}_t$	$\gamma_{B90,t}$	$\gamma_{10,t}$	$\gamma^{\sigma}_{B90,t}$	$\gamma^{\mu}_{B90,t}$	$\gamma^{\sigma}_{10,t}$	$\gamma^{\mu}_{10,t}$
1962	4.341	0.046	0.954	0.034	0.012	0.848	0.106
1979	2.328	0.071	0.929	0.053	0.017	0.774	0.155
$\text{Avg}_{1962-79}$	2.884	0.068	0.932	0.051	0.016	0.784	0.148
1980	1.813	0.092	0.908	0.070	0.022	0.714	0.194
1999	7.067	0.023	0.976	0.015	0.009	0.899	0.077
$\text{Avg}_{1980-99}$	3.414	0.058	0.941	0.042	0.016	0.798	0.144
2000	7.742	0.022	0.978	0.014	0.008	0.906	0.072
2019	6.716	0.026	0.974	0.015	0.011	0.877	0.098
$\text{Avg}_{2000-19}$	7.268	0.026	0.974	0.016	0.010	0.888	0.086

Note: The statistics are based on Pre-Tax National Income (peinc). $\gamma_{j,t}$ represents the share of inequality for the j^{th} sub-group $\mathcal{G}_{j,t}$, which assesses the group's contribution to the overall inequality measure of the economy. $\gamma_{j,t}$ is a normalized measure, where $\gamma_{B90,t} = 1 - \gamma_{10,t}$. Also, $\gamma_{j,t}$ is further decomposed into $\gamma^{\sigma}_{j,t}$ and $\gamma^{\mu}_{j,t}$, denoting within-group inequality and between-group inequality for $\mathcal{G}_{j,t}$, respectively. $\gamma_{j,t} = \gamma^{\sigma}_{j,t} + \gamma^{\mu}_{j,t}$, $\gamma^{\sigma}_{j,t} = n_{j,t}\frac{\sigma^2_{j,t}}{\sigma^2_t}$, $\gamma^{\mu}_{j,t} = n_{j,t}\frac{(\mu_{j,t}-\mu_t)^2}{\sigma^2_t}$. 'Avg' refers to the average over the period for each sub-period.

share ($\gamma^{\mu}_{10,t}$). In other words, the rapidly widening dispersion within the top decile income distribution plays a significant role in driving the worsening income inequality in the U.S.

In addition to the results based on pre-tax national income shown in Table 2, we provide additional decomposition analysis focusing on the top 10% across the other income and wealth series considered in this paper in Table 3, which confirms that the dominance of within-group inequality among the top 10% appears in all income and wealth series. The share of inequality, $\gamma^{\sigma}_{10,t}$, tends to be the highest for net personal wealth, while the share estimates for post-tax national income are the lowest. The results for within group inequality in personal pre-tax income are very similar to those for pre-tax national income, reported in Table 2. Over the past two decades, the average within-group inequality share estimates range from 0.82 to 0.89, with between-group inequality accounting for less than 10%.

Given the dominant influence of the top 10% income and wealth distribution on U.S. economic inequality, we further explore the inequality shares within this group, comparing within-group and between-group inequality share estimates from the top 10% to the top 0.1%, as shown in Table 4.

As the income percentile increases from the top 10% to the top 0.1%, the number of income earners decreases by a factor of 100. Consequently, income variations naturally

Table 3: Shares of Contributions to Inequality with Various Incomes

	Within Group Inequality: $\gamma^{\sigma}_{10,t}$				*Between Group Inequality*: $\gamma^{\mu}_{10,t}$			
	Wealth	Fiscal	Personal	Post-Tax	Wealth	Fiscal	Personal	Post-Tax
1962	0.85	0.70	0.86	0.68	0.13	0.18	0.10	0.20
1979	0.75	0.79	0.79	0.68	0.20	0.12	0.15	0.20
$\text{Avg}_{1962-79}$	0.81	0.67	0.79	0.62	0.16	0.18	0.15	0.24
1980	0.75	0.70	0.73	0.61	0.21	0.17	0.19	0.25
1999	0.92	0.88	0.89	0.85	0.07	0.05	0.08	0.10
$\text{Avg}_{1980-99}$	0.83	0.73	0.80	0.75	0.14	0.12	0.14	0.17
2000	0.92	0.92	0.90	0.87	0.06	0.05	0.08	0.08
2019	0.86	0.80	0.89	0.81	0.12	0.09	0.09	0.09
$\text{Avg}_{2000-19}$	0.89	0.82	0.89	0.86	0.09	0.08	0.08	0.09

Note: 'Wealth' stands for Net Personal Wealth (hweal), 'Fiscal' stands for Fiscal Income (fiinc), 'Personal' stands for Personal Pre-Tax Income (ptinc), 'Post-Tax' stands for Post-Tax National Income (poinc). These data series were obtained from Gabriel Zucman's website.

Table 4: Within-Group and Between-Group Inequality: Pre-Tax National Income

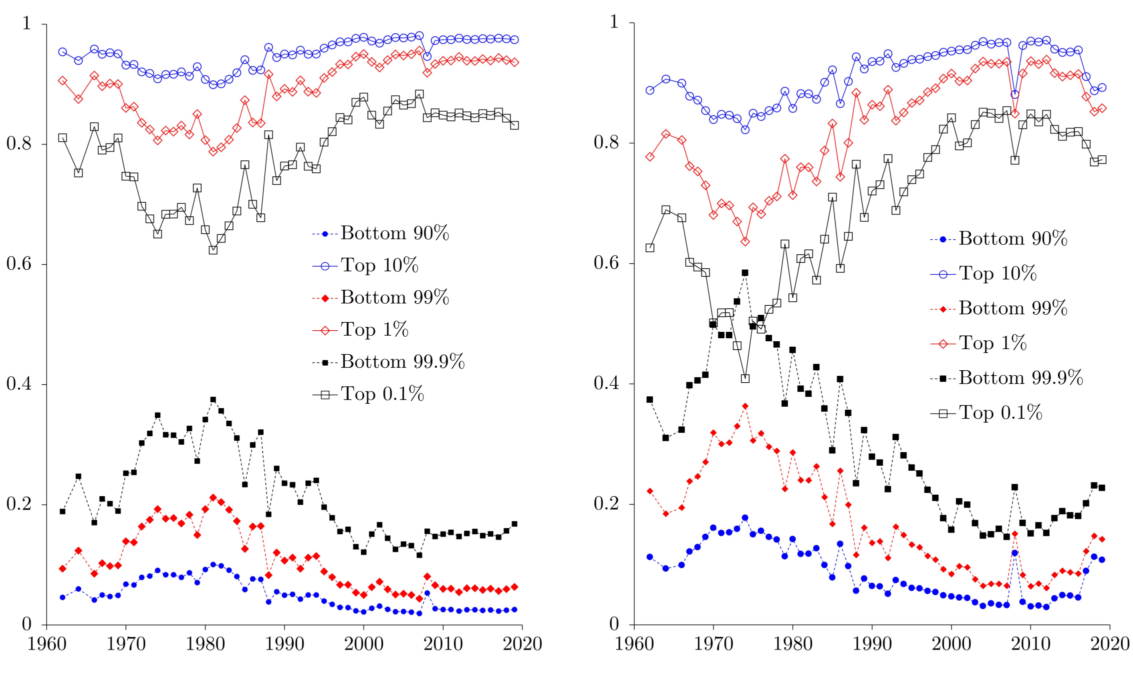
	Within-Group Inequality: $\gamma^{\sigma}_{j,t}$				*Between-Group Inequality*: $\gamma^{\mu}_{j,t}$			
	$\gamma^{\sigma}_{10,t}$	$\gamma^{\sigma}_{5,t}$	$\gamma^{\sigma}_{1,t}$	$\gamma^{\sigma}_{0.1,t}$	$\gamma^{\mu}_{10,t}$	$\gamma^{\mu}_{5,t}$	$\gamma^{\mu}_{1,t}$	$\gamma^{\mu}_{0.1,t}$
1962	0.85	0.82	0.72	0.56	0.11	0.13	0.19	0.25
1979	0.77	0.73	0.62	0.47	0.16	0.18	0.23	0.26
$\text{Avg}_{1962-79}$	0.78	0.74	0.64	0.48	0.15	0.17	0.22	0.26
1980	0.71	0.66	0.54	0.36	0.19	0.22	0.27	0.30
1999	0.90	0.87	0.78	0.56	0.08	0.10	0.17	0.31
$\text{Avg}_{1980-99}$	0.80	0.75	0.63	0.42	0.14	0.17	0.24	0.34
2000	0.91	0.88	0.79	0.57	0.07	0.10	0.16	0.31
2019	0.88	0.84	0.71	0.44	0.09	0.13	0.23	0.41
$\text{Avg}_{2000-19}$	0.89	0.85	0.74	0.49	0.09	0.12	0.20	0.37

Note: The statistics are based on Pre-Tax National Income (peinc) data from from Gabriel Zucman's website for Piketty et al. (2018) with an update in 2020. We report $\gamma^{\sigma}_{j,t}$ (within-group inequality) and $\gamma^{\mu}_{j,t}$ (between-group inequality) for top income earner groups, including the top 10%, 5%, 1%, and 0.1% groups. 'Avg' denotes the average over the period for each sub-period. The sum of $(\gamma^{\sigma}_{j,t} + \gamma^{\mu}_{j,t})$ indicates the contribution share of the j-th group to overall inequality $\mathcal{S}_t$. For example, the top 10% group contributes 97.4% to inequality from 2000 to 2019, with the top 0.1% alone explains 85.3%.

diminish, while average income within these higher percentiles rises. As a result, within-group inequality gradually declines. Nonetheless, income dispersion within the top 0.1% still accounts for approximately 50% of income inequality, with its contribution surpassing that of between-group differences, or relative mean income gaps. Therefore, the key finding from Table 2 remains valid: within-group inequality, or income dispersion among top earners, continues to play a pivotal role in driving overall inequality.

Figure 5 illustrates the dynamics of a more detailed group-wise decomposition over time. For inequality based on pre-tax national income (peinc), the top 10% share, $\gamma_{10,t}$, accounts for over 90% of the observed inequality dynamics in the U.S., while the bottom 90% contributes negligibly. Inequality based on post-tax national income (poinc) demonstrates generally weaker but qualitatively similar patterns. Strikingly, the inequality shares of the top income earners have become virtually indistinguishable since 2000. In particular, the top 0.1% share, $\gamma_{0.1,t}$, alone accounts for nearly 80% of both pre- and post-tax national income inequality.

Figure 5: Shares of Inequality: Group-Wise Decomposition



(a) Pre-Tax National Income

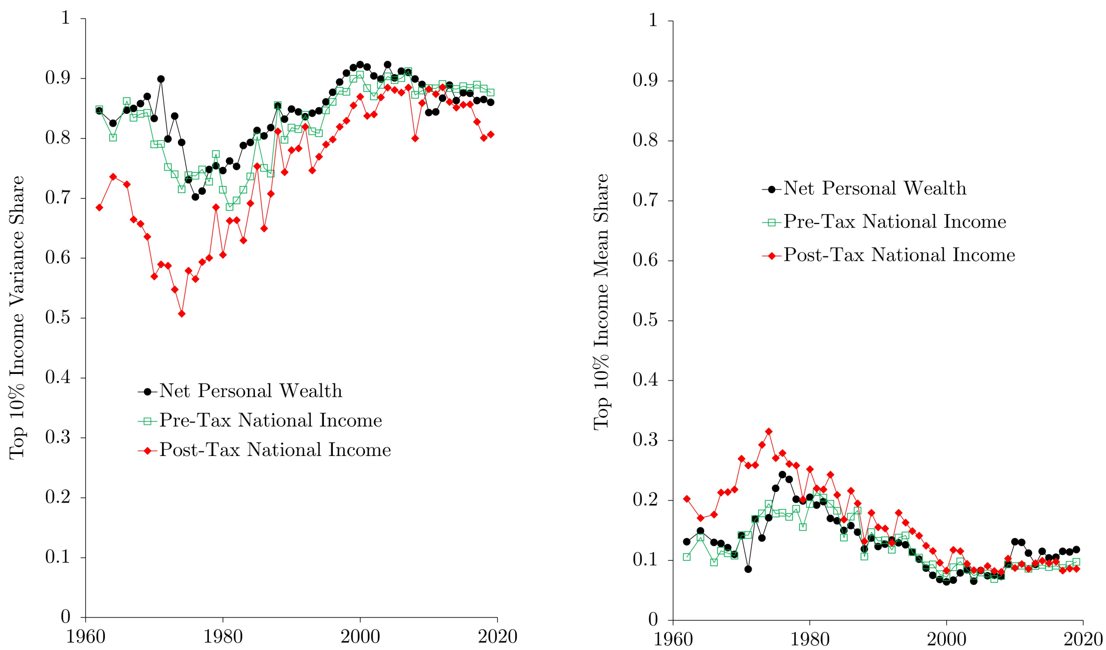
(b) Post-Tax National Income

Note: We report two-income group inequality decomposition via normalized measures: $\gamma_{B90,t}$ vs. $\gamma_{10,t}$; $\gamma_{B99,t}$ vs. $\gamma_{1,t}$; $\gamma_{B99.9,t}$ vs. $\gamma_{0.1,t}$. Panel (a) presents the results for pre-tax national inomce (peinc), while Panel (b) shows the results for post-tax national income (poinc).

Figure 6 presents estimates of within-group and between-group inequality among the top

10% income earners over time for pre-tax national income, post-tax national income, and net personal wealth. All within-group inequality measures display a pronounced upward trend beginning in the late 1970s, accompanied by corresponding declines in between-group inequality. These trends appear to stabilize around 2000, with no markedly distinct dynamics thereafter. Overall, the results suggest that rising U.S. income inequality is driven primarily by increasing within-group inequality among top earners.[20]

Figure 6: Within-Group Inequality vs. Between-Group Inequality in $\mathcal{G}_{10,t}$



(a) Within-Group Inequality (b) Between-Group Inequality

Note: We report $\gamma^{\sigma}_{10,t}$ (within-group inequality) and $\gamma^{\mu}_{10,t}$ (between-group inequality) using pre-tax and post-tax national income as well as net personal wealth. Results based on fiscal income and personal pre-tax income are qualitatively similar.

4 Decomposing the Contributions of Factor Incomes

This section implements a further decomposition analysis to reconcile our findings on the contributions of top income earners with the existing literature on the role of income sources in shaping inequality dynamics in the U.S.

[20]For more detailed estimation results on the dynamics of U.S. economic inequality, see Tables A11 (Fiscal Income, fiinc) through A15 (Net Personal Wealth, hweal) in Online Appendix D.

A substantial body of research has examined labor market factors as key drivers of inequality dynamics. In particular, numerous studies analyze how the distribution of returns to labor has evolved in response to changes in skills, tasks, and technologies, including more recent developments such as automation and robotization (see, among others, Goldin and Katz 2007, Acemoglu and Autor 2011, Autor and Dorn 2013, Caines et al. 2017, Autor 2019, Autor et al. 2020, and Acemoglu and Restrepo 2020). Fortin et al. (2021) further emphasize the role of labor market institutions such as the minimum wage and unionization. Using IPUMS-CPS data, Hoffmann et al. (2020) document key trends in U.S. income inequality since the late 1970s, distinguishing between labor and non-labor income sources.[21]

On the other hand, Saez and Zucman (2016) emphasize the role of continued wealth accumulation, while Piketty et al. (2018) argue that non-labor income has played an increasingly important role in driving inequality, particularly among top earners.

This section first reports the labor income shares for various income percentile groups, based on Personal Factor Income (fainc) and its sub-components, Personal Factor Labor Income (flinc) and Personal Factor Capital Income (fkinc), using the 2020 updated dataset from Piketty et al. (2018).[22] The labor share for each income group is calculated as the ratio of average labor income to average total income, where total income is defined as the sum of labor and capital incomes.

Figure 7 confirms the well-documented trend of a modest decline in the overall labor income share, which fell from 76.4% in 1970 to 72.1% in 2019.[23,24] It should be noted, however, that the labor income shares of top income percentile groups followed markedly different trajectories, rising rapidly from the early 1960s to the early 2000s before stabilizing

[21] More recently, He and Jiang (2023) highlighted the importance of returns to education by decomposing inequality in CPS data across five characteristics: sex, race, educational attainment, occupation, and industry of employment.

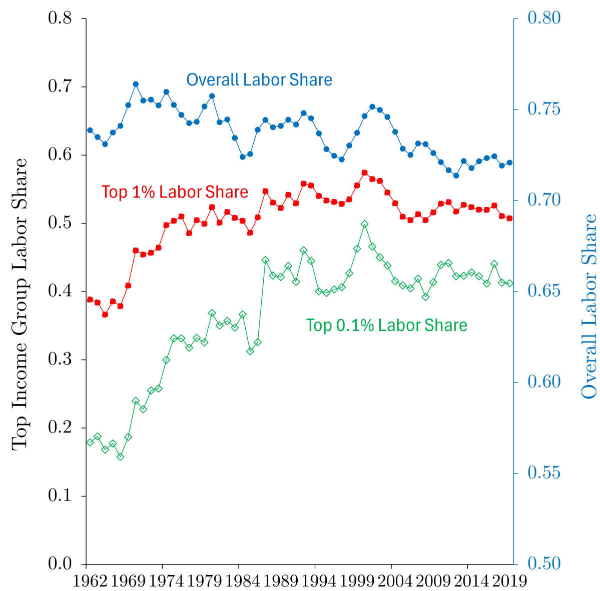
[22] Alternatively, one may employ Personal Pre-Tax Income (ptinc) and its corresponding labor and capital components, plinc and pkinc, respectively, with ptinc = plinc + pkinc. We obtained similar results that are available upon request. Our main findings are based on factor incomes to emphasize income dynamics directly tied to market returns. Personal Factor Income refers to pre-tax, market-based earnings from labor and capital, excluding government transfers and pension benefits. In contrast, Personal Pre-Tax Income encompasses all pre-tax personal income, including pensions, Social Security payments, and certain non-cash transfers.

[23] Smith et al. (2022) show that this decline reflects tax-induced reporting behavior, as S-corporation owners underreport wage compensation to reduce payroll tax liabilities.

[24] The labor share of the bottom 90% and bottom 99% income groups (not shown in the figure for clarity) closely track the overall labor income share. For example, the labor share of the bottom 99% declined from 80.3% in 1970 to 76.6% in 2019.

at around 51% and 41% for the top 1% and top 0.1% income groups, respectively. The top 10% and top 5% (not shown in the figure for clarity) exhibit similar patterns. Notably, the labor share gap between the overall population and the top 1% (0.1%) group narrowed from 35%p (56%p) in 1962 to 21%p (31%p) in 2019. These phenomena underscore the growing role of labor income in the recent rise of income inequality in the U.S.

Figure 7: Dynamics of Labor Income Shares



Note: The labor income share is calculated as the ratio of average labor income to the average total income. These statistics are based on Personal Factor Income (fainc) data from Gabriel Zucman's website for Piketty et al. (2018) with an update in 2020. Personal Factor Income is decomposed into Personal Factor Labor Income (flinc) and Personal Factor Capital Income (fkinc), such that fainc = flinc + fkinc.

These findings are consistent with rising disparity among top income earners reported in Murphy (2012), as cited by Solow (2014) in response to Mankiw (2013).[25] That is, the growing disparity among top earners may have contributed to the rise in overall income inequality, potentially driven by an increasing gap in labor income at the top.

The rising labor income shares among top earners may be partly attributable to the Tax Reform Act of 1986 (TRA86), which created strong incentives to switch from C-corporations

[25] Solow (2014), p243, "...: from 1970 to about 1995, the median realized compensation for chief executive officers in Standard and Poor's 500 broker-dealer firms was essentially indistinguishable from that of Standard and Poor's 500 banks and industrials. Rather suddenly, between 1996 to 2006, the median broker-dealer chief executive officer started to collect anywhere between 7 and 10 times the median compensation of the other two groups."

to S-corporations or other pass-through entities such as partnerships and sole proprietorships. By lowering the top individual tax rate below the top corporate tax rate, TRA86 caused transformation of retained earnings (capital income) of C-corporations into pass-through income, reported partly as labor income, on individual tax returns. This shift contributed to the apparent increase in labor income shares among high income earners. See Auten and Splinter (2024) for detailed discussion. Nevertheless, TRA86 alone does not fully explain the *persistent* increase in the labor income share among top earners.

In what follows, we further decompose overall income inequality into the respective contributions of labor and capital income to investigate how shifts in labor income shares affect the dynamics of U.S. income inequality. For illustrative purposes, we consider a simple two-group framework, consisting of the top 10% versus the bottom 90% of the distribution. From equations (6) and (7), $\mathcal{S}_t$, can be rewritten as follows.

$$\begin{aligned}\mathcal{S}_t &= \mathcal{C}^{\sigma}_{10,t} + \mathcal{C}^{\mu}_{10,t} + \mathcal{C}^{\sigma}_{B90,t} + \mathcal{C}^{\mu}_{B90,t} \\ &= \mathcal{C}^{\sigma}_{10,t} + R_t,\end{aligned} \tag{13}$$

where $\mathcal{C}^{\sigma}_{10,t} = 0.1 \times \sigma^2_{10,t}/2\mu^2_t$, $\mathcal{C}^{\mu}_{10,t} = 0.1 \times (\mu_{10,t} - \mu_t)^2/2\mu^2_t$, $\mathcal{C}^{\sigma}_{B90,t} = 0.9 \times \sigma^2_{B90,t}/2\mu^2_t$ and $\mathcal{C}^{\mu}_{B90,t} = 0.9 \times (\mu_{B90,t} - \mu_t)^2/2\mu^2_t$.

As shown in the previous section, the first fraction, $\mathcal{C}^{\sigma}_{10,t}$, accounts for more than 80% of the variation in $\mathcal{S}_t$. Note that for each percentile group, we have the following.

$$\mu_{j,t} = \mu_{j,l,t} + \mu_{j,c,t}, \text{ and } \sigma^2_{j,t} = \sigma^2_{j,l,t} + \sigma^2_{j,c,t} + 2\sigma_{j,l,c,t}, \tag{14}$$

where $\mu_{j,l,t}$ and $\mu_{j,c,t}$ denote the average labor and capital incomes, respectively, in the j^{th} income group. Similarly, $\sigma^2_{j,l,t}$ and $\sigma^2_{j,c,t}$ are the variances of labor and capital incomes, respectively, while $\sigma_{j,l,c,t}$ denotes the covariance between the two within the j^{th} income group.

Plugging (14) into (13) yields the following decomposition of $\mathcal{S}_t$ that separates the contributions of labor and capital incomes.

$$\mathcal{S}_t = \mathcal{C}^{l,\sigma}_{10,t} + \mathcal{C}^{c,\sigma}_{10,t} + \mathcal{C}^{l,c,\sigma}_{10,t} + R_t, \tag{15}$$

where $\mathcal{C}^{l,\sigma}_{10,t} = 0.1 \times \sigma^2_{10,l,t}/2\mu^2_t$, $\mathcal{C}^{c,\sigma}_{10,t} = 0.1 \times \sigma^2_{10,c,t}/2\mu^2_t$ and $\mathcal{C}^{l,c,\sigma}_{10,t} = 0.2 \times \sigma_{10,l,c,t}/2\mu^2_t$. By dividing both sides of (15) by $\mathcal{S}_t$, we obtain the relative or normalized contribution of each component as follows.

$$1 = \gamma_{10,t}^{l,\sigma} + \gamma_{10,t}^{c,\sigma} + r_t^*, \tag{16}$$

where $r_t^* = \left(\mathcal{C}_{10,t}^{l,c,\sigma} + R_t\right)/\mathcal{S}_t$.

Figure 8 presents our historical decomposition of U.S. Personal Factor Income (fainc) into labor (flinc) and capital (fkinc) factor incomes, with a focus on within-group inequality among the top 10% earners ($\mathcal{G}_j$), which drives a substantial portion of overall inequality dynamics. As shown in Panel (a), factor income-based inequality (SCV) follows patterns observed in earlier sections for other measures of income and wealth inequality. Within-group inequality among $\mathcal{G}_j$ again accounts for the majority of the overall inequality dynamics, while the contributions from top 10% between-group inequality and bottom 90% inequality remain relatively small and are therefore omitted here.

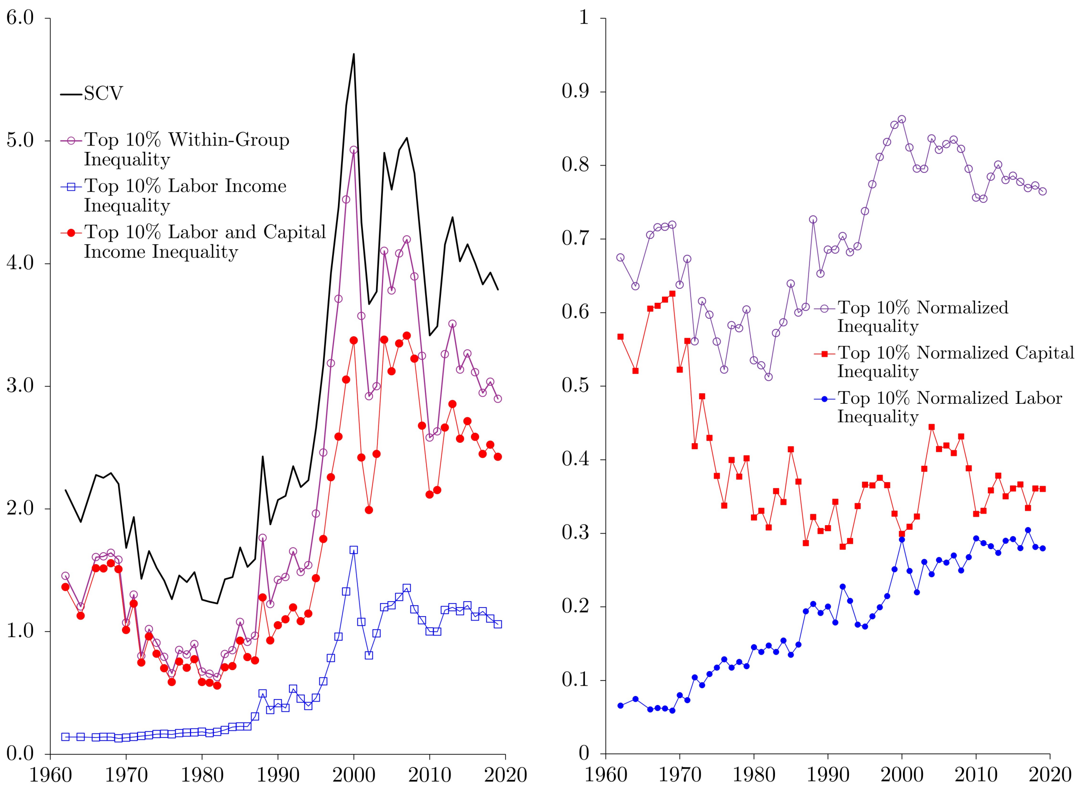
Notably, the contribution of top 10% (within-group) labor income inequality ($\mathcal{C}_{10,t}^{l,\sigma}$) begins to rise rapidly in the mid-1980s, eventually becoming as significant as that of top 10% (within-group) capital income inequality ($\mathcal{C}_{10,t}^{c,\sigma}$). The combined shares of labor and capital income inequality explain a substantial portion of within-group inequality among the top 10%. However, the residual term, $\mathcal{C}_{10,t}^{l,c,\sigma}$, still remains sizable, indicating a significant role of positive correlations between labor and capital incomes among top earners.

Panel (b) illustrates the normalized (relative) contributions of labor and capital factor incomes from (16), as well as the relative contribution of within-group inequality among the top 10% to overall factor income inequality (SCV), $\gamma_{10,t}^{\sigma}$ from (8). We observe that the dominant role of within-group capital income inequality decreases sharply until around the mid-1990s, then stabilize around 35%. In contrast, the normalized contribution of labor income within-group inequality within the top 10% shows a steady upward trend, reaching approximately 30%, eventually being equivalent to the capital income share.

In Panel (a), a sharp increase in top 10% labor income inequality emerges around 1986–87, possibly associated with TRA86. However, the steady rise in the relative contribution of labor income inequality observed in Panel (b) suggests a persistent and structural increase in income inequality over time. That is, while TRA86 may have acted as a temporary catalyst, it is unlikely to fully account for the long-run trend in rising U.S. income inequality driven by the increasing labor income share among top earners.[26]

[26] We performed the same decomposition using Personal Pre-Tax Income (ptinc) and its corresponding labor (plinc) and capital (pkinc) components, yielding qualitatively similar results.

Figure 8: Decomposition of Inequality based on the Income Source



(a) Decomposition of SCV (b) Normalized Shares

Note: Panel (a) reports $\mathcal{S}_t$ and $\mathcal{C}^{\sigma}_{10,t}$ from (13) along with its sub-components $\mathcal{C}^{l,\sigma}_{10,t}$ and $\mathcal{C}^{l,\sigma}_{10,t} + \mathcal{C}^{c,\sigma}_{10,t}$ from (15), where $\mathcal{C}^{\sigma}_{10,t} = \mathcal{C}^{l,\sigma}_{10,t} + \mathcal{C}^{c,\sigma}_{10,t} + \mathcal{C}^{l,c,\sigma}_{10,t}$. The difference between $\mathcal{S}_t$ and $\mathcal{C}^{\sigma}_{10,t}$ corresponds to R_t. Panel (b) presents $\gamma^{\sigma}_{10,t}$ in (8), the normalized contribution share of the top 10%, along with income-source-specific contributions, $\gamma^{l,\sigma}_{10,t}$ and $\gamma^{c,\sigma}_{10,t}$ for labor and capital incomes, respectively, from (16).

5 Conclusion

The economics profession has observed rising trends in U.S. economic inequality since the late 1970s, with top income shares used as a key measure of inequality. This paper investigates how different income groups contribute to overall economic inequality, utilizing the squared coefficient of variation, a measure within the generalized entropy class, to provide a richer statistical analysis that further disentangles group-level contributions into between-group and within-group inequality.

Applying this approach to an array of micro-level income and wealth data, we demonstrate that the primary driver of rising U.S. economic inequality is the increasing dispersion of incomes within the top decile of earners, rather than disparities in average income across groups. Our findings highlight the pivotal role of *within-group* inequality among the top 10%, which has accounted for over 87% of the overall changes in U.S. pre-tax income inequality since 2000. Although post-tax income inequality has increased to a lesser extent, the pattern remains: more than 80% of the rise in post-tax income inequality is attributable to growing dispersion within the top decile.

We further decompose U.S. income inequality by income source, distinguishing between labor and capital factor incomes, highlighting the growing role of labor income dispersion among top earners. This analysis sheds additional light on the underlying drivers of inequality and aligns our findings with the existing literature emphasizing the increasing importance of labor income inequality. Specifically, despite the overall decline in labor's share of national income, we document a continued rise in the labor income share among top earners. Notably, since the early 2000s, within-group inequality in labor income among the top decile has contributed roughly as much as capital income inequality to overall U.S. income inequality.

Our findings draw attention to several interesting yet overlooked points in the current literature. First, the worsening of economic inequality in recent decades appears to be concentrated among the top 10%, or even the top 1%, while the vast majority of the population, including the so-called "average Joe" or "ordinary Jane", has experienced relatively stable income dispersion. The limited change in inequality among the bottom 90% raises a compelling question: how might this growing imbalance within the top affect society as a whole? This is an intriguing yet complex issue that requires attention in the future.

Second, our empirical results identify a common driver of both pre-tax and post-tax income inequality, within-group dispersion among top earners, suggesting that tax policy has not effectively reduced income inequality within the top decile of earners. However, these findings should not be interpreted as an endorsement of more progressive tax policies targeting high-income earners, as our empirical model is agnostic about the potential effects of such tax policies on the entire population. Addressing this issue requires a general equilibrium model with heterogeneous agents that assesses the economic impact of tax policy changes on both inequality and the macroeconomic outcomes. We leave this important but challenging task for future research.

Lastly, we emphasize that our decomposition methodology is highly flexible and can be applied to analyze other dimensions of inequality. For example, our framework can be used to decompose the contributions of different gender or racial groups to overall inequality, capturing not only between-group but also within-group inequality. Such extensions hold significant potential to deepen our understanding of inequality and further enrich the existing literature.

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Online Appendix for "The Divide among the Rich: Within-Group Inequality at the Top of the U.S. Income Distribution"

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September 2026

This document includes supplementary materials: properties of existing inequality measures, detailed derivations of inequality decompositions, explanations of the procedure for removing outliers via a projection depth approach, and additional tables and figures.

A Properties of Existing Inequality Measures

There are four key properties that a valid measure of income inequality should satisfy: (i) Symmetry, (ii) Scale Independence, (iii) Population Independence, and (iv) the Transfer Principle.

Not all commonly used measures meet these criteria. For instance, it is well known that the Gini index does not satisfy the Transfer Principle, which requires that a small income transfer from the richest to the poorest, without altering income rankings, should reduce income inequality.

Several alternatives have been put forward. Among these, measures of **top percentile income share** satisfy all four properties, but lack **subgroup decomposability** by construction, limiting their application in richer economic analyses. The family of **generalized entropy** (GE) measure of inequality, denoted as $GE(\alpha)$, is widely used due to its flexibility. Here, α is a scale parameter, allowing for various functional forms as α changes.

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For instance, with $\alpha = 0$, $GE(0)$ corresponds to the **mean log deviation** (MLD). An alternative measure of the MLD is the variance of log income, $\ln Y_{i,t}$, which becomes propotionally equivalent to the **squared coefficient of variation** (SCV) when $Y_{i,t}$ obeys a log normal distribution. $GE(1)$ is referred to as the **Theil index**, whereas $GE(2)$ corresponds to the SCV, which has been popularly used in the literature. As far as the dynamics of overall income inequality is concerned, these indexes yield qualitatively similar results.

However, $GE(0)$, like the Gini index, violates the Transfer Principle (see Foster and Ok (1999)). Moreover, the log transformation of $Y_{i,t}$ substantially reshapes the income distribution. If $Y_{i,t}$ is log-normally distributed, $\ln Y_{i,t}$ becomes a normal distribution, theirby dramatically shifting the source of inequality. Since identifying the drivers of inequality is our main objective, we exclude $GE(0)$ from our analysis.

Top income shares also fall short when subgroup decomposition is required. In what follows, we show that, although $GE(1)$ is sub-group decomposable, subgroup contributions can be negative, complicating interpretations, especially when income percentiles are used as sub-groups. For instance, income percentiles below the mean yield negative contributions, making it difficult to quantify the subgroup contributions to inequality dynamics. Consequently, we also exclude $GE(1)$.

B Subgroup Decomposition of Inequality

Assume that there are R subgroups, denoted as $\mathcal{G}_{1,t}, ..., \mathcal{G}_{R,t}$. Let $n_{j,t} = N_{j,t}/N_t$ denote the population share of subgroup $\mathcal{G}_{j,t}$. We show detailed derivations of inequality indexes, decomposing them into two parts: within-group inequality and between-group inequality.

B.1 Decomposition of the Squared Coefficient of Variation

We present detailed derivations of the decomposition formulae for the squared coefficient of variation (SCV). Unlike the approach by Rosenbluth (1951), our method decomposes the SCV into a first moment component and a second moment component, allowing for an interpretation of the results in terms of between-group inequality and within-group inequality, respectively.

B.1.1 Rosenbluth's Decomposition

Let $\mu_{j,t}$ and $\sigma^2_{j,t}$ denote the mean and variance of income within subgroup $\mathcal{G}_{j,t}$, respectively, and let μ_t denote the average income of the entire population. The overall SCV, $\mathcal{S}_t$, can be decomposed into subgroup SCVs, denoted $\mathcal{S}_{j,t}$ for $j = 1, 2, ..., R$, as follows.

$$\begin{aligned}\mathcal{S}_t &= \sum_{j=1}^{R} n_{j,t} \frac{\sigma^2_{j,t}/\mu^2_{j,t} + \left(\mu_{j,t} - \mu_t\right)^2/\mu^2_{j,t}}{2\mu^2_t/\mu^2_{j,t}} \\ &= \sum_{j=1}^{R} n_{j,t} \left\{ \lambda^2_{j,t}\mathcal{S}_{j,t} + \frac{1}{2}\frac{\left(\mu_{j,t} - \mu_t\right)^2}{\mu^2_t} \right\} \\ &= \sum_{j=1}^{R} n_{j,t} \left\{ \lambda^2_{j,t}\mathcal{S}_{j,t} + \frac{1}{2}\left(\lambda_{j,t} - 1\right)^2 \right\},\end{aligned} \tag{s-1}$$

where $\lambda_{j,t} = \mu_{j,t}/\mu_t$ and $\mathcal{S}_{j,t} = \sigma^2_{j,t}/2\mu^2_{j,t}$. Note that (s-1) implies a positive relationship between the group-level inequality $\mathcal{S}_{j,t}$ and overall inequality $\mathcal{S}_t$. It also suggests that both tails of the income distribution among N_t have greater effects through mean deviations.

B.1.2 Decomposition of the SCV

We first decompose σ^2_t by groups, $\mathcal{G}_{1,t}, ..., \mathcal{G}_{R,t}$ as follows.

$$\sigma^2_t = \frac{1}{N_t}\sum_{i=1}^{N_t}\left(Y_{i,t} - \mu_t\right)^2 = \frac{1}{N_t}\sum_{j=1}^{R}\sum_{i\in\mathcal{G}_{j,t}}\left(Y_{i,t} - \mu_t\right)^2 \tag{s-2}$$

Adding and subtracting each group mean $\mu_{j,t}$, (s-2) can be rewritten as,

$$\begin{aligned}\sigma^2_t &= \frac{1}{N_t}\sum_{j=1}^{R}\sum_{i\in\mathcal{G}_{j,t}}\left(Y_{i,t} - \mu_{j,t} + \mu_{j,t} - \mu_t\right)^2 \\ &= \frac{1}{N_t}\sum_{j=1}^{R}\sum_{i\in\mathcal{G}_{j,t}}\left\{\left(Y_{i,t} - \mu_{j,t}\right)^2 + \left(\mu_{j,t} - \mu_t\right)^2\right\} + \Delta_t,\end{aligned} \tag{s-3}$$

where Δ_t is a sum of the cross products which vanishes as shown below.

$$\begin{aligned}\Delta_t &= 2\sum_{j=1}^{R}\left\{\frac{N_{j,t}}{N_t}\left(\mu_{j,t} - \mu_{N_t}\right)\left(\frac{1}{N_{j,t}}\sum_{i\in\mathcal{G}_{j,t}}\left(Y_{i,t} - \mu_{j,t}\right)\right)\right\} \\ &= 2\sum_{j=1}^{R}\left\{\frac{N_{j,t}}{N_t}\left(\mu_{j,t} - \mu_t\right)\left(\mu_{j,t} - \mu_{j,t}\right)\right\} = 0\end{aligned}$$

Rearranging (s-3), we obtain the following.

$$\sigma_t^2 = \sum_{j=1}^{R} \frac{N_{j,t}}{N_t} \frac{1}{N_{j,t}} \left\{ \sum_{i \in \mathcal{G}_{j,t}} (Y_{i,t} - \mu_{j,t})^2 + N_{j,t} (\mu_{j,t} - \mu_t)^2 \right\} \quad \text{(s-4)}$$
$$= \sum_{j=1}^{R} n_{j,t} \left\{ \frac{1}{N_{j,t}} \sum_{i \in \mathcal{G}_{j,t}} (Y_{i,t} - \mu_{j,t})^2 + (\mu_{j,t} - \mu_t)^2 \right\}$$
$$= \sum_{j=1}^{R} n_{j,t} \left\{ \sigma_{j,t}^2 + (\mu_{j,t} - \mu_t)^2 \right\},$$

where $n_{j,t} = N_{j,t}/N_t$, $\sigma_{j,t}^2$, and $\mu_{j,t}$ denote the population share, the group variance, and the group mean of $\mathcal{G}_{j,t}$, respectively.

Finally, $\mathcal{S}_t$ can be decomposed as follows.

$$\mathcal{S}_t = \frac{1}{2\mu_t^2} \sum_{j=1}^{R} n_{j,t} \left\{ \sigma_{j,t}^2 + (\mu_{j,t} - \mu_t)^2 \right\} \quad \text{(s-5)}$$
$$= \sum_{j=1}^{R} n_{j,t} \frac{\sigma_{j,t}^2 + (\mu_{j,t} - \mu_t)^2}{2\mu_t^2}, \; j = 1, ..., R$$

Note that $\mathcal{S}_t$ in (s-5) is further decomposed into the following two parts. The first part, $\sum_{j=1}^{R} n_{j,t} \frac{\sigma_{j,t}^2}{2\mu_t^2}$, represents the sum of the contributions of the j^{th} group $\mathcal{G}_{j,t}$ through cross-sectional variance, indicating within-group variation. The second term, $\sum_{j=1}^{R} n_{j,t} \frac{(\mu_{j,t} - \mu_t)^2}{2\mu_t^2}$, is the sum of the relative mean deviations, which is corresponds to between-group variation.

B.2 Decomposition of the Theil Index

Let $\mathcal{T}_t$ be the Theil Index of the entire population N_t, which can be decomposed into the sum of local indexes, weighted by the population share.

$$\mathcal{T}_t = \frac{1}{N_t} \sum_{i=1}^{N_t} \left[\frac{Y_{i,t} \ln \left(\frac{Y_{i,t}}{\mu_t} \right)}{\mu_t} \right] \quad \text{(a-6)}$$
$$= \sum_{j=1}^{R} n_{j,t} \left[\frac{1}{N_{j,t}} \sum_{i \in \mathcal{G}_j} \frac{Y_{i,t} \ln \left(\frac{Y_{i,t}}{\mu_t} \right)}{\mu_t} \right]$$
$$= \sum_{j=1}^{R} n_{j,t} \mathcal{T}_{j,t}^*,$$

where $\mathcal{T}^*_{j,t}$ is the local quasi Theil index, where group incomes are expressed as the gross deviations from the overall mean μ_t instead of the group mean $\mu_{j,t}$.

There is a known decomposition of $\mathcal{T}_t$ which is similar to (s-1).

$$\begin{aligned}
\mathcal{T}_t &= \frac{1}{N_t}\sum_{i=1}^{N_t}\left[\frac{Y_{i,t}\ln\left(\frac{Y_{i,t}}{\mu_t}\right)}{\mu_t}\right] = \sum_{j=1}^{R} n_{j,t}\left[\frac{1}{N_{j,t}}\sum_{i\in\mathcal{G}_j}\frac{Y_{i,t}\ln\left(\frac{Y_{i,t}}{\mu_t}\right)}{\mu_t}\right] \\
&= \sum_{j=1}^{R} n_{j,t}\left[\frac{1}{N_{j,t}}\sum_{i\in\mathcal{G}_j}\frac{Y_{i,t}\ln\left(\frac{Y_{i,t}}{\mu_{j,t}}\frac{\mu_{j,t}}{\mu_t}\right)}{\mu_{j,t}\left(\frac{\mu_{j,t}}{\mu_t}\right)^{-1}}\right] \\
&= \sum_{j=1}^{R} n_{j,t}\lambda_{j,t}\left[\frac{1}{N_{j,t}}\sum_{i\in\mathcal{G}_j}\frac{Y_{i,t}\left\{\ln\left(\frac{Y_{i,t}}{\mu_{j,t}}\right)+\ln\lambda_{j,t}\right\}}{\mu_{j,t}}\right] \\
&= \sum_{j=1}^{R} n_{j,t}\lambda_{j,t}\left[\mathcal{T}_{j,t}+\frac{1}{N_{j,t}}\sum_{i\in\mathcal{G}_j}\frac{Y_{i,t}\ln\lambda_{j,t}}{\mu_{j,t}}\right] \\
&= \sum_{j=1}^{R} n_{j,t}\lambda_{j,t}\left[\mathcal{T}_{j,t}+\frac{\ln\lambda_{j,t}}{\mu_{j,t}}\frac{1}{N_{j,t}}\sum_{i\in\mathcal{G}_j}Y_{i,t}\right] \\
&= \sum_{j=1}^{R} n_{j,t}\lambda_{j,t}\left[\mathcal{T}_{j,t}+\ln\lambda_{j,t}\right],
\end{aligned} \tag{a-7}$$

where $\mathcal{T}_{j,t} = \frac{1}{N_{j,t}}\sum_{i\in\mathcal{G}_j}\left[\frac{Y_{i,t}\ln\left(\frac{Y_{i,t}}{\mu_{j,t}}\right)}{\mu_{j,t}}\right]$ is the local Theil index of $\mathcal{G}_{j,t}$ and $\lambda_{j,t} = \frac{\mu_{j,t}}{\mu_t}$ is the gross deviation of the group mean from the overall mean.

B.3 Decomposition of the SCV with Population Weighted Observations

The total weighted mean $\tilde{\mu}_t$ can be decomposed as follows.

$$\begin{aligned}
\tilde{\mu}_t &= \sum_{i=1}^{\tilde{N}_t}\frac{W_{i,t}Y_{i,t}}{\sum_{i=1}^{\tilde{N}_t}W_{i.t}} \\
&= \sum_{j=1}^{R}\left\{\sum_{i\in\mathcal{G}_{j,t}}\frac{W_{i,t}Y_{i,t}}{\sum_{i=1}^{\tilde{N}_t}W_{i.t}}\right\} = \sum_{j=1}^{R}\tau_{j,t}\left\{\sum_{i\in\mathcal{G}_{j,t}}\frac{W_{i,t}Y_{i,t}}{\sum_{i\in\mathcal{G}_{j,t}}W_{i.t}}\right\} \\
&= \sum_{j=1}^{R}\tau_{j,t}\tilde{\mu}_{j,t}
\end{aligned} \tag{a-8}$$

where $\tau_{j,t} = \frac{\sum_{i \in \mathcal{G}_{j,t}} W_{i,t}}{\sum_{i=1}^{\tilde{N}_t} W_{i,t}}$ and $\tilde{\mu}_{j,t}$ is the weighted mean of the group $\mathcal{G}_{j,t}$. Similarly the total weighted variance $\tilde{\sigma}_t^2$ can be decomposed as follows.

$$
\begin{aligned}
\tilde{\sigma}_t^2 &= \sum_{i=1}^{\tilde{N}_t} \frac{W_{i,t}\left(Y_{i,t} - \tilde{\mu}_t\right)^2}{\sum_{i=1}^{\tilde{N}_t} W_{i.t}} \qquad \text{(a-9)} \\
&= \sum_{j=1}^{R} \left\{ \sum_{i \in \mathcal{G}_{j,t}} \frac{W_{i,t}\left(Y_{i,t} - \tilde{\mu}_t\right)^2}{\sum_{i=1}^{\tilde{N}_t} W_{i.t}} \right\} = \sum_{j=1}^{R} \tau_{j,t} \left\{ \sum_{i \in \mathcal{G}_{j,t}} \left(\frac{W_{i,t}\left(Y_{i,t} - \tilde{\mu}_{j,t} + \tilde{\mu}_{j,t} - \tilde{\mu}_t\right)^2}{\sum_{i \in \mathcal{G}_{j,t}} W_{i.t}} \right) \right\} \\
&= \sum_{j=1}^{R} \tau_{j,t} \left\{ \sum_{i \in \mathcal{G}_{j,t}} \left(\frac{W_{i,t}\left(Y_{i,t} - \tilde{\mu}_{j,t}\right)^2}{\sum_{i \in \mathcal{G}_{j,t}} W_{i.t}} \right) + \left(\tilde{\mu}_{j,t} - \tilde{\mu}_t\right)^2 \right\} + \Delta_t \\
&= \sum_{j=1}^{R} \tau_{j,t} \left\{ \tilde{\sigma}_{j,t} + \left(\tilde{\mu}_{j,t} - \tilde{\mu}_t\right)^2 \right\},
\end{aligned}
$$

where $\tilde{\sigma}_{j,t}$ is the weighted variance of the group $\mathcal{G}_{j,t}$. Note that the product term Δ_t disappears in a similar manner as shown previously.

$$
\begin{aligned}
\Delta_t &= 2 \sum_{j=1}^{R} \left\{ \tau_{j,t} \left(\tilde{\mu}_{j,t} - \tilde{\mu}_t\right) \left(\sum_{i \in \mathcal{G}_{j,t}} \frac{W_{i,t}\left(Y_{i,t} - \tilde{\mu}_{j,t}\right)}{\sum_{i \in \mathcal{G}_{j,t}} W_{i.t}} \right) \right\} \\
&= 2 \sum_{j=1}^{R} \tau_{j,t} \left(\tilde{\mu}_{j,t} - \tilde{\mu}_t\right)\left(\tilde{\mu}_{j,t} - \tilde{\mu}_{j,t}\right) = 0
\end{aligned}
$$

Finally, we have the following decomposition similar to (s-5),

$$
\mathcal{S}_t = \sum_{j=1}^{R} \tau_{j,t} \frac{\tilde{\sigma}_{j,t} + \left(\tilde{\mu}_{j,t} - \tilde{\mu}_t\right)^2}{2\tilde{\mu}_t}, \; j = 1, ..., R \qquad \text{(a-10)}
$$

C Detecting Outliers Based on Projection Depth

The distributional national accounts (DINA) micro-file data comes with extremely large synthetic records that were created to match the total income reported to the IRS over the 1996 to 2008 period. This is because the Statistics of Income (SOI) division of the IRS excluded a small number of extreme records from the public use files (PUF) that were large enough to create significant discrepancies at the very top during this time period.[1]

In probability theory, it is well known that the asymptotic breakdown point of a

[1]For more details, see the data appendix for Piketty et al. (2018).

sample average, $N_t^{-1}\sum_{i=1}^{n_t} Y_{i,t}$, is zero, meaning that it is difficult to robustly estimate the true mean in the presence of even a single outlier in either tail of the distribution. In other words, the sample mean can become unbounded when outliers are present. Similarly, the sample variance is also unbounded and is significantly affected by outliers.

C.1 Unbounded Inequality Measures Under Presence of Extreme Outliers

Assume that the richest individual, denoted by $i = N_t$, generates an income of $Y_{N_t,t} = N_t^2\mu_t$ per year, which is N_t^2 times the average income in year t. As $N_t \to \infty$, the following results hold.

$$\begin{aligned}\mathcal{T}_t &= \frac{1}{N_t}\sum_{i=1}^{N_t-1}\left[\frac{Y_{i,t}}{\mu_t}\ln\left(\frac{Y_{i,t}}{\mu_t}\right)\right] + \frac{1}{N_t}\frac{N_t^2\mu_t}{\mu_t}\ln\left(\frac{N_t^2\mu_t}{\mu_t}\right)\\ &= \frac{1}{N_t}\sum_{i=1}^{N_t-1}\left[\frac{Y_{i,t}}{\mu_t}\ln\left(\frac{Y_{i,t}}{\mu_t}\right)\right] + 2N_t\ln\left(n_t\right) \to \infty,\end{aligned}$$

$$\mathcal{Z}_{P,t} = \frac{\sum_{i=(1-p)N_t+1}^{N_t} Y_{i,t}}{\sum_{i=1}^{N_t} Y_{i,t}} = \frac{N_t^{-1}\sum_{i=(1-p)N_t+1}^{N_t-1} Y_{i,t} + N_t}{\mu_t + N_t} \to 1.$$

$$\mathcal{S}_t = \frac{1}{2}\frac{\sigma_t^2}{\mu_t^2} = \frac{N_t^3 + O\left(N_t^2\right)}{N_t^2 + O\left(N_t\right)} \to \infty,$$

The last result holds because,

$$\begin{aligned}\frac{1}{N_t}\sum_{i=1}^{N_t}\left(Y_{i,t} - \frac{1}{N_t}\sum_{i=1}^{N_t} Y_{i,t}\right)^2 &= \frac{1}{N_t}\sum_{i=1}^{N_t-1}\left(Y_{i,t} - \frac{1}{N_t}\sum_{i=1}^{N_{t-1}} Y_{i,t} - N_t\mu_t\right)^2 + \frac{1}{N_t}\mu_t^2\left(N_t^2 - 1 - N_t\right)^2\\ &= \frac{1}{N_t}\sum_{i=1}^{N_t-1}\left(Y_{i,t} - \frac{1}{N_t}\sum_{i=1}^{N_{t-1}} Y_{i,t} - N_t\mu_t\right)^2 + \mu_t^2 N_t^3 + O\left(N_t^2\right),\end{aligned}$$

and

$$\mu_t^2 = \left(\frac{1}{N_t}\sum_{i=1}^{N_t-1} Y_{i,t} + N_t\right)^2 = \mu_t^2 + N_t^2.$$

It turns out that $\mathcal{T}_t$ and $\mathcal{S}_t$ are not bounded, while $\mathcal{Z}_{P,t}$ converges to its upper limit 1 in the presence of outliers. That is,

$$\mathcal{T}_t \to \infty,\ \mathcal{Z}_{P,t} \to 1,\ \mathcal{S}_t \to \infty \tag{a-11}$$

C.2 Projection Depth

To restore consistency, outliers must be removed before estimating the average. various methods have been developed for detecting outliers, with the data depth method emerging as one of the most robust and effective approaches. The data depth is an inverse function of an outlyingness measure, which quantifies the distance of a data point from the center of the distribution. That is, outlyingness reflects how far a given data point, or a group of points, is positioned relative to the distribution center.

Let x be a vector of random variables with finite mean μ_x and variance-covariance Σ. The well-known outlyingness measure proposed by Mahalanobis (1936) is given by,

$$\mathcal{O}\left(x_i\right) = \left(x_i - \mu_x\right)\Sigma^{-1}\left(x_i - \mu_x\right)'.$$

If x_i moves further from its center, the joint mean in this case, the the outlyingness measure $\mathcal{O}\left(x_i\right)$ increases. The outlyingness function can range from 0 to positive infinity. If $x_i = \mu_x$ exactly, $\mathcal{O}\left(x_i\right) = 0$.

The projection outlyingness is defined as follows.

$$\mathcal{O}^p\left(x; P\right) \equiv \sup_{v:||v||=1} \frac{\left|v'x - \mu_{v'X}\right|}{\sigma_{v'X}} \quad \text{for } x \in \mathbb{R}^k, \tag{a-12}$$

where v is a $k \times 1$ nonrandom vector with $||v|| = 1$ and $\mu_{v'X}$ and $\sigma_{v'X}$ are some location and scale parameters. For example, let X_i be a $k \times 1$ vector of random samples and let $\mu_{v'X}$ and $\sigma_{v'X}$ denote the median and the median absolute deviation (MAD) of $v'X_i$, respectively. Then the projection outlyingness at $X_i = x$ is defined as $\mathcal{O}^p(x; P) \equiv \sup_{v:||v||=1}\{\left|v'x - \mu_{v'X}\right| / \sigma_{v'X}\}$ and the projection depth is given by $\mathcal{D}^p(x; P) \equiv (1 + \mathcal{O}^p(x; P))^{-1}$. For a single dimension ($k = 1$), the projection outlyingness simplifies to the following.

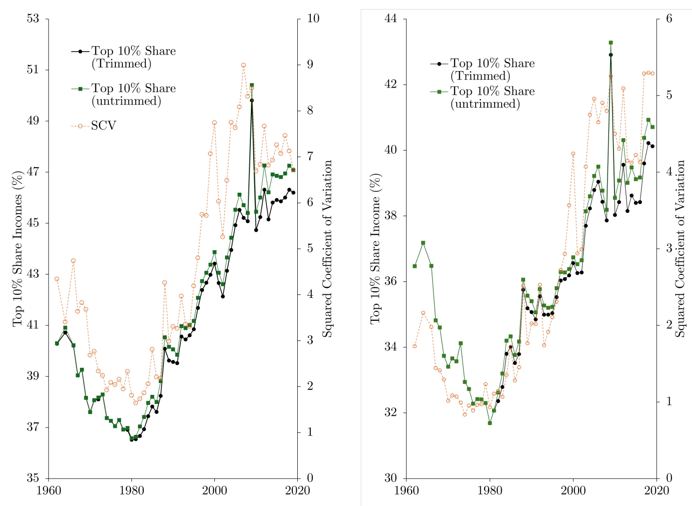
$$\mathcal{O}_i^p \equiv \frac{\left|X_i - med\left(X\right)\right|}{med\left|X_i - med\left(X\right)\right|} \quad \text{for } x \in \mathbb{R}^1,$$

where $med\left(\cdot\right)$ represents the median. In our previous example, if the maximum value of X_i, denoted by X_{n_1}, is n_1^2, it follows that $\mathcal{O}_i^p \to \infty$ as $n_1 \to \infty$. This is because $\left|X_{n_1} - med\left(X\right)\right|$ diverges, while the MAD is well-defined as a finite value. Therefore, $\mathcal{D}^p\left(X_{n_1}\right) \to 0$ as $n_1 \to \infty$.

According to Zuo (2006), using a threshold of $\mathcal{D}_{i,t}^p < 0.1$ tends to remove a large fraction of high-income individuals from the data. Since our focus is on the income distribution in the right tail, which is typically right-skewed, we employ a much lower projection depth (PD) threshold of $\mathcal{D}_{t,i}^{p} < 0.001$ for out main empirical results. For further discussion, see Lee and Sul (2023), Zuo and Serfling (2000), and Zuo and Serfling (2000).[2]

As shown in Figure 1, the top 10% income share estimates, $\mathcal{Z}_{10,t}$, calculated using the projection method, are qualitatively similar to those derived from the untrimmed data, both pre-tax (peinc) and the post-tax national income (poinc) data. It should be noted that the SCV estimates, $\mathcal{S}_t$, closely align with both the income share estimates. This indicates that our PD approach effectively manages extreme outliers while preserving the data's inequality dynamics.

Figure 1: Eliminating Outliers by a Projection Depth Approach



(a) Pre-Tax National Income (b) Post-Tax National Income

Note: We report trimmed and untrimmed top 10% income share estimates ($\mathcal{Z}_{10,t}$), comparing them with the squared coefficient of variation (SCV, $\mathcal{S}_t$) after trimming identified outliers. We report the rsults for pre-tax national income in panel (a), while the results for post-tax national income appear in in panel (b). All series show qualitatively similar dynamics.

D Additional Tables

[2] As the trimming threshold increases, more samples from both tails of distributions are excluded. Given that income distributions for each year are right-skewed, increasing the threshold reduces measured income inequality.

Table A1. U.S. Income Distribution Data: Fiscal Income

Year	*Pop*	μ_t	$\mu_{B90,t}$	$\mu_{10,t}$	σ_t^2	$\sigma_{B90,t}^2$	$\sigma_{10,t}^2$	$\mathcal{S}_t$	$\mathcal{Z}_{B90,t}$	$\mathcal{Z}_{10,t}$	$\mathcal{Z}_{1,t}$	$\mathcal{Z}_{0.1,t}$
1962	113.75	3.16	2.14	12.35	0.05	0.00	0.32	2.30	60.94	39.05	10.70	3.21
1964	116.80	3.54	2.40	13.78	0.06	0.01	0.46	2.53	61.05	38.96	10.81	3.30
1966	119.72	4.05	2.77	15.61	0.09	0.01	0.65	2.67	61.50	38.50	10.84	3.40
1967	121.14	4.36	2.98	16.77	0.10	0.01	0.78	2.71	61.51	38.49	11.26	3.62
1968	123.51	4.73	3.22	18.29	0.15	0.01	1.20	3.35	61.28	38.71	11.71	3.91
1969	125.54	5.02	3.46	19.07	0.17	0.01	1.37	3.37	62.00	38.00	10.96	3.70
1970	127.67	5.13	3.57	19.19	0.10	0.01	0.62	1.83	62.64	37.37	9.84	2.83
1971	130.77	5.38	3.70	20.49	0.12	0.02	0.82	2.09	61.87	38.12	10.25	3.04
1972	133.50	5.85	4.03	22.22	0.16	0.02	1.11	2.29	62.03	37.97	10.29	3.11
1973	136.01	6.34	4.37	24.01	0.14	0.02	0.81	1.69	62.11	37.89	9.94	2.78
1974	138.44	6.80	4.71	25.57	0.15	0.03	0.84	1.61	62.38	37.61	9.91	2.77
1975	141.05	7.05	4.86	26.72	0.17	0.04	0.96	1.72	62.07	37.93	9.73	2.67
1976	143.61	7.71	5.35	28.94	0.20	0.04	1.12	1.69	62.44	37.56	9.68	2.67
1977	146.31	8.36	5.81	31.27	0.23	0.04	1.33	1.66	62.58	37.42	9.73	2.76
1978	149.14	9.18	6.41	34.09	0.26	0.05	1.46	1.54	62.87	37.13	9.71	2.74
1979	152.11	10.22	7.10	38.31	0.67	0.06	5.36	3.23	62.53	37.47	10.51	3.42
1980	155.27	11.02	7.62	41.62	0.56	0.07	3.91	2.30	62.24	37.76	10.55	3.34
1981	158.03	11.92	8.25	44.96	0.54	0.11	3.22	1.90	62.28	37.72	10.29	3.21
1982	160.66	12.39	8.42	48.08	0.70	0.13	4.48	2.29	61.19	38.82	11.06	3.74
1983	163.13	13.00	8.72	51.59	0.95	0.18	6.22	2.80	60.33	39.67	11.73	4.15
1984	165.65	14.02	9.43	55.30	1.32	0.30	8.65	3.36	60.54	39.46	12.08	4.48
1985	168.20	14.95	9.95	59.95	1.75	0.31	12.38	3.90	59.91	40.09	12.70	4.78
1986	170.55	16.13	10.45	67.20	2.61	0.32	20.35	5.03	58.32	41.67	14.45	5.83
1987	172.55	16.25	10.77	65.58	1.88	0.34	13.04	3.56	59.64	40.36	13.04	4.75
1988	174.34	17.71	11.38	74.68	3.56	0.52	27.33	5.68	57.83	42.16	15.39	6.22
1989	176.06	18.51	12.04	76.69	3.10	0.42	23.49	4.53	58.57	41.43	14.52	5.58
1990	178.36	19.17	12.50	79.22	3.48	0.51	26.15	4.73	58.67	41.32	14.55	5.58
1991	180.98	19.21	12.54	79.29	3.20	0.92	19.74	4.34	58.73	41.27	13.76	4.98
1992	183.44	19.91	12.74	84.43	3.70	0.52	27.75	4.67	57.60	42.40	14.90	5.69
1993	185.68	20.19	12.88	86.02	3.63	0.60	26.06	4.45	57.40	42.61	14.56	5.43
1994	187.76	20.94	13.30	89.71	3.95	0.53	29.45	4.50	57.17	42.84	14.67	5.50
1995	189.91	22.11	14.02	94.96	5.28	0.95	38.40	5.40	57.05	42.95	15.41	5.93
1996	192.04	23.62	14.69	103.92	7.77	0.99	61.63	6.97	55.99	44.00	16.59	6.74
1997	194.43	25.51	15.59	114.75	10.55	0.99	87.68	8.11	55.01	44.99	17.70	7.48
1998	196.79	27.38	16.53	125.05	15.25	1.03	132.66	10.17	54.33	45.67	18.70	8.25
1999	199.25	29.21	17.36	135.87	20.96	1.32	185.07	12.29	53.49	46.52	19.66	8.92
2000	201.65	31.22	18.22	148.19	29.67	1.02	272.21	15.22	52.53	47.47	20.69	9.78
2001	203.77	30.02	18.28	135.67	15.41	1.47	128.48	8.55	54.81	45.19	17.81	7.58
2002	206.20	29.13	17.94	129.90	11.61	1.55	90.82	6.84	55.42	44.59	16.71	6.73
2003	208.60	29.70	18.10	134.11	13.22	1.25	108.82	7.49	54.85	45.16	17.38	7.19
2004	210.95	32.07	18.91	150.42	21.76	1.83	185.53	10.58	53.09	46.91	19.28	8.48
2005	213.35	34.13	19.53	165.50	25.07	2.52	208.86	10.76	51.50	48.49	20.86	9.30
2006	215.90	36.63	20.76	179.40	32.25	1.32	287.84	12.02	51.01	48.98	21.63	9.89
2007	218.46	38.81	21.99	190.19	38.80	2.51	339.82	12.88	50.99	49.00	21.95	10.12
2008	220.88	36.85	21.43	175.68	27.31	3.24	222.52	10.06	52.33	47.67	19.84	8.69
2009	352.42	23.74	12.75	122.63	10.78	1.37	84.59	9.57	48.33	51.66	19.04	7.77
2010	225.68	35.00	20.31	167.28	21.98	2.43	178.48	8.97	52.21	47.79	18.96	8.14
2011	227.45	36.08	20.80	173.59	21.73	3.03	168.95	8.34	51.89	48.11	18.91	7.91
2012	230.63	38.25	21.25	191.23	31.91	2.78	268.01	10.91	50.00	50.00	21.33	9.42
2013	232.52	38.26	21.96	184.97	27.14	4.70	205.21	9.27	51.66	48.34	19.22	8.00
2014	235.46	40.47	22.79	199.55	29.88	3.55	238.71	9.12	50.69	49.31	20.11	8.49
2015	237.48	41.95	23.58	207.28	35.12	4.31	281.96	9.98	50.58	49.41	20.40	8.72
2016	240.45	41.67	23.60	204.25	30.54	3.51	244.42	8.80	50.98	49.02	19.66	8.19
2017	241.96	42.78	22.98	221.05	39.62	3.73	327.29	10.82	48.34	51.67	21.63	9.28
2018	244.23	44.71	24.05	230.67	41.95	4.24	342.99	10.49	48.41	51.59	21.56	9.18
2019	246.39	45.64	24.82	232.95	39.01	4.32	312.18	9.36	48.95	51.04	20.96	8.69

Note: Fiscal Income (fiinc) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). *Pop* denotes the adult population in millions. μ_t and $\mu_{j,t}$ are the averages of the entire population and of the subgroup $\mathcal{G}_{j,t}$, respectively. σ_t^2 and $\sigma_{j,t}^2$ are the variances of the entire population and of the subgroup $\mathcal{G}_{j,t}$, respectively. $\mathcal{S}_t$ is the half the squared coefficient of variation (SCV). $\mathcal{Z}_{j,t}$ denotes the income shares of $\mathcal{G}_{j,t}$. For j, $B90$ denotes the bottom 90% and 10, 1, and 0.1 represent the top 10%, 1%, and 0.1%, respectively.

Table A2. U.S. Income Distribution Data: Personal Pre-Tax Income

Year	Pop	μ_t	$\mu_{B90,t}$	$\mu_{10,t}$	σ_t^2	$\sigma_{B90,t}^2$	$\sigma_{10,t}^2$	$\mathcal{S}_t$	$\mathcal{Z}_{B90,t}$	$\mathcal{Z}_{10,t}$	$\mathcal{Z}_{1,t}$	$\mathcal{Z}_{0.1,t}$
1962	113.75	4.58	3.03	18.57	0.19	0.01	1.64	4.56	59.50	40.50	13.93	4.84
1964	116.80	5.03	3.30	20.61	0.18	0.01	1.47	3.59	59.01	41.00	14.05	4.79
1966	119.72	5.78	3.81	23.43	0.34	0.01	2.94	5.07	59.43	40.57	14.13	5.03
1967	121.14	6.02	4.06	23.72	0.28	0.01	2.37	3.88	60.63	39.39	13.59	4.65
1968	123.51	6.50	4.36	25.70	0.34	0.01	2.91	4.06	60.43	39.55	13.73	4.78
1969	125.54	6.87	4.69	26.46	0.37	0.01	3.16	3.93	61.49	38.51	12.83	4.50
1970	127.67	7.10	4.90	26.84	0.29	0.02	2.29	2.85	62.17	37.83	11.81	3.79
1971	130.77	7.48	5.12	28.67	0.33	0.02	2.64	2.95	61.64	38.35	12.15	3.93
1972	133.50	8.03	5.50	30.79	0.26	0.02	1.89	2.05	61.66	38.34	11.99	3.67
1973	136.01	8.87	6.05	34.19	0.37	0.02	2.82	2.38	61.43	38.56	11.90	3.60
1974	138.44	9.37	6.49	35.28	0.36	0.03	2.60	2.04	62.36	37.65	11.48	3.44
1975	141.05	9.92	6.89	37.20	0.44	0.03	3.28	2.22	62.51	37.49	11.33	3.38
1976	143.61	10.85	7.57	40.39	0.43	0.03	3.04	1.83	62.78	37.22	11.15	3.33
1977	146.31	11.81	8.19	44.39	0.64	0.04	4.88	2.30	62.42	37.57	11.50	3.56
1978	149.14	12.97	9.05	48.30	0.70	0.05	5.21	2.09	62.76	37.24	11.27	3.48
1979	152.11	13.99	9.75	52.11	0.99	0.05	7.78	2.52	62.74	37.26	11.62	3.73
1980	155.27	14.86	10.43	54.67	0.85	0.06	6.15	1.92	63.20	36.80	11.16	3.49
1981	158.03	16.39	11.51	60.27	0.93	0.07	6.53	1.74	63.22	36.77	11.07	3.47
1982	160.66	16.64	11.69	61.21	0.97	0.08	6.74	1.74	63.24	36.78	11.08	3.55
1983	163.13	17.46	12.19	64.84	1.21	0.09	8.81	1.98	62.86	37.15	11.32	3.73
1984	165.65	19.10	13.23	72.02	1.64	0.10	12.43	2.25	62.31	37.70	11.92	4.10
1985	168.20	19.94	13.71	75.98	2.03	0.11	15.84	2.55	61.89	38.11	12.27	4.25
1986	170.56	20.57	14.18	78.13	1.98	0.12	15.02	2.33	62.02	37.98	11.95	3.96
1987	172.55	21.98	15.01	84.65	2.30	0.13	17.45	2.38	61.48	38.52	12.66	4.29
1988	174.34	23.76	15.75	95.84	5.03	0.14	43.29	4.46	59.66	40.35	14.76	5.69
1989	176.06	25.01	16.70	99.83	4.01	0.16	32.44	3.20	60.10	39.91	14.14	5.09
1990	178.36	26.13	17.47	104.04	4.80	0.17	39.67	3.51	60.18	39.82	14.28	5.22
1991	180.98	26.85	17.98	106.64	5.03	0.18	41.57	3.49	60.28	39.72	13.80	4.92
1992	183.44	28.13	18.54	114.40	6.34	0.20	53.30	4.01	59.33	40.67	14.74	5.53
1993	185.68	29.02	19.16	117.86	6.05	0.21	49.85	3.59	59.40	40.60	14.27	5.21
1994	187.76	30.48	20.04	124.40	6.71	0.23	55.27	3.61	59.18	40.82	14.36	5.23
1995	189.91	31.72	20.77	130.27	9.11	0.24	78.06	4.53	58.93	41.07	15.02	5.63
1996	192.04	33.20	21.46	138.93	10.73	0.26	92.58	4.87	58.16	41.84	15.61	5.97
1997	194.43	34.98	22.33	148.84	14.23	0.29	125.29	5.81	57.45	42.55	16.37	6.46
1998	196.79	36.94	23.46	158.27	16.91	0.31	149.87	6.20	57.15	42.85	16.70	6.65
1999	199.25	38.52	24.34	166.11	19.35	0.34	172.27	6.52	56.87	43.12	17.01	6.90
2000	201.65	40.67	25.47	177.46	24.01	0.37	215.87	7.26	56.36	43.63	17.43	7.21
2001	203.78	41.67	26.40	179.13	22.66	0.40	202.00	6.52	57.02	42.98	16.93	6.85
2002	206.20	42.30	27.06	179.48	19.93	0.42	174.68	5.57	57.57	42.43	16.26	6.42
2003	208.60	43.50	27.33	189.02	25.75	0.43	230.01	6.80	56.55	43.45	17.21	6.94
2004	210.95	45.86	28.37	203.31	35.16	0.48	319.71	8.36	55.67	44.33	18.09	7.54
2005	213.35	48.09	29.27	217.45	36.99	0.51	333.36	8.00	54.77	45.22	18.88	8.01
2006	215.90	50.46	30.32	231.65	44.78	0.55	406.07	8.79	54.08	45.91	19.51	8.37
2007	218.46	51.70	31.34	234.84	47.90	0.58	436.28	8.96	54.56	45.42	19.30	8.31
2008	220.88	52.58	31.96	238.28	49.71	2.64	435.03	8.99	54.69	45.31	18.93	8.18
2009	352.42	31.97	17.88	158.77	17.82	0.31	157.52	8.72	50.33	49.67	19.08	7.88
2010	225.68	53.00	32.54	237.18	39.31	0.62	349.82	7.00	55.25	44.75	18.26	7.65
2011	227.45	55.61	33.87	251.30	41.77	0.70	368.86	6.75	54.81	45.19	18.33	7.49
2012	230.63	57.69	34.42	267.15	52.64	0.73	471.11	7.91	53.69	46.31	19.50	8.21
2013	232.52	57.86	35.12	262.49	47.89	0.74	425.65	7.15	54.63	45.37	18.41	7.59
2014	235.47	59.98	35.99	275.93	52.12	0.79	462.18	7.24	54.00	46.00	18.84	7.80
2015	237.48	61.95	37.10	285.63	57.92	0.83	516.08	7.55	53.89	46.11	18.96	7.92
2016	240.45	62.46	37.41	287.81	59.86	0.85	534.35	7.67	53.91	46.08	18.80	7.85
2017	241.96	64.88	38.84	299.33	63.31	0.90	563.92	7.52	53.87	46.13	18.99	7.89
2018	244.23	67.97	40.49	315.32	68.28	0.99	605.77	7.39	53.61	46.39	19.19	7.95
2019	246.39	70.10	41.81	324.69	70.57	1.04	624.32	7.18	53.68	46.32	19.12	7.81

Note: Personal Pre-Tax Income (ptinc) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). Pop denotes the adult population in millions. μ_t and $\mu_{j,t}$ are the averages of the entire population and of the subgroup $\mathcal{G}_{j,t}$, respectively. σ_t^2 and $\sigma_{j,t}^2$ are the variances of the entire population and of the subgroup $\mathcal{G}_{j,t}$, respectively. $\mathcal{S}_t$ is the half the squared coefficient of variation (SCV). $\mathcal{Z}_{j,t}$ denotes the income shares of $\mathcal{G}_{j,t}$. For j, $B90$ denotes the bottom 90% and 10, 1, and 0.1 represent the top 10%, 1%, and 0.1%, respectively.

Table A3. U.S. Income Distribution Data: Pre-Tax National Income

Year	Pop	μ_t	$\mu_{B90,t}$	$\mu_{10,t}$	σ_t^2	$\sigma_{B90,t}^2$	$\sigma_{10,t}^2$	$\mathcal{S}_t$	$\mathcal{Z}_{B90,t}$	$\mathcal{Z}_{10,t}$	$\mathcal{Z}_{1,t}$	$\mathcal{Z}_{0.1,t}$
1962	113.75	4.69	3.11	18.90	0.19	0.01	1.62	4.34	59.73	40.27	13.67	4.73
1964	116.80	5.18	3.41	21.08	0.18	0.01	1.46	3.41	59.30	40.69	13.73	4.66
1966	119.72	6.00	3.98	24.11	0.34	0.01	2.94	4.74	59.80	40.20	13.76	4.87
1967	121.14	6.26	4.24	24.44	0.29	0.01	2.38	3.64	60.97	39.03	13.23	4.51
1968	123.51	6.72	4.54	26.39	0.35	0.01	2.91	3.83	60.75	39.25	13.41	4.63
1969	125.54	7.15	4.91	27.26	0.38	0.02	3.17	3.68	61.85	38.15	12.51	4.36
1970	127.67	7.34	5.09	27.60	0.29	0.02	2.29	2.68	62.41	37.58	11.54	3.68
1971	130.77	7.75	5.34	29.50	0.33	0.02	2.63	2.77	61.94	38.05	11.85	3.80
1972	133.50	8.38	5.76	31.90	0.33	0.02	2.47	2.34	61.91	38.09	11.75	3.64
1973	136.01	9.21	6.32	35.26	0.38	0.03	2.82	2.24	61.73	38.26	11.59	3.47
1974	138.44	9.73	6.77	36.34	0.36	0.03	2.60	1.93	62.64	37.37	11.20	3.33
1975	141.05	10.25	7.15	38.19	0.44	0.03	3.24	2.09	62.75	37.25	11.05	3.27
1976	143.61	11.21	7.84	41.52	0.51	0.04	3.78	2.04	62.95	37.05	10.95	3.31
1977	146.31	12.25	8.54	45.68	0.65	0.04	4.85	2.16	62.72	37.28	11.19	3.44
1978	149.14	13.56	9.51	50.06	0.72	0.05	5.21	1.95	63.08	36.92	10.95	3.35
1979	152.11	14.71	10.31	54.28	1.01	0.06	7.80	2.33	63.10	36.90	11.26	3.58
1980	155.27	15.56	10.98	56.84	0.88	0.07	6.27	1.81	63.48	36.52	10.86	3.37
1981	158.03	17.15	12.10	62.66	0.97	0.08	6.63	1.64	63.47	36.53	10.79	3.34
1982	160.66	17.54	12.35	64.23	1.07	0.09	7.42	1.73	63.36	36.62	10.81	3.46
1983	163.13	18.56	13.01	68.52	1.28	0.10	9.17	1.86	63.08	36.91	10.98	3.57
1984	165.65	20.56	14.29	76.96	1.74	0.12	12.82	2.06	62.56	37.43	11.49	3.88
1985	168.20	21.68	14.98	82.01	2.64	0.13	21.21	2.81	62.18	37.82	11.85	4.09
1986	170.56	22.32	15.48	83.95	2.20	0.14	16.51	2.21	62.39	37.60	11.50	3.76
1987	172.55	23.53	16.15	89.98	2.41	0.15	17.87	2.18	61.76	38.24	12.26	4.08
1988	174.34	25.46	16.95	102.00	5.52	0.16	47.24	4.26	59.93	40.07	14.41	5.52
1989	176.06	26.79	17.98	106.16	4.29	0.19	34.20	2.99	60.38	39.62	13.76	4.90
1990	178.36	27.88	18.72	110.32	5.14	0.20	42.03	3.31	60.43	39.56	13.92	5.04
1991	180.98	28.38	19.08	112.16	5.26	0.21	42.89	3.26	60.49	39.52	13.42	4.72
1992	183.44	29.64	19.58	120.19	6.97	0.23	58.52	3.97	59.45	40.55	14.44	5.39
1993	185.68	30.64	20.27	123.90	6.30	0.24	51.18	3.36	59.55	40.44	13.90	5.01
1994	187.76	32.35	21.35	131.36	6.92	0.26	55.99	3.31	59.40	40.61	13.90	4.98
1995	189.91	33.80	22.21	138.06	9.58	0.29	81.09	4.19	59.15	40.85	14.52	5.37
1996	192.04	35.53	23.03	148.07	12.12	0.31	104.38	4.80	58.33	41.67	15.15	5.74
1997	194.43	37.57	24.06	159.15	16.22	0.34	142.68	5.75	57.63	42.36	15.87	6.22
1998	196.79	39.50	25.16	168.45	17.85	0.37	156.62	5.72	57.34	42.65	16.13	6.34
1999	199.25	41.32	26.18	177.53	24.13	0.40	217.02	7.07	57.03	42.97	16.56	6.71
2000	201.65	43.65	27.45	189.50	29.51	0.44	267.38	7.74	56.59	43.41	16.94	6.99
2001	203.78	44.57	28.40	190.07	23.96	0.47	211.73	6.03	57.35	42.64	16.33	6.53
2002	206.20	45.18	29.05	190.27	21.45	0.49	186.65	5.26	57.88	42.12	15.69	6.14
2003	208.61	46.62	29.46	201.08	28.20	0.52	250.80	6.49	56.87	43.13	16.61	6.63
2004	210.95	49.33	30.72	216.78	37.71	0.57	340.76	7.75	56.05	43.95	17.38	7.16
2005	213.35	51.89	31.77	233.00	41.10	0.62	368.84	7.63	55.09	44.90	18.19	7.64
2006	215.90	54.71	33.12	248.97	48.39	0.68	435.74	8.09	54.49	45.51	18.68	7.91
2007	218.46	55.77	33.96	252.12	55.96	0.71	510.38	8.99	54.80	45.20	18.65	8.01
2008	220.88	55.93	34.13	252.00	52.02	2.60	453.75	8.31	54.93	45.06	18.32	7.81
2009	352.42	33.79	18.85	168.30	19.40	0.36	170.68	8.50	50.20	49.80	18.65	7.59
2010	225.68	55.90	34.33	249.96	41.79	0.73	369.41	6.69	55.28	44.72	17.77	7.37
2011	227.45	57.98	35.28	262.28	45.96	0.80	406.04	6.84	54.77	45.24	17.98	7.35
2012	230.63	60.04	35.82	277.99	55.26	0.83	492.27	7.66	53.70	46.30	19.06	7.97
2013	232.52	61.18	37.29	276.19	51.02	0.87	450.99	6.82	54.85	45.14	17.83	7.29
2014	235.47	63.36	38.16	290.24	55.66	0.93	490.99	6.93	54.20	45.81	18.26	7.49
2015	237.48	65.15	39.16	299.08	61.63	0.97	546.71	7.26	54.10	45.90	18.41	7.63
2016	240.45	65.50	39.41	300.33	60.65	0.99	536.26	7.07	54.15	45.85	18.21	7.50
2017	241.96	68.11	40.86	313.25	69.23	1.04	615.95	7.46	54.00	45.99	18.55	7.67
2018	244.23	71.10	42.42	329.21	72.07	1.13	636.34	7.13	53.69	46.30	18.70	7.68
2019	246.39	72.95	43.61	337.04	71.49	1.18	626.70	6.72	53.80	46.20	18.62	7.51

Note: Pre-Tax National Income (peinc) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). Pop denotes the adult population in millions. μ_t and $\mu_{j,t}$ are the averages of the entire population and of the subgroup $\mathcal{G}_{j,t}$, respectively. σ_t^2 and $\sigma_{j,t}^2$ are the variances of the entire population and of the subgroup $\mathcal{G}_{j,t}$, respectively. $\mathcal{S}_t$ is the half the squared coefficient of variation (SCV). $\mathcal{Z}_{j,t}$ denotes the income shares of $\mathcal{G}_{j,t}$. For j, $B90$ denotes the bottom 90% and 10, 1, and 0.1 represent the top 10%, 1%, and 0.1%, respectively.

Table A4. U.S. Income Distribution Data: Post-Tax National Income

Year	Pop	μ_t	$\mu_{B90,t}$	$\mu_{10,t}$	σ_t^2	$\sigma_{B90,t}^2$	$\sigma_{10,t}^2$	$\mathcal{S}_t$	$\mathcal{Z}_{B90,t}$	$\mathcal{Z}_{10,t}$	$\mathcal{Z}_{1,t}$	$\mathcal{Z}_{0.1,t}$
1962	113.75	4.69	3.31	17.12	0.08	0.01	0.52	1.73	63.54	36.47	10.31	2.88
1964	116.80	5.20	3.63	19.32	0.12	0.01	0.86	2.16	62.83	37.18	10.66	3.09
1966	119.72	6.00	4.23	21.86	0.14	0.01	1.03	1.98	63.54	36.44	10.41	3.04
1967	121.14	6.26	4.54	21.78	0.11	0.01	0.75	1.44	65.20	34.79	9.74	2.69
1968	123.51	6.72	4.89	23.25	0.13	0.01	0.84	1.41	65.42	34.59	9.60	2.63
1969	125.54	7.15	5.26	24.11	0.13	0.02	0.84	1.29	66.27	33.74	8.88	2.41
1970	127.67	7.34	5.43	24.53	0.11	0.02	0.62	1.02	66.60	33.40	8.52	2.13
1971	130.77	7.75	5.72	26.10	0.13	0.02	0.77	1.08	66.35	33.66	8.80	2.24
1972	133.50	8.39	6.19	28.15	0.15	0.02	0.89	1.07	66.44	33.56	8.72	2.20
1973	136.01	9.21	6.75	31.43	0.17	0.02	0.92	0.99	65.89	34.11	8.94	2.19
1974	138.44	9.73	7.25	32.03	0.16	0.03	0.80	0.84	67.06	32.94	8.48	2.02
1975	141.05	10.25	7.66	33.54	0.20	0.03	1.16	0.95	67.28	32.72	8.52	2.15
1976	143.61	11.21	8.43	36.17	0.22	0.03	1.26	0.89	67.73	32.27	8.31	2.11
1977	146.31	12.25	9.20	39.72	0.29	0.04	1.72	0.96	67.58	32.42	8.47	2.22
1978	149.14	13.56	10.19	43.95	0.36	0.04	2.15	0.97	67.59	32.41	8.48	2.26
1979	152.11	14.73	11.08	47.56	0.54	0.05	3.67	1.23	67.71	32.29	8.69	2.43
1980	155.27	15.58	11.82	49.36	0.45	0.06	2.74	0.93	68.32	31.69	8.25	2.24
1981	158.03	17.18	12.97	55.08	0.65	0.07	4.33	1.11	67.93	32.07	8.58	2.45
1982	160.67	17.58	13.21	56.86	0.71	0.07	4.69	1.14	67.65	32.35	8.62	2.56
1983	163.13	18.59	13.89	60.94	0.74	0.08	4.64	1.07	67.22	32.78	8.79	2.56
1984	165.65	20.60	15.16	69.63	1.15	0.10	7.95	1.35	66.21	33.79	9.51	2.94
1985	168.20	21.71	15.92	73.86	1.62	0.11	12.19	1.72	65.99	34.01	9.71	3.02
1986	170.56	22.38	16.53	75.00	1.28	0.16	8.33	1.28	66.49	33.51	9.03	2.54
1987	172.55	23.62	17.38	79.80	1.62	0.14	11.46	1.45	66.21	33.79	9.80	2.98
1988	174.34	25.52	18.22	91.22	3.28	0.15	26.60	2.51	64.26	35.74	11.84	4.23
1989	176.06	26.88	19.36	94.59	2.55	0.16	19.00	1.77	64.81	35.19	11.27	3.74
1990	178.36	27.96	20.18	98.02	3.16	0.17	24.68	2.02	64.94	35.05	11.43	3.89
1991	180.98	28.44	20.59	99.10	3.26	0.17	25.56	2.02	65.16	34.84	10.90	3.59
1992	183.44	29.74	21.30	105.71	4.47	0.18	36.65	2.53	64.46	35.54	11.69	4.12
1993	185.68	30.73	22.20	107.48	3.29	0.20	24.54	1.74	65.02	34.98	10.79	3.50
1994	187.76	32.46	23.45	113.57	4.04	0.22	31.09	1.92	65.02	34.99	10.73	3.51
1995	189.91	33.87	24.45	118.64	4.83	0.24	38.15	2.10	64.97	35.03	11.06	3.68
1996	192.04	35.63	25.52	126.56	5.86	0.29	46.80	2.31	64.47	35.52	11.40	3.82
1997	194.43	37.65	26.76	135.64	7.72	0.36	63.23	2.72	63.97	36.02	11.87	4.16
1998	196.79	39.64	28.16	142.96	9.22	0.43	76.47	2.93	63.93	36.07	11.92	4.19
1999	199.25	41.48	29.41	150.05	12.28	0.52	104.99	3.57	63.82	36.17	12.15	4.43
2000	201.65	43.87	30.93	160.35	16.33	0.68	142.06	4.24	63.45	36.55	12.40	4.58
2001	203.78	44.70	31.66	162.08	11.75	0.42	98.37	2.94	63.75	36.26	12.36	4.52
2002	206.20	45.29	32.07	164.26	12.28	0.43	103.18	2.99	63.73	36.27	12.33	4.54
2003	208.60	46.72	32.35	176.08	17.78	0.53	154.41	4.07	62.31	37.69	13.72	5.26
2004	210.95	49.45	33.94	189.00	23.24	0.56	205.59	4.75	61.77	38.22	14.21	5.59
2005	213.35	52.11	35.44	202.12	26.93	0.78	237.22	4.96	61.21	38.78	14.66	5.95
2006	215.90	54.90	37.19	214.26	28.04	0.71	245.75	4.65	60.97	39.03	14.85	5.99
2007	218.46	55.98	38.30	215.05	30.74	0.80	271.99	4.90	61.58	38.42	14.49	5.90
2008	220.88	56.16	38.78	212.59	30.27	3.70	242.15	4.80	62.15	37.85	14.09	5.72
2009	352.42	33.98	21.56	145.80	12.14	0.36	104.27	5.25	57.10	42.90	15.09	5.86
2010	225.68	56.16	38.67	213.57	28.41	0.66	250.65	4.50	61.97	38.03	14.44	5.88
2011	227.45	58.18	39.81	223.52	29.15	0.70	254.85	4.31	61.58	38.42	14.51	5.77
2012	230.63	60.37	40.55	238.79	37.11	0.81	328.50	5.09	60.45	39.55	15.49	6.34
2013	232.52	61.53	42.29	234.67	31.42	1.15	270.47	4.15	61.86	38.14	14.09	5.52
2014	235.47	63.76	43.49	246.25	33.54	1.43	285.58	4.13	61.38	38.62	14.37	5.63
2015	237.48	65.54	44.87	251.61	36.29	1.53	310.67	4.22	61.61	38.39	14.30	5.66
2016	240.45	65.86	45.07	252.97	35.85	1.37	307.18	4.13	61.59	38.41	14.24	5.62
2017	241.96	68.43	45.93	270.98	49.53	4.42	409.93	5.29	60.40	39.60	14.89	6.06
2018	244.23	71.50	47.49	287.51	54.17	6.22	433.83	5.30	59.79	40.21	15.20	6.10
2019	246.39	73.43	48.86	294.54	57.04	6.23	459.96	5.29	59.89	40.11	15.21	6.08

Note: Post-Tax National Income (poinc) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). *Pop* denotes the adult population in millions. μ_t and $\mu_{j,t}$ are the averages of the entire population and of the subgroup $\mathcal{G}_{j,t}$, respectively. σ_t^2 and $\sigma_{j,t}^2$ are the variances of the entire population and of the subgroup $\mathcal{G}_{j,t}$, respectively. $\mathcal{S}_t$ is the half the squared coefficient of variation (SCV). $\mathcal{Z}_{j,t}$ denotes the income shares of $\mathcal{G}_{j,t}$. For j, $B90$ denotes the bottom 90% and 10, 1, and 0.1 represent the top 10%, 1%, and 0.1%, respectively.

Table A5. U.S. Income Distribution Data: Net Personal Wealth

Year	Pop	μ_t	$\mu_{B90,t}$	$\mu_{10,t}$	σ_t^2	$\sigma^2_{B90,t}$	$\sigma^2_{10,t}$	$\mathcal{S}_t$	$\mathcal{Z}_{B90,t}$	$\mathcal{Z}_{10,t}$	$\mathcal{Z}_{1,t}$	$\mathcal{Z}_{0.1,t}$
1962	113.75	15.23	6.43	94.41	4.77	0.04	40.35	10.28	38.00	62.00	25.76	9.07
1964	116.79	16.18	6.73	101.16	4.84	0.05	39.98	9.26	37.46	62.54	25.17	8.69
1966	119.72	17.90	7.52	111.41	6.74	0.06	57.13	10.52	37.79	62.23	25.35	9.10
1967	121.14	18.89	8.02	116.65	7.48	0.07	63.60	10.49	38.24	61.76	25.17	8.99
1968	123.51	20.66	8.40	130.98	10.06	0.08	86.34	11.78	36.61	63.39	26.83	9.97
1969	125.54	21.43	9.32	130.45	10.83	0.10	94.19	11.79	39.13	60.86	24.97	9.43
1970	127.67	21.50	9.18	132.35	8.72	0.10	72.65	9.44	38.42	61.57	23.88	8.49
1971	130.77	22.78	10.03	137.55	15.48	0.11	139.11	14.91	39.62	60.38	24.03	8.97
1972	133.50	25.05	10.74	153.88	9.83	0.14	78.52	7.83	38.58	61.42	23.50	7.92
1973	136.01	26.90	11.39	166.43	14.21	0.17	118.94	9.82	38.12	61.88	23.09	7.60
1974	138.44	26.58	11.82	159.32	10.33	0.19	81.88	7.31	40.01	59.93	21.87	6.82
1975	141.05	27.71	13.04	159.69	7.91	0.21	57.81	5.15	42.36	57.63	20.48	6.01
1976	143.61	30.96	14.63	177.88	8.88	0.27	62.36	4.63	42.53	57.46	19.47	5.72
1977	146.30	33.74	15.84	194.79	11.04	0.33	78.63	4.85	42.26	57.73	19.57	5.79
1978	149.14	36.87	18.14	205.46	14.09	0.42	105.43	5.18	44.27	55.72	18.71	5.67
1979	152.11	41.27	20.02	232.57	18.37	0.50	138.59	5.39	43.65	56.35	19.66	6.08
1980	155.27	46.74	22.80	262.12	22.61	0.64	168.75	5.18	43.91	56.08	19.70	6.26
1981	158.03	51.33	25.74	281.61	27.62	0.76	210.47	5.24	45.14	54.87	19.92	6.43
1982	160.66	54.31	27.74	293.39	28.87	0.86	217.27	4.89	45.97	54.02	19.63	6.53
1983	163.13	57.95	29.83	311.06	37.70	0.97	297.13	5.61	46.33	53.68	19.31	6.59
1984	165.65	61.81	31.74	332.56	44.14	1.11	349.91	5.78	46.21	53.80	19.82	6.89
1985	168.20	67.47	34.35	365.40	59.21	1.29	481.52	6.50	45.82	54.16	20.58	7.48
1986	170.55	74.43	37.76	404.21	68.98	1.54	554.45	6.23	45.67	54.31	20.66	7.45
1987	172.55	79.56	40.37	432.30	84.86	1.75	694.57	6.70	45.67	54.34	21.16	7.42
1988	174.34	85.20	41.46	478.77	130.10	1.97	1110.63	8.96	43.80	56.19	23.24	8.74
1989	176.06	92.17	44.65	519.80	133.85	2.31	1114.25	7.88	43.60	56.39	23.29	8.40
1990	178.36	96.32	46.33	546.23	164.85	2.59	1399.69	8.88	43.29	56.71	23.56	8.71
1991	180.98	99.96	47.45	572.54	175.26	2.79	1479.12	8.77	42.72	57.27	23.28	8.43
1992	183.44	103.87	48.08	605.73	188.01	2.99	1572.12	8.71	41.66	58.32	23.84	8.74
1993	185.68	108.09	49.87	631.93	212.81	3.29	1792.74	9.11	41.52	58.46	23.78	8.82
1994	187.75	111.90	51.47	655.68	234.11	3.60	1979.50	9.35	41.40	58.59	23.81	8.95
1995	189.91	118.46	53.91	699.40	295.37	4.05	2542.02	10.52	40.96	59.04	24.15	9.30
1996	192.04	127.54	56.70	765.33	400.66	4.53	3513.92	12.31	40.01	60.00	24.94	9.85
1997	194.42	138.86	60.27	846.13	573.22	5.40	5127.27	14.86	39.06	60.93	25.93	10.57
1998	196.79	153.80	65.06	952.26	845.86	6.30	7690.83	17.88	38.07	61.92	26.96	11.34
1999	199.25	169.31	71.39	1050.47	1141.24	7.51	10480.32	19.91	37.95	62.05	27.20	11.68
2000	201.65	176.92	75.12	1093.17	1311.35	8.25	12106.27	20.95	38.22	61.79	27.34	11.78
2001	203.77	179.06	78.10	1087.71	1230.28	8.70	11306.75	19.19	39.26	60.75	26.94	11.58
2002	206.20	176.53	78.21	1061.24	986.69	8.58	8917.14	15.83	39.87	60.12	25.65	10.71
2003	208.60	182.73	71.41	1184.62	1192.58	9.54	10723.66	17.86	35.17	64.83	28.16	11.68
2004	210.95	207.76	79.18	1364.94	2067.96	11.90	19083.58	23.96	34.30	65.70	29.23	12.79
2005	213.35	228.25	86.87	1500.55	1954.45	14.27	17615.73	18.76	34.25	65.74	29.35	12.43
2006	215.89	245.79	92.63	1624.00	2577.88	16.66	23510.72	21.34	33.92	66.07	30.03	13.01
2007	218.45	253.31	93.69	1689.93	2744.11	17.94	24984.57	21.38	33.29	66.71	30.34	13.11
2008	220.88	246.32	85.26	1696.09	2876.37	64.19	25848.16	23.70	31.15	68.86	32.09	14.23
2009	352.42	133.68	39.64	980.08	766.40	5.20	6821.21	21.44	26.69	73.32	32.99	13.25
2010	225.67	210.38	74.73	1430.98	1141.35	14.33	9626.38	12.89	31.97	68.02	29.08	11.37
2011	227.45	216.41	75.71	1482.44	1231.87	14.69	10403.09	13.15	31.49	68.50	29.50	11.60
2012	230.62	222.84	75.22	1551.28	1575.75	15.00	13659.02	15.87	30.38	69.61	30.77	12.59
2013	232.52	246.06	87.07	1676.78	2199.52	18.10	19553.06	18.16	31.85	68.15	29.76	12.53
2014	235.46	265.24	95.21	1795.46	2039.18	20.67	17603.68	14.49	32.31	67.69	29.26	11.77
2015	237.47	279.58	100.53	1890.84	2489.47	22.26	21803.93	15.92	32.36	67.63	29.58	12.22
2016	240.44	288.88	104.59	1947.48	2612.98	23.83	22855.94	15.66	32.58	67.41	29.31	12.06
2017	241.95	310.90	115.23	2071.62	2704.27	26.57	23350.99	13.99	33.36	66.63	29.21	11.58
2018	244.22	325.80	120.74	2171.49	2991.13	28.70	25867.43	14.09	33.35	66.65	29.23	11.66
2019	246.39	347.19	129.67	2305.06	3243.38	31.94	27886.65	13.45	33.61	66.39	29.10	11.50

Note: Net Personal Wealth (hweal) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). Pop denotes the adult population in millions. μ_t and $\mu_{j,t}$ are the averages of the entire population and of the subgroup $\mathcal{G}_{j,t}$, respectively. σ_t^2 and $\sigma^2_{j,t}$ are the variances of the entire population and of the subgroup $\mathcal{G}_{j,t}$, respectively. $\mathcal{S}_t$ is the half the squared coefficient of variation (SCV). $\mathcal{Z}_{j,t}$ denotes the income shares of $\mathcal{G}_{j,t}$. For j, $B90$ denotes the bottom 90% and 10, 1, and 0.1 represent the top 10%, 1%, and 0.1%, respectively.

Table A6. Inequality Decomposition Estimates: Fiscal Income

	Two-Way Decomp		*Four-Way Decomp*			
Year	$\mathcal{C}_{10,t}$	$\mathcal{C}_{B90,t}$	$\mathcal{C}^{\sigma}_{10,t}$	$\mathcal{C}^{\mu}_{10,t}$	$\mathcal{C}^{\sigma}_{B90,t}$	$\mathcal{C}^{\mu}_{B90,t}$
1962	2.03	0.27	1.61	0.42	0.22	0.05
1964	2.25	0.28	1.83	0.42	0.24	0.05
1966	2.38	0.28	1.98	0.41	0.24	0.05
1967	2.45	0.26	2.04	0.41	0.21	0.05
1968	3.10	0.25	2.69	0.41	0.21	0.05
1969	3.12	0.25	2.73	0.39	0.21	0.04
1970	1.55	0.27	1.18	0.37	0.23	0.04
1971	1.81	0.28	1.41	0.40	0.23	0.04
1972	2.02	0.28	1.63	0.39	0.23	0.04
1973	1.40	0.28	1.01	0.39	0.24	0.04
1974	1.29	0.32	0.91	0.38	0.28	0.04
1975	1.35	0.37	0.96	0.39	0.32	0.04
1976	1.32	0.37	0.94	0.38	0.33	0.04
1977	1.33	0.33	0.95	0.38	0.28	0.04
1978	1.23	0.31	0.86	0.37	0.27	0.04
1979	2.94	0.29	2.56	0.38	0.25	0.04
1980	1.99	0.31	1.61	0.39	0.27	0.04
1981	1.52	0.38	1.13	0.38	0.34	0.04
1982	1.87	0.42	1.46	0.42	0.37	0.05
1983	2.28	0.52	1.84	0.44	0.47	0.05
1984	2.63	0.73	2.20	0.43	0.68	0.05
1985	3.22	0.68	2.77	0.45	0.63	0.05
1986	4.41	0.61	3.91	0.50	0.55	0.06
1987	2.93	0.63	2.47	0.46	0.58	0.05
1988	4.87	0.80	4.36	0.52	0.75	0.06
1989	3.92	0.61	3.43	0.49	0.55	0.05
1990	4.05	0.68	3.56	0.49	0.62	0.05
1991	3.16	1.18	2.67	0.49	1.12	0.05
1992	4.02	0.65	3.50	0.52	0.59	0.06
1993	3.73	0.72	3.20	0.53	0.66	0.06
1994	3.90	0.60	3.36	0.54	0.54	0.06
1995	4.47	0.93	3.93	0.54	0.87	0.06
1996	6.10	0.86	5.52	0.58	0.80	0.06
1997	7.35	0.76	6.74	0.61	0.69	0.07
1998	9.48	0.69	8.84	0.64	0.62	0.07
1999	11.51	0.77	10.85	0.67	0.70	0.07
2000	14.66	0.55	13.96	0.70	0.47	0.08
2001	7.75	0.80	7.13	0.62	0.73	0.07
2002	5.95	0.89	5.35	0.60	0.82	0.07
2003	6.79	0.71	6.17	0.62	0.64	0.07
2004	9.70	0.88	9.02	0.68	0.80	0.08
2005	9.71	1.05	8.96	0.74	0.97	0.08
2006	11.49	0.53	10.73	0.76	0.44	0.08
2007	12.04	0.84	11.28	0.76	0.75	0.08
2008	8.90	1.15	8.19	0.71	1.07	0.08
2009	8.38	1.19	7.51	0.87	1.10	0.10
2010	8.00	0.97	7.28	0.71	0.89	0.08
2011	7.21	1.13	6.49	0.73	1.05	0.08
2012	9.96	0.95	9.16	0.80	0.86	0.09
2013	7.74	1.53	7.01	0.73	1.44	0.08
2014	8.06	1.06	7.29	0.77	0.98	0.09
2015	8.79	1.19	8.01	0.78	1.10	0.09
2016	7.80	0.99	7.04	0.76	0.91	0.08
2017	9.81	1.01	8.94	0.87	0.92	0.10
2018	9.44	1.05	8.58	0.86	0.95	0.10
2019	8.34	1.03	7.49	0.84	0.93	0.09

Note: Fiscal Income (fiinc) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). $\mathcal{C}_{10,t}$ and $\mathcal{C}_{B90,t}$ denote the contributions of the top 10% and the bottom 90% income groups, respectively, to the overall inequality measure $\mathcal{S}_t$. The four-way decomposition further breaks down each $\mathcal{C}_{j,t}$ into two components, $\mathcal{C}^{\sigma}_{j,t}$ and $\mathcal{C}^{\mu}_{j,t}$.

Table A7. Inequality Decomposition Estimates: Personal Pre-Tax Income

	Two-Way Decomp		*Four-Way Decomp*			
Year	$\mathcal{C}_{10,t}$	$\mathcal{C}_{B90,t}$	$\mathcal{C}^{\sigma}_{10,t}$	$\mathcal{C}^{\mu}_{10,t}$	$\mathcal{C}^{\sigma}_{B90,t}$	$\mathcal{C}^{\mu}_{B90,t}$
1962	4.36	0.20	3.89	0.47	0.15	0.05
1964	3.39	0.20	2.91	0.48	0.15	0.05
1966	4.87	0.20	4.40	0.47	0.14	0.05
1967	3.70	0.18	3.27	0.43	0.13	0.05
1968	3.88	0.18	3.44	0.44	0.13	0.05
1969	3.75	0.18	3.34	0.41	0.13	0.05
1970	2.66	0.18	2.28	0.39	0.14	0.04
1971	2.77	0.18	2.36	0.40	0.14	0.04
1972	1.86	0.18	1.46	0.40	0.14	0.04
1973	2.20	0.18	1.79	0.41	0.14	0.05
1974	1.86	0.17	1.48	0.38	0.13	0.04
1975	2.04	0.17	1.67	0.38	0.13	0.04
1976	1.66	0.17	1.29	0.37	0.13	0.04
1977	2.13	0.17	1.75	0.38	0.13	0.04
1978	1.92	0.17	1.55	0.37	0.13	0.04
1979	2.36	0.16	1.99	0.37	0.12	0.04
1980	1.75	0.17	1.39	0.36	0.13	0.04
1981	1.57	0.16	1.21	0.36	0.12	0.04
1982	1.58	0.17	1.22	0.36	0.13	0.04
1983	1.81	0.17	1.45	0.37	0.13	0.04
1984	2.09	0.16	1.70	0.38	0.12	0.04
1985	2.39	0.16	1.99	0.40	0.12	0.04
1986	2.17	0.17	1.77	0.39	0.12	0.04
1987	2.21	0.16	1.81	0.41	0.12	0.05
1988	4.30	0.16	3.84	0.46	0.11	0.05
1989	3.04	0.16	2.59	0.45	0.11	0.05
1990	3.35	0.16	2.91	0.44	0.11	0.05
1991	3.33	0.16	2.88	0.44	0.12	0.05
1992	3.84	0.17	3.37	0.47	0.12	0.05
1993	3.43	0.17	2.96	0.47	0.11	0.05
1994	3.45	0.16	2.98	0.47	0.11	0.05
1995	4.36	0.16	3.88	0.48	0.11	0.05
1996	4.71	0.16	4.20	0.51	0.11	0.06
1997	5.65	0.16	5.12	0.53	0.10	0.06
1998	6.03	0.16	5.49	0.54	0.10	0.06
1999	6.35	0.16	5.80	0.55	0.10	0.06
2000	7.09	0.16	6.53	0.57	0.10	0.06
2001	6.36	0.16	5.82	0.54	0.10	0.06
2002	5.41	0.16	4.88	0.53	0.10	0.06
2003	6.64	0.17	6.08	0.56	0.10	0.06
2004	8.19	0.17	7.60	0.59	0.10	0.07
2005	7.83	0.17	7.21	0.62	0.10	0.07
2006	8.62	0.17	7.97	0.64	0.10	0.07
2007	8.79	0.17	8.16	0.63	0.10	0.07
2008	8.49	0.50	7.87	0.62	0.43	0.07
2009	8.49	0.22	7.71	0.79	0.14	0.09
2010	6.83	0.17	6.23	0.60	0.10	0.07
2011	6.58	0.17	5.96	0.62	0.10	0.07
2012	7.74	0.17	7.08	0.66	0.10	0.07
2013	6.98	0.17	6.36	0.63	0.10	0.07
2014	7.07	0.17	6.42	0.65	0.10	0.07
2015	7.38	0.17	6.72	0.65	0.10	0.07
2016	7.50	0.17	6.85	0.65	0.10	0.07
2017	7.35	0.17	6.70	0.65	0.10	0.07
2018	7.22	0.17	6.56	0.66	0.10	0.07
2019	7.01	0.17	6.35	0.66	0.10	0.07

Note: Personal Pre-Tax Income (ptinc) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). $\mathcal{C}_{10,t}$ and $\mathcal{C}_{B90,t}$ denote the contributions of the top 10% and the bottom 90% income groups, respectively, to the overall inequality measure $\mathcal{S}_t$. The four-way decomposition further breaks down each $\mathcal{C}_{j,t}$ into two components, $\mathcal{C}^{\sigma}_{j,t}$ and $\mathcal{C}^{\mu}_{j,t}$.

Table A8. Inequality Decomposition Estimates: Pre-Tax National Income

	Two-Way Dec		*Four-Way Dec*			
Year	$\mathcal{C}_{10,t}$	$\mathcal{C}_{B90,t}$	$\mathcal{C}^{\sigma}_{10,t}$	$\mathcal{C}^{\mu}_{10,t}$	$\mathcal{C}^{\sigma}_{B90,t}$	$\mathcal{C}^{\mu}_{B90,t}$
1962	4.14	0.20	3.68	0.46	0.15	0.05
1964	3.20	0.20	2.73	0.47	0.15	0.05
1966	4.54	0.20	4.09	0.46	0.15	0.05
1967	3.46	0.18	3.03	0.42	0.13	0.05
1968	3.64	0.18	3.22	0.43	0.13	0.05
1969	3.50	0.18	3.10	0.40	0.14	0.04
1970	2.50	0.18	2.12	0.38	0.14	0.04
1971	2.58	0.18	2.19	0.39	0.14	0.04
1972	2.15	0.19	1.76	0.39	0.14	0.04
1973	2.06	0.18	1.66	0.40	0.14	0.04
1974	1.75	0.17	1.38	0.37	0.13	0.04
1975	1.91	0.17	1.54	0.37	0.13	0.04
1976	1.87	0.17	1.50	0.37	0.13	0.04
1977	1.99	0.17	1.61	0.37	0.13	0.04
1978	1.78	0.17	1.42	0.36	0.13	0.04
1979	2.16	0.16	1.80	0.36	0.12	0.04
1980	1.65	0.17	1.29	0.35	0.13	0.04
1981	1.48	0.17	1.13	0.35	0.13	0.04
1982	1.56	0.17	1.21	0.35	0.13	0.04
1983	1.69	0.17	1.33	0.36	0.13	0.04
1984	1.89	0.17	1.52	0.38	0.12	0.04
1985	2.64	0.17	2.26	0.39	0.12	0.04
1986	2.04	0.17	1.66	0.38	0.13	0.04
1987	2.01	0.17	1.61	0.40	0.12	0.04
1988	4.10	0.16	3.65	0.45	0.11	0.05
1989	2.82	0.17	2.38	0.44	0.12	0.05
1990	3.14	0.16	2.70	0.44	0.12	0.05
1991	3.10	0.17	2.66	0.44	0.12	0.05
1992	3.80	0.17	3.33	0.47	0.12	0.05
1993	3.19	0.17	2.73	0.46	0.12	0.05
1994	3.14	0.17	2.68	0.47	0.11	0.05
1995	4.03	0.17	3.55	0.48	0.11	0.05
1996	4.64	0.17	4.13	0.50	0.11	0.06
1997	5.58	0.17	5.05	0.52	0.11	0.06
1998	5.55	0.17	5.02	0.53	0.11	0.06
1999	6.90	0.17	6.36	0.54	0.11	0.06
2000	7.57	0.17	7.02	0.56	0.10	0.06
2001	5.86	0.17	5.33	0.53	0.11	0.06
2002	5.09	0.17	4.57	0.52	0.11	0.06
2003	6.32	0.17	5.77	0.55	0.11	0.06
2004	7.58	0.17	7.00	0.58	0.11	0.06
2005	7.46	0.17	6.85	0.61	0.10	0.07
2006	7.91	0.17	7.28	0.63	0.10	0.07
2007	8.82	0.17	8.20	0.62	0.10	0.07
2008	7.87	0.44	7.25	0.61	0.37	0.07
2009	8.26	0.23	7.47	0.79	0.14	0.09
2010	6.51	0.17	5.91	0.60	0.11	0.07
2011	6.66	0.18	6.04	0.62	0.11	0.07
2012	7.49	0.18	6.83	0.66	0.10	0.07
2013	6.64	0.17	6.02	0.62	0.10	0.07
2014	6.76	0.18	6.11	0.64	0.10	0.07
2015	7.08	0.17	6.44	0.64	0.10	0.07
2016	6.89	0.18	6.25	0.64	0.10	0.07
2017	7.29	0.17	6.64	0.65	0.10	0.07
2018	6.95	0.17	6.29	0.66	0.10	0.07
2019	6.54	0.17	5.89	0.66	0.10	0.07

Note: Pre-Tax National Income (peinc) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). $\mathcal{C}_{10,t}$ and $\mathcal{C}_{B90,t}$ denote the contributions of the top 10% and the bottom 90% income groups, respectively, to the overall inequality measure $\mathcal{S}_t$. The four-way decomposition further breaks down each $\mathcal{C}_{j,t}$ into two components, $\mathcal{C}^{\sigma}_{j,t}$ and $\mathcal{C}^{\mu}_{j,t}$.

Table A9. Inequality Decomposition Estimates: Post-Tax National Income

	Two-Way Dec		*Four-Way Dec*			
Year	$\mathcal{C}_{10,t}$	$\mathcal{C}_{B90,t}$	$\mathcal{C}^{\sigma}_{10,t}$	$\mathcal{C}^{\mu}_{10,t}$	$\mathcal{C}^{\sigma}_{B90,t}$	$\mathcal{C}^{\mu}_{B90,t}$
1962	1.53	0.19	1.18	0.35	0.16	0.04
1964	1.96	0.20	1.59	0.37	0.16	0.04
1966	1.78	0.20	1.43	0.35	0.16	0.04
1967	1.27	0.18	0.96	0.31	0.14	0.03
1968	1.23	0.18	0.93	0.30	0.15	0.03
1969	1.10	0.19	0.82	0.28	0.16	0.03
1970	0.85	0.16	0.58	0.27	0.13	0.03
1971	0.92	0.17	0.64	0.28	0.13	0.03
1972	0.91	0.16	0.63	0.28	0.13	0.03
1973	0.83	0.16	0.54	0.29	0.13	0.03
1974	0.69	0.15	0.42	0.26	0.12	0.03
1975	0.81	0.14	0.55	0.26	0.11	0.03
1976	0.75	0.14	0.50	0.25	0.11	0.03
1977	0.82	0.14	0.57	0.25	0.11	0.03
1978	0.83	0.14	0.58	0.25	0.11	0.03
1979	1.09	0.14	0.85	0.25	0.11	0.03
1980	0.80	0.13	0.56	0.24	0.11	0.03
1981	0.98	0.13	0.73	0.24	0.10	0.03
1982	1.01	0.14	0.76	0.25	0.11	0.03
1983	0.93	0.14	0.67	0.26	0.11	0.03
1984	1.22	0.13	0.94	0.28	0.10	0.03
1985	1.58	0.13	1.29	0.29	0.10	0.03
1986	1.11	0.17	0.83	0.28	0.14	0.03
1987	1.31	0.14	1.03	0.28	0.11	0.03
1988	2.37	0.14	2.04	0.33	0.10	0.04
1989	1.63	0.14	1.31	0.32	0.10	0.04
1990	1.89	0.13	1.58	0.31	0.10	0.03
1991	1.89	0.13	1.58	0.31	0.09	0.03
1992	2.40	0.13	2.07	0.33	0.09	0.04
1993	1.61	0.13	1.30	0.31	0.09	0.03
1994	1.79	0.13	1.48	0.31	0.09	0.03
1995	1.98	0.13	1.66	0.31	0.09	0.03
1996	2.17	0.14	1.84	0.33	0.10	0.04
1997	2.57	0.15	2.23	0.34	0.12	0.04
1998	2.77	0.16	2.43	0.34	0.12	0.04
1999	3.39	0.17	3.05	0.34	0.14	0.04
2000	4.04	0.20	3.69	0.35	0.16	0.04
2001	2.81	0.13	2.46	0.34	0.09	0.04
2002	2.86	0.13	2.52	0.35	0.10	0.04
2003	3.92	0.15	3.54	0.38	0.11	0.04
2004	4.60	0.15	4.20	0.40	0.10	0.04
2005	4.78	0.18	4.37	0.41	0.13	0.05
2006	4.50	0.15	4.08	0.42	0.11	0.05
2007	4.74	0.16	4.34	0.40	0.11	0.04
2008	4.23	0.57	3.84	0.39	0.53	0.04
2009	5.06	0.20	4.51	0.54	0.14	0.06
2010	4.37	0.14	3.97	0.39	0.09	0.04
2011	4.17	0.14	3.76	0.40	0.09	0.04
2012	4.94	0.15	4.51	0.44	0.10	0.05
2013	3.97	0.18	3.57	0.40	0.14	0.04
2014	3.92	0.20	3.51	0.41	0.16	0.05
2015	4.02	0.20	3.62	0.40	0.16	0.04
2016	3.94	0.19	3.54	0.40	0.14	0.04
2017	4.81	0.47	4.38	0.44	0.42	0.05
2018	4.70	0.60	4.24	0.46	0.55	0.05
2019	4.72	0.57	4.27	0.45	0.52	0.05

Note: Post-Tax National Income (poinc) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). $\mathcal{C}_{10,t}$ and $\mathcal{C}_{B90,t}$ denote the contributions of the top 10% and the bottom 90% income groups, respectively, to the overall inequality measure $\mathcal{S}_t$. The four-way decomposition further breaks down each $\mathcal{C}_{j,t}$ into two components, $\mathcal{C}^{\sigma}_{j,t}$ and $\mathcal{C}^{\mu}_{j,t}$.

Table A10. Inequality Decomposition Estimates: Net Personal Wealth

	Two-Way Decomp		*Four-Way Decomp*			
Year	$\mathcal{C}_{10,t}$	$\mathcal{C}_{B90,t}$	$\mathcal{C}^{\sigma}_{10,t}$	$\mathcal{C}^{\mu}_{10,t}$	$\mathcal{C}^{\sigma}_{B90,t}$	$\mathcal{C}^{\mu}_{B90,t}$
1962	10.05	0.23	8.70	1.35	0.08	0.15
1964	9.02	0.24	7.64	1.38	0.08	0.15
1966	10.28	0.24	8.91	1.36	0.09	0.15
1967	10.25	0.24	8.91	1.34	0.09	0.15
1968	11.54	0.25	10.11	1.43	0.09	0.16
1969	11.54	0.24	10.25	1.29	0.10	0.14
1970	9.19	0.24	7.86	1.33	0.10	0.15
1971	14.67	0.24	13.40	1.27	0.10	0.14
1972	7.58	0.25	6.26	1.32	0.10	0.15
1973	9.57	0.25	8.22	1.35	0.10	0.15
1974	7.04	0.26	5.79	1.25	0.12	0.14
1975	4.90	0.25	3.76	1.13	0.12	0.13
1976	4.38	0.25	3.25	1.13	0.13	0.13
1977	4.59	0.26	3.45	1.14	0.13	0.13
1978	4.92	0.26	3.88	1.05	0.14	0.12
1979	5.14	0.25	4.07	1.07	0.13	0.12
1980	4.92	0.25	3.86	1.06	0.13	0.12
1981	5.00	0.24	3.99	1.01	0.13	0.11
1982	4.65	0.24	3.68	0.97	0.13	0.11
1983	5.38	0.24	4.42	0.95	0.13	0.11
1984	5.54	0.24	4.58	0.96	0.13	0.11
1985	6.26	0.24	5.29	0.98	0.13	0.11
1986	5.99	0.23	5.00	0.98	0.13	0.11
1987	6.47	0.23	5.49	0.98	0.12	0.11
1988	8.72	0.24	7.65	1.07	0.12	0.12
1989	7.63	0.24	6.56	1.08	0.12	0.12
1990	8.63	0.25	7.54	1.09	0.13	0.12
1991	8.52	0.25	7.40	1.12	0.13	0.12
1992	8.45	0.25	7.29	1.17	0.12	0.13
1993	8.85	0.26	7.67	1.17	0.13	0.13
1994	9.08	0.26	7.90	1.18	0.13	0.13
1995	10.26	0.26	9.06	1.20	0.13	0.13
1996	12.05	0.26	10.80	1.25	0.13	0.14
1997	14.59	0.27	13.29	1.30	0.13	0.14
1998	17.60	0.27	16.26	1.35	0.12	0.15
1999	19.64	0.27	18.28	1.35	0.12	0.15
2000	20.68	0.27	19.34	1.34	0.12	0.15
2001	18.92	0.27	17.63	1.29	0.12	0.14
2002	15.56	0.26	14.31	1.26	0.12	0.14
2003	17.56	0.30	16.06	1.50	0.13	0.17
2004	23.66	0.30	22.11	1.55	0.12	0.17
2005	18.46	0.30	16.91	1.55	0.12	0.17
2006	21.03	0.30	19.46	1.57	0.12	0.17
2007	21.08	0.30	19.47	1.61	0.13	0.18
2008	23.03	0.67	21.30	1.73	0.48	0.19
2009	21.09	0.35	19.09	2.00	0.13	0.22
2010	12.56	0.33	10.87	1.68	0.15	0.19
2011	12.82	0.33	11.11	1.71	0.14	0.19
2012	15.53	0.33	13.75	1.78	0.14	0.20
2013	17.84	0.32	16.15	1.69	0.13	0.19
2014	14.18	0.32	12.51	1.66	0.13	0.18
2015	15.61	0.31	13.95	1.66	0.13	0.18
2016	15.34	0.31	13.69	1.65	0.13	0.18
2017	13.68	0.30	12.08	1.60	0.12	0.18
2018	13.79	0.30	12.18	1.60	0.12	0.18
2019	13.16	0.30	11.57	1.59	0.12	0.18

Note: Net Personal Wealth (hweal) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). $\mathcal{C}_{10,t}$ and $\mathcal{C}_{B90,t}$ denote the contributions of the top 10% and the bottom 90% income groups, respectively, to the overall inequality measure $\mathcal{S}_t$. The four-way decomposition further breaks down each $\mathcal{C}_{j,t}$ into two components, $\mathcal{C}^{\sigma}_{j,t}$ and $\mathcal{C}^{\mu}_{j,t}$.

Table A11. Inequality Share Estimates: Fiscal Income

Year	*Within-Group Ineqaulity Shares*					*Between-Group Ineqaulity Shares*				
	$\gamma^{\sigma}_{10,t}$	$\gamma^{\sigma}_{5,t}$	$\gamma^{\sigma}_{1,t}$	$\gamma^{\sigma}_{0.1,t}$	$\gamma^{\sigma}_{0.01,t}$	$\gamma^{\mu}_{10,t}$	$\gamma^{\mu}_{5,t}$	$\gamma^{\mu}_{1,t}$	$\gamma^{\mu}_{0.1,t}$	$\gamma^{\mu}_{0.01,t}$
1962	0.700	0.665	0.578	0.455	0.292	0.183	0.189	0.204	0.210	0.267
1964	0.722	0.690	0.608	0.488	0.313	0.166	0.173	0.190	0.203	0.279
1966	0.741	0.709	0.629	0.507	0.330	0.152	0.161	0.182	0.205	0.282
1967	0.755	0.721	0.633	0.493	0.291	0.150	0.164	0.195	0.229	0.317
1968	0.802	0.772	0.692	0.557	0.345	0.123	0.136	0.171	0.217	0.324
1969	0.808	0.782	0.716	0.598	0.372	0.116	0.125	0.147	0.192	0.333
1970	0.645	0.606	0.518	0.402	0.261	0.205	0.210	0.214	0.204	0.238
1971	0.677	0.641	0.555	0.436	0.274	0.189	0.195	0.205	0.207	0.264
1972	0.709	0.676	0.597	0.482	0.320	0.171	0.176	0.188	0.197	0.260
1973	0.600	0.556	0.460	0.342	0.211	0.231	0.237	0.237	0.213	0.226
1974	0.563	0.517	0.417	0.294	0.178	0.236	0.244	0.246	0.221	0.207
1975	0.560	0.520	0.432	0.326	0.217	0.227	0.228	0.221	0.193	0.194
1976	0.556	0.515	0.427	0.319	0.208	0.224	0.228	0.222	0.196	0.195
1977	0.576	0.534	0.442	0.322	0.197	0.227	0.231	0.230	0.214	0.217
1978	0.561	0.516	0.416	0.289	0.168	0.239	0.243	0.246	0.225	0.216
1979	0.794	0.769	0.708	0.603	0.437	0.117	0.124	0.140	0.171	0.257
1980	0.698	0.664	0.577	0.439	0.262	0.167	0.176	0.198	0.227	0.286
1981	0.597	0.556	0.460	0.306	0.142	0.203	0.212	0.227	0.256	0.275
1982	0.636	0.597	0.500	0.317	0.107	0.181	0.193	0.221	0.289	0.338
1983	0.657	0.622	0.528	0.339	0.118	0.157	0.170	0.206	0.293	0.348
1984	0.655	0.624	0.537	0.349	0.112	0.129	0.142	0.183	0.285	0.366
1985	0.709	0.680	0.594	0.407	0.161	0.116	0.131	0.175	0.280	0.381
1986	0.779	0.749	0.656	0.431	0.120	0.100	0.119	0.180	0.326	0.458
1987	0.694	0.660	0.558	0.358	0.134	0.129	0.148	0.204	0.304	0.358
1988	0.767	0.738	0.639	0.409	0.140	0.091	0.112	0.182	0.330	0.417
1989	0.757	0.723	0.616	0.391	0.134	0.109	0.132	0.202	0.332	0.405
1990	0.752	0.721	0.618	0.401	0.154	0.104	0.125	0.194	0.318	0.391
1991	0.616	0.583	0.489	0.309	0.114	0.113	0.134	0.188	0.274	0.315
1992	0.749	0.714	0.606	0.380	0.119	0.112	0.137	0.207	0.334	0.409
1993	0.718	0.682	0.577	0.363	0.119	0.119	0.143	0.206	0.319	0.387
1994	0.746	0.708	0.603	0.387	0.131	0.120	0.146	0.208	0.323	0.401
1995	0.727	0.694	0.592	0.379	0.128	0.100	0.124	0.192	0.314	0.391
1996	0.793	0.763	0.668	0.448	0.159	0.083	0.106	0.175	0.317	0.437
1997	0.831	0.802	0.706	0.469	0.157	0.075	0.098	0.172	0.336	0.467
1998	0.870	0.844	0.756	0.521	0.191	0.063	0.084	0.154	0.326	0.487
1999	0.883	0.859	0.777	0.547	0.202	0.054	0.074	0.142	0.317	0.501
2000	0.918	0.897	0.822	0.594	0.235	0.046	0.064	0.127	0.308	0.514
2001	0.834	0.806	0.713	0.482	0.168	0.072	0.094	0.165	0.327	0.468
2002	0.783	0.751	0.654	0.432	0.148	0.087	0.110	0.180	0.322	0.432
2003	0.823	0.792	0.694	0.459	0.159	0.082	0.106	0.179	0.336	0.455
2004	0.852	0.827	0.736	0.498	0.172	0.064	0.086	0.158	0.332	0.483
2005	0.833	0.803	0.695	0.411	0.091	0.069	0.095	0.183	0.393	0.482
2006	0.892	0.864	0.758	0.468	0.118	0.063	0.088	0.177	0.398	0.522
2007	0.876	0.848	0.746	0.460	0.118	0.059	0.083	0.170	0.390	0.511
2008	0.815	0.786	0.684	0.421	0.113	0.071	0.095	0.176	0.367	0.464
2009	0.784	0.755	0.666	0.454	0.169	0.091	0.112	0.170	0.307	0.430
2010	0.812	0.782	0.682	0.426	0.098	0.080	0.104	0.180	0.361	0.488
2011	0.777	0.745	0.638	0.382	0.093	0.087	0.113	0.192	0.365	0.442
2012	0.840	0.809	0.698	0.412	0.089	0.073	0.100	0.189	0.398	0.489
2013	0.756	0.725	0.624	0.390	0.114	0.079	0.104	0.179	0.337	0.422
2014	0.799	0.764	0.650	0.379	0.086	0.085	0.113	0.200	0.386	0.451
2015	0.803	0.771	0.663	0.399	0.103	0.078	0.105	0.189	0.372	0.454
2016	0.800	0.766	0.655	0.395	0.108	0.087	0.115	0.198	0.372	0.443
2017	0.826	0.793	0.680	0.405	0.088	0.080	0.108	0.197	0.389	0.481
2018	0.818	0.783	0.668	0.390	0.086	0.082	0.112	0.201	0.393	0.468
2019	0.800	0.763	0.643	0.369	0.084	0.090	0.121	0.213	0.394	0.444

Note: Fiscal Income (fiinc) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). $\gamma^{\sigma}_{j,t}$ and $\gamma^{\mu}_{j,t}$ denote within-group inequality share and between-group inequality share, respectively, for the subgroup $\mathcal{G}_{j,t}$. We report the shares for the top 10% down to the top 0.1%.

Table A12. Inequality Share Estimates: Personal Pre-Tax Income

	Within-Group Ineqaulity Shares					*Between-Group Ineqaulity Shares*				
Year	$\gamma^{\sigma}_{10,t}$	$\gamma^{\sigma}_{5,t}$	$\gamma^{\sigma}_{1,t}$	$\gamma^{\sigma}_{0.1,t}$	$\gamma^{\sigma}_{0.01,t}$	$\gamma^{\mu}_{10,t}$	$\gamma^{\mu}_{5,t}$	$\gamma^{\mu}_{1,t}$	$\gamma^{\mu}_{0.1,t}$	$\gamma^{\mu}_{0.01,t}$
1962	0.855	0.823	0.727	0.570	0.352	0.102	0.124	0.183	0.247	0.339
1964	0.810	0.768	0.646	0.453	0.210	0.134	0.162	0.237	0.306	0.382
1966	0.869	0.838	0.750	0.595	0.367	0.092	0.114	0.170	0.240	0.350
1967	0.842	0.806	0.700	0.529	0.310	0.111	0.137	0.204	0.267	0.346
1968	0.848	0.812	0.707	0.535	0.326	0.107	0.133	0.199	0.270	0.335
1969	0.851	0.818	0.728	0.571	0.327	0.103	0.124	0.178	0.247	0.368
1970	0.800	0.762	0.663	0.517	0.317	0.136	0.158	0.205	0.239	0.317
1971	0.801	0.763	0.660	0.507	0.305	0.136	0.159	0.211	0.249	0.322
1972	0.714	0.660	0.517	0.331	0.140	0.196	0.227	0.295	0.312	0.326
1973	0.752	0.704	0.585	0.435	0.256	0.171	0.200	0.249	0.257	0.298
1974	0.727	0.675	0.548	0.388	0.219	0.188	0.218	0.270	0.274	0.288
1975	0.752	0.707	0.593	0.452	0.282	0.171	0.195	0.241	0.243	0.283
1976	0.705	0.651	0.520	0.354	0.185	0.203	0.232	0.281	0.285	0.290
1977	0.760	0.715	0.602	0.447	0.259	0.165	0.191	0.240	0.260	0.307
1978	0.742	0.694	0.575	0.413	0.231	0.178	0.204	0.253	0.273	0.304
1979	0.788	0.746	0.638	0.479	0.279	0.147	0.172	0.224	0.262	0.322
1980	0.726	0.676	0.548	0.368	0.168	0.187	0.215	0.269	0.300	0.333
1981	0.699	0.644	0.506	0.310	0.111	0.206	0.237	0.292	0.327	0.336
1982	0.698	0.643	0.506	0.297	0.099	0.206	0.235	0.292	0.341	0.337
1983	0.730	0.679	0.553	0.345	0.135	0.186	0.214	0.269	0.333	0.349
1984	0.756	0.708	0.578	0.352	0.121	0.170	0.200	0.265	0.355	0.384
1985	0.781	0.735	0.613	0.397	0.198	0.155	0.183	0.249	0.337	0.335
1986	0.760	0.712	0.589	0.387	0.187	0.168	0.197	0.257	0.320	0.341
1987	0.760	0.708	0.565	0.330	0.108	0.171	0.205	0.286	0.369	0.373
1988	0.860	0.823	0.708	0.469	0.195	0.103	0.131	0.212	0.350	0.433
1989	0.809	0.761	0.619	0.362	0.108	0.140	0.175	0.270	0.388	0.416
1990	0.827	0.783	0.649	0.399	0.143	0.127	0.159	0.251	0.374	0.418
1991	0.826	0.783	0.662	0.444	0.199	0.127	0.158	0.235	0.333	0.396
1992	0.841	0.799	0.670	0.425	0.140	0.117	0.150	0.235	0.368	0.448
1993	0.824	0.779	0.651	0.412	0.142	0.130	0.162	0.245	0.363	0.430
1994	0.823	0.778	0.649	0.410	0.143	0.131	0.165	0.247	0.364	0.426
1995	0.857	0.819	0.702	0.476	0.210	0.107	0.136	0.217	0.338	0.418
1996	0.863	0.822	0.702	0.465	0.181	0.104	0.136	0.219	0.355	0.443
1997	0.880	0.844	0.732	0.494	0.197	0.091	0.120	0.203	0.348	0.457
1998	0.886	0.852	0.741	0.502	0.211	0.087	0.116	0.199	0.346	0.447
1999	0.890	0.857	0.746	0.500	0.189	0.084	0.112	0.197	0.355	0.474
2000	0.899	0.867	0.762	0.518	0.209	0.078	0.105	0.186	0.348	0.469
2001	0.891	0.858	0.748	0.506	0.203	0.083	0.111	0.194	0.349	0.464
2002	0.876	0.840	0.724	0.479	0.175	0.094	0.124	0.209	0.358	0.468
2003	0.893	0.860	0.751	0.514	0.206	0.082	0.110	0.193	0.344	0.469
2004	0.909	0.880	0.779	0.547	0.228	0.071	0.096	0.175	0.331	0.480
2005	0.901	0.867	0.751	0.475	0.138	0.078	0.107	0.200	0.391	0.507
2006	0.907	0.874	0.760	0.484	0.149	0.073	0.102	0.195	0.389	0.506
2007	0.911	0.880	0.770	0.502	0.165	0.070	0.097	0.187	0.376	0.509
2008	0.875	0.845	0.741	0.483	0.159	0.069	0.095	0.179	0.363	0.488
2009	0.884	0.852	0.750	0.508	0.187	0.090	0.114	0.187	0.347	0.485
2010	0.890	0.854	0.730	0.445	0.104	0.086	0.117	0.213	0.408	0.517
2011	0.883	0.845	0.718	0.436	0.121	0.092	0.124	0.222	0.405	0.488
2012	0.895	0.858	0.732	0.439	0.113	0.083	0.115	0.216	0.416	0.502
2013	0.889	0.852	0.731	0.458	0.128	0.087	0.119	0.212	0.392	0.500
2014	0.887	0.848	0.722	0.438	0.110	0.089	0.123	0.220	0.409	0.500
2015	0.891	0.854	0.732	0.448	0.115	0.086	0.118	0.214	0.405	0.506
2016	0.893	0.856	0.738	0.465	0.133	0.085	0.116	0.207	0.391	0.503
2017	0.891	0.853	0.729	0.448	0.118	0.087	0.119	0.215	0.403	0.506
2018	0.887	0.848	0.720	0.429	0.109	0.090	0.123	0.224	0.416	0.493
2019	0.885	0.844	0.712	0.426	0.115	0.092	0.127	0.229	0.414	0.482

Note: Personal Pre-Tax Income (ptinc) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). $\gamma^{\sigma}_{j,t}$ and $\gamma^{\mu}_{j,t}$ denote within-group inequality share and between-group inequality share, respectively, for the subgroup $\mathcal{G}_{j,t}$. We report the shares for the top 10% down to the top 0.1%.

Table A13. Inequality Share Estimates: Pre-Tax National Income

Year	*Within-Group Ineqaulity Shares* $\gamma^{\sigma}_{10,t}$	$\gamma^{\sigma}_{5,t}$	$\gamma^{\sigma}_{1,t}$	$\gamma^{\sigma}_{0.1,t}$	$\gamma^{\sigma}_{0.01,t}$	*Between-Group Ineqaulity Shares* $\gamma^{\mu}_{10,t}$	$\gamma^{\mu}_{5,t}$	$\gamma^{\mu}_{1,t}$	$\gamma^{\mu}_{0.1,t}$	$\gamma^{\mu}_{0.01,t}$
1962	0.848	0.816	0.721	0.564	0.348	0.106	0.127	0.185	0.246	0.337
1964	0.801	0.760	0.638	0.447	0.207	0.138	0.165	0.238	0.306	0.378
1966	0.862	0.831	0.742	0.589	0.363	0.096	0.118	0.172	0.240	0.347
1967	0.834	0.797	0.691	0.523	0.306	0.116	0.141	0.206	0.267	0.343
1968	0.841	0.805	0.700	0.527	0.321	0.112	0.137	0.201	0.268	0.331
1969	0.843	0.811	0.720	0.564	0.323	0.108	0.128	0.180	0.246	0.365
1970	0.790	0.752	0.654	0.508	0.312	0.142	0.163	0.207	0.238	0.313
1971	0.791	0.752	0.650	0.498	0.299	0.142	0.164	0.213	0.248	0.318
1972	0.752	0.707	0.589	0.429	0.242	0.169	0.193	0.247	0.268	0.309
1973	0.740	0.692	0.575	0.423	0.251	0.178	0.206	0.250	0.253	0.293
1974	0.715	0.663	0.537	0.379	0.214	0.194	0.223	0.270	0.271	0.283
1975	0.738	0.693	0.581	0.442	0.276	0.178	0.201	0.242	0.241	0.278
1976	0.737	0.691	0.579	0.432	0.263	0.179	0.203	0.242	0.252	0.283
1977	0.748	0.702	0.590	0.437	0.254	0.173	0.197	0.241	0.258	0.302
1978	0.727	0.680	0.562	0.402	0.224	0.186	0.210	0.254	0.271	0.299
1979	0.774	0.732	0.624	0.467	0.271	0.155	0.179	0.226	0.261	0.316
1980	0.714	0.664	0.539	0.363	0.168	0.194	0.220	0.268	0.295	0.326
1981	0.685	0.630	0.496	0.304	0.112	0.214	0.243	0.291	0.319	0.327
1982	0.696	0.645	0.517	0.317	0.125	0.204	0.231	0.278	0.327	0.329
1983	0.714	0.664	0.541	0.342	0.140	0.194	0.220	0.267	0.323	0.335
1984	0.736	0.686	0.560	0.342	0.120	0.183	0.211	0.267	0.347	0.369
1985	0.803	0.765	0.664	0.482	0.294	0.138	0.160	0.210	0.284	0.310
1986	0.751	0.704	0.587	0.397	0.204	0.173	0.199	0.250	0.303	0.329
1987	0.741	0.687	0.544	0.313	0.102	0.183	0.216	0.291	0.365	0.360
1988	0.855	0.819	0.706	0.471	0.203	0.106	0.133	0.211	0.345	0.424
1989	0.798	0.749	0.607	0.354	0.109	0.147	0.182	0.273	0.386	0.405
1990	0.818	0.773	0.640	0.395	0.146	0.132	0.165	0.253	0.369	0.408
1991	0.816	0.772	0.651	0.439	0.201	0.133	0.164	0.236	0.327	0.387
1992	0.839	0.799	0.679	0.443	0.161	0.118	0.148	0.228	0.352	0.441
1993	0.812	0.767	0.640	0.404	0.140	0.138	0.169	0.248	0.360	0.422
1994	0.809	0.762	0.634	0.399	0.139	0.142	0.174	0.251	0.360	0.415
1995	0.847	0.807	0.693	0.473	0.213	0.114	0.143	0.218	0.331	0.409
1996	0.861	0.822	0.712	0.490	0.215	0.104	0.134	0.209	0.331	0.428
1997	0.879	0.845	0.741	0.519	0.229	0.091	0.118	0.192	0.326	0.443
1998	0.877	0.842	0.733	0.500	0.216	0.093	0.122	0.200	0.340	0.438
1999	0.899	0.870	0.775	0.561	0.270	0.077	0.101	0.171	0.309	0.439
2000	0.906	0.877	0.786	0.572	0.286	0.072	0.096	0.164	0.307	0.431
2001	0.884	0.850	0.742	0.505	0.207	0.088	0.116	0.195	0.343	0.457
2002	0.870	0.834	0.723	0.486	0.189	0.098	0.126	0.205	0.347	0.457
2003	0.889	0.856	0.752	0.527	0.225	0.085	0.111	0.188	0.328	0.458
2004	0.904	0.874	0.776	0.552	0.240	0.074	0.099	0.173	0.322	0.469
2005	0.897	0.864	0.754	0.492	0.160	0.080	0.108	0.194	0.373	0.498
2006	0.900	0.867	0.756	0.490	0.162	0.078	0.106	0.193	0.377	0.496
2007	0.912	0.883	0.783	0.536	0.202	0.069	0.094	0.173	0.347	0.500
2008	0.872	0.842	0.739	0.487	0.166	0.074	0.100	0.180	0.357	0.484
2009	0.880	0.848	0.750	0.522	0.209	0.093	0.117	0.183	0.330	0.472
2010	0.884	0.848	0.729	0.453	0.114	0.090	0.120	0.210	0.396	0.513
2011	0.883	0.847	0.728	0.461	0.142	0.091	0.121	0.211	0.384	0.491
2012	0.891	0.855	0.733	0.448	0.124	0.086	0.117	0.213	0.404	0.499
2013	0.884	0.847	0.731	0.469	0.144	0.091	0.121	0.208	0.379	0.492
2014	0.882	0.844	0.724	0.450	0.125	0.092	0.124	0.215	0.394	0.494
2015	0.887	0.850	0.733	0.460	0.130	0.089	0.119	0.209	0.391	0.500
2016	0.884	0.847	0.730	0.461	0.134	0.091	0.122	0.209	0.387	0.496
2017	0.890	0.854	0.737	0.469	0.138	0.087	0.117	0.206	0.384	0.503
2018	0.883	0.844	0.720	0.440	0.122	0.092	0.125	0.220	0.403	0.490
2019	0.877	0.836	0.706	0.423	0.118	0.098	0.132	0.231	0.408	0.476

Note: Pre-Tax National Income (peinc) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). $\gamma^{\sigma}_{j,t}$ and $\gamma^{\mu}_{j,t}$ denote within-group inequality share and between-group inequality share, respectively, for the subgroup $\mathcal{G}_{j,t}$. We report the shares for the top 10% down to the top 0.1%.

Table A14. Inequality Share Estimates: Post-Tax National Income

Year	*Within-Group Ineqaulity Shares*					*Between-Group Ineqaulity Shares*				
	$\gamma^{\sigma}_{10,t}$	$\gamma^{\sigma}_{5,t}$	$\gamma^{\sigma}_{1,t}$	$\gamma^{\sigma}_{0.1,t}$	$\gamma^{\sigma}_{0.01,t}$	$\gamma^{\mu}_{10,t}$	$\gamma^{\mu}_{5,t}$	$\gamma^{\mu}_{1,t}$	$\gamma^{\mu}_{0.1,t}$	$\gamma^{\mu}_{0.01,t}$
1962	0.685	0.639	0.527	0.403	0.254	0.203	0.220	0.251	0.223	0.250
1964	0.736	0.697	0.600	0.483	0.316	0.171	0.186	0.216	0.206	0.267
1966	0.723	0.682	0.581	0.458	0.284	0.177	0.195	0.224	0.219	0.280
1967	0.665	0.615	0.497	0.369	0.218	0.213	0.235	0.265	0.233	0.254
1968	0.657	0.607	0.491	0.368	0.225	0.214	0.235	0.262	0.226	0.244
1969	0.636	0.590	0.490	0.378	0.217	0.218	0.231	0.240	0.207	0.262
1970	0.569	0.514	0.402	0.298	0.184	0.270	0.283	0.278	0.203	0.204
1971	0.590	0.535	0.419	0.306	0.191	0.258	0.272	0.281	0.212	0.208
1972	0.588	0.535	0.418	0.314	0.201	0.259	0.272	0.278	0.205	0.203
1973	0.548	0.484	0.352	0.243	0.139	0.293	0.313	0.317	0.220	0.195
1974	0.507	0.439	0.302	0.187	0.102	0.315	0.336	0.335	0.222	0.176
1975	0.579	0.521	0.397	0.284	0.173	0.271	0.288	0.297	0.220	0.205
1976	0.565	0.505	0.381	0.263	0.151	0.279	0.297	0.301	0.228	0.206
1977	0.593	0.536	0.415	0.291	0.165	0.261	0.280	0.289	0.233	0.226
1978	0.600	0.544	0.424	0.294	0.162	0.258	0.276	0.288	0.240	0.235
1979	0.685	0.638	0.534	0.412	0.254	0.201	0.220	0.240	0.221	0.262
1980	0.606	0.550	0.432	0.297	0.156	0.252	0.271	0.282	0.246	0.249
1981	0.662	0.612	0.500	0.358	0.196	0.220	0.240	0.260	0.250	0.274
1982	0.663	0.615	0.506	0.352	0.189	0.218	0.236	0.254	0.264	0.279
1983	0.630	0.574	0.452	0.289	0.133	0.243	0.265	0.285	0.283	0.272
1984	0.692	0.640	0.520	0.342	0.166	0.209	0.234	0.268	0.299	0.302
1985	0.754	0.711	0.611	0.462	0.305	0.168	0.189	0.221	0.249	0.265
1986	0.650	0.599	0.492	0.360	0.244	0.216	0.237	0.252	0.232	0.215
1987	0.708	0.657	0.534	0.359	0.199	0.195	0.221	0.267	0.287	0.281
1988	0.812	0.770	0.650	0.426	0.196	0.132	0.161	0.234	0.338	0.376
1989	0.744	0.689	0.540	0.302	0.097	0.179	0.215	0.299	0.374	0.353
1990	0.780	0.732	0.595	0.366	0.147	0.155	0.189	0.269	0.354	0.369
1991	0.783	0.737	0.618	0.429	0.219	0.153	0.183	0.243	0.302	0.347
1992	0.819	0.778	0.663	0.455	0.196	0.129	0.158	0.226	0.319	0.409
1993	0.747	0.694	0.562	0.357	0.134	0.179	0.211	0.275	0.332	0.367
1994	0.770	0.722	0.604	0.416	0.199	0.163	0.193	0.247	0.304	0.351
1995	0.790	0.745	0.626	0.436	0.220	0.149	0.179	0.240	0.304	0.351
1996	0.798	0.753	0.637	0.449	0.228	0.141	0.173	0.234	0.300	0.358
1997	0.819	0.778	0.668	0.473	0.235	0.124	0.153	0.217	0.303	0.377
1998	0.830	0.791	0.688	0.504	0.273	0.116	0.143	0.203	0.285	0.362
1999	0.855	0.823	0.733	0.560	0.326	0.096	0.119	0.174	0.263	0.362
2000	0.870	0.841	0.762	0.606	0.397	0.083	0.104	0.153	0.236	0.323
2001	0.837	0.797	0.683	0.463	0.203	0.117	0.146	0.220	0.332	0.411
2002	0.840	0.802	0.690	0.472	0.204	0.115	0.143	0.214	0.329	0.419
2003	0.868	0.834	0.725	0.504	0.216	0.094	0.121	0.199	0.327	0.442
2004	0.885	0.852	0.752	0.534	0.238	0.084	0.110	0.184	0.318	0.449
2005	0.881	0.848	0.744	0.504	0.189	0.084	0.110	0.188	0.345	0.475
2006	0.876	0.841	0.726	0.468	0.154	0.091	0.120	0.206	0.373	0.480
2007	0.885	0.853	0.749	0.511	0.195	0.082	0.108	0.186	0.343	0.476
2008	0.800	0.768	0.670	0.442	0.156	0.081	0.106	0.178	0.329	0.435
2009	0.859	0.826	0.727	0.515	0.220	0.103	0.125	0.189	0.315	0.448
2010	0.882	0.848	0.736	0.477	0.140	0.087	0.115	0.200	0.371	0.508
2011	0.874	0.838	0.719	0.461	0.148	0.094	0.124	0.212	0.374	0.483
2012	0.885	0.850	0.733	0.465	0.145	0.086	0.115	0.206	0.383	0.490
2013	0.861	0.824	0.710	0.469	0.161	0.095	0.126	0.206	0.353	0.469
2014	0.851	0.812	0.694	0.441	0.133	0.099	0.131	0.217	0.370	0.470
2015	0.856	0.819	0.703	0.453	0.141	0.095	0.126	0.209	0.366	0.473
2016	0.857	0.819	0.703	0.450	0.137	0.098	0.128	0.212	0.369	0.476
2017	0.828	0.795	0.695	0.463	0.141	0.083	0.108	0.182	0.336	0.482
2018	0.801	0.767	0.662	0.429	0.126	0.086	0.114	0.190	0.340	0.458
2019	0.806	0.772	0.667	0.435	0.138	0.086	0.114	0.191	0.338	0.451

Note: Post-Tax National Income (poinc) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). $\gamma^{\sigma}_{j,t}$ and $\gamma^{\mu}_{j,t}$ denote within-group inequality share and between-group inequality share, respectively, for the subgroup $\mathcal{G}_{j,t}$. We report the shares for the top 10% down to the top 0.1%.

Table A15. Inequality Share Estimates: Net Personal Wealth

Year	*Within-Group Ineqaulity Shares* $\gamma^{\sigma}_{10,t}$	$\gamma^{\sigma}_{5,t}$	$\gamma^{\sigma}_{1,t}$	$\gamma^{\sigma}_{0.1,t}$	$\gamma^{\sigma}_{0.01,t}$	*Between-Group Ineqaulity Shares* $\gamma^{\mu}_{10,t}$	$\gamma^{\mu}_{5,t}$	$\gamma^{\mu}_{1,t}$	$\gamma^{\mu}_{0.1,t}$	$\gamma^{\mu}_{0.01,t}$
1962	0.846	0.784	0.621	0.370	0.131	0.131	0.186	0.298	0.391	0.396
1964	0.825	0.756	0.589	0.337	0.096	0.149	0.209	0.315	0.399	0.397
1966	0.847	0.786	0.634	0.387	0.127	0.130	0.184	0.282	0.385	0.424
1967	0.850	0.789	0.641	0.399	0.151	0.128	0.180	0.278	0.377	0.403
1968	0.858	0.801	0.645	0.371	0.117	0.121	0.172	0.283	0.413	0.423
1969	0.870	0.820	0.688	0.443	0.140	0.110	0.153	0.244	0.369	0.466
1970	0.833	0.773	0.628	0.390	0.137	0.141	0.192	0.277	0.373	0.413
1971	0.899	0.861	0.767	0.594	0.365	0.085	0.117	0.178	0.264	0.360
1972	0.799	0.727	0.560	0.313	0.084	0.169	0.230	0.323	0.390	0.393
1973	0.837	0.778	0.655	0.479	0.275	0.137	0.187	0.248	0.286	0.339
1974	0.793	0.726	0.579	0.385	0.208	0.171	0.225	0.298	0.309	0.318
1975	0.731	0.647	0.465	0.265	0.106	0.220	0.287	0.369	0.339	0.300
1976	0.702	0.615	0.444	0.251	0.089	0.243	0.309	0.368	0.341	0.295
1977	0.712	0.628	0.462	0.269	0.100	0.235	0.299	0.355	0.334	0.303
1978	0.748	0.679	0.538	0.365	0.193	0.202	0.253	0.303	0.300	0.297
1979	0.754	0.682	0.526	0.329	0.142	0.199	0.255	0.323	0.332	0.326
1980	0.746	0.672	0.507	0.287	0.095	0.205	0.263	0.338	0.366	0.337
1981	0.762	0.690	0.518	0.283	0.086	0.192	0.249	0.341	0.383	0.346
1982	0.753	0.678	0.494	0.235	0.045	0.198	0.257	0.355	0.423	0.336
1983	0.788	0.724	0.571	0.339	0.094	0.170	0.221	0.299	0.375	0.400
1984	0.793	0.729	0.574	0.319	0.092	0.166	0.216	0.307	0.399	0.389
1985	0.813	0.754	0.597	0.326	0.084	0.150	0.199	0.295	0.418	0.398
1986	0.804	0.741	0.576	0.294	0.100	0.158	0.209	0.310	0.433	0.362
1987	0.818	0.759	0.597	0.338	0.088	0.147	0.196	0.303	0.400	0.417
1988	0.854	0.803	0.648	0.369	0.103	0.119	0.163	0.276	0.416	0.436
1989	0.832	0.773	0.597	0.309	0.064	0.137	0.188	0.315	0.437	0.411
1990	0.849	0.796	0.636	0.359	0.088	0.123	0.168	0.287	0.417	0.444
1991	0.844	0.790	0.634	0.374	0.116	0.127	0.173	0.283	0.396	0.424
1992	0.836	0.779	0.615	0.331	0.073	0.134	0.182	0.299	0.428	0.427
1993	0.842	0.787	0.632	0.357	0.088	0.129	0.176	0.285	0.417	0.438
1994	0.846	0.793	0.641	0.363	0.080	0.126	0.171	0.278	0.419	0.455
1995	0.861	0.813	0.673	0.401	0.106	0.114	0.155	0.255	0.403	0.467
1996	0.877	0.832	0.704	0.443	0.133	0.102	0.140	0.233	0.386	0.480
1997	0.894	0.855	0.738	0.482	0.151	0.087	0.122	0.209	0.369	0.506
1998	0.909	0.874	0.767	0.520	0.185	0.075	0.106	0.188	0.354	0.507
1999	0.918	0.886	0.788	0.550	0.207	0.068	0.096	0.172	0.337	0.512
2000	0.923	0.893	0.798	0.568	0.237	0.064	0.091	0.166	0.326	0.491
2001	0.919	0.887	0.786	0.544	0.201	0.067	0.095	0.175	0.343	0.510
2002	0.904	0.868	0.759	0.513	0.172	0.079	0.110	0.192	0.355	0.513
2003	0.899	0.861	0.743	0.483	0.144	0.084	0.117	0.207	0.375	0.514
2004	0.923	0.892	0.797	0.559	0.197	0.065	0.092	0.166	0.336	0.528
2005	0.901	0.862	0.739	0.454	0.095	0.083	0.117	0.214	0.405	0.541
2006	0.912	0.877	0.762	0.483	0.128	0.074	0.106	0.197	0.391	0.532
2007	0.910	0.874	0.757	0.477	0.122	0.075	0.107	0.201	0.396	0.533
2008	0.899	0.862	0.741	0.441	0.081	0.073	0.106	0.204	0.421	0.539
2009	0.890	0.842	0.706	0.432	0.093	0.093	0.137	0.239	0.403	0.512
2010	0.843	0.785	0.614	0.280	0.025	0.131	0.181	0.306	0.493	0.418
2011	0.844	0.785	0.612	0.270	0.025	0.130	0.182	0.309	0.502	0.402
2012	0.867	0.814	0.655	0.315	0.032	0.112	0.159	0.279	0.492	0.451
2013	0.889	0.846	0.718	0.422	0.079	0.093	0.131	0.228	0.425	0.516
2014	0.863	0.810	0.656	0.333	0.040	0.115	0.161	0.276	0.470	0.455
2015	0.876	0.827	0.682	0.362	0.050	0.104	0.148	0.257	0.461	0.481
2016	0.875	0.826	0.679	0.365	0.050	0.105	0.148	0.256	0.457	0.480
2017	0.863	0.809	0.649	0.327	0.040	0.115	0.163	0.284	0.471	0.452
2018	0.865	0.811	0.651	0.325	0.041	0.114	0.162	0.283	0.475	0.447
2019	0.860	0.804	0.638	0.308	0.038	0.118	0.168	0.293	0.483	0.430

Note: Net Personal Wealth (hweal) data is obtained from Gabriel Zucman's website for the updated 2020 dataset based on the work of Piketty et al. (2018). $\gamma^{\sigma}_{j,t}$ and $\gamma^{\mu}_{j,t}$ denote within-group inequality share and between-group inequality share, respectively, for the subgroup $\mathcal{G}_{j,t}$. We report the shares for the top 10% down to the top 0.1%.

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