Volume Title: Measuring Distribution and Mobility of Income and Wealth

Volume Authors/Editors: Raj Chetty, John N. Friedman, Janet C. Gornick, Barry Johnson, and Arthur Kennickell, editors

Volume Publisher: University of Chicago Press

Volume ISBNs: 978-0-226-81603-6 (cloth), 978-0-226-81604-3 (electronic)

Volume URL: https://www.nber.org/books-and-chapters/measuring-distribution-and-mobili ty-income-and-wealth

Conference Date: March 5-6, 2020

Publication Date: November 2022

Chapter Title: Distributing Personal Income: Trends over Time

Chapter Author(s): Dennis Fixler, Marina Gindelsky, David S. Johnson

Chapter URL: https://www.nber.org/books-and-chapters/measuring-distribution-and-mobility-income-and-wealth/distributing-personal-income-trends-over-time

Chapter pages in book: p. 589 – 603

19

# Distributing Personal Income
## Trends over Time

Dennis Fixler, Marina Gindelsky, and David S. Johnson

As GDP has continued to grow following the Great Recession, attention has turned to what is "Beyond GDP"—a concept intended to focus on additional measures of economic and social performance (Stiglitz, Fitoussi, and Durand 2018). Much of the discussion has focused on income distribution. The inferences one makes necessarily depend on the income measures used; there are a variety of views about the proper measure. Some, like Piketty, Saez, and Zucman (2018, hereafter PSZ) and Auten and Splinter (2019), use federal income tax data and focus on individuals. The treatment of the 1986 tax law by Auten and Splinter (hereafter, A&S) significantly affects the results, such that the authors obtain different conclusions. The US Census Bureau produces a household distribution of their money income concept, based on data collected in the Current Population Survey (CPS).

In this chapter, we extend a perspective first presented in Fixler and Johnson (2014) and further developed in Fixler, Gindelsky and Johnson

Dennis Fixler is Chief Economist of the Bureau of Economic Analysis.

Marina Gindelsky is a research economist in the Office of the Chief Economist at the Bureau of Economic Analysis.

David S. Johnson is a research professor at the Survey Research Center, and director of the Panel Study of Income Dynamics at the University of Michigan.

We greatly thank William Gale and the participants of the CRIW-NBER conference on "Measuring and Understanding the Distribution and Intra/Inter-Generational Mobility of Income and Wealth," Bethesda, Maryland, March 5–6, 2020, for their comments; and Andrew Craig for his extensive assistance in creating and evaluating the CPS and NIPA data. The views expressed in this chapter are those of the authors and do not necessarily represent the US Bureau of Economic Analysis, the US Department of Commerce, or the University of Michigan. For acknowledgments, sources of research support, and disclosure of the authors' material financial relationships, if any, please see https://www.nber.org/books-and-chapters/measuring-distribution-and-mobility-income-and-wealth/distributing-personal-income-trends-over-time.

(2018, 2019) and Fixler et al. (2017) that produces a distribution of personal income (PI), a concept based on the National Income and Product Accounts (NIPA).[1] In our view, if there is to be an evaluation of the distribution of economic growth, such as that measured by the growth in GDP, then it is necessary to have a concept of income that is based on the same accounting principles as GDP.

By constructing this measure from publicly available microdata for 2007–16, we investigate the relationship between the distribution of aggregate growth and trend in inequality over a volatile period, which includes the Great Recession. PSZ (2018), A&S (2019), and Zwijnenburg (2019) focused on the top of the income distribution. Our analysis examines the entire income distribution. We compare our inequality metrics for equivalized personal income to comparable metrics produced by academics and statisticians.

This chapter uses publicly available survey data, tax records, and administrative data for 2007–16 to distribute personal income. Section 19.1 describes the measurement and definition of income; section 19.2 presents the data and methodology for this exercise. Section 19.3 presents the results and section 19.4 concludes.

## 19.1 Measuring Income

As in previous exercises, we first evaluated the source of the gap between the micro and macro data. Fixler and Johnson (2014) demonstrated that the aggregate level of income is much lower than the comparable aggregate income in the NIPA.[2] However, there are a few considerations when using the CPS. First, it is important to assess whether the difference between CPS totals and NIPA totals is likely due to underreporting in the CPS or "missing" high-income individuals from the CPS. If the source of the gap were entirely due to underreporting, we could close the gap by substituting tax data for the income components of the CPS. Many researchers have attempted to match household survey data to tax or earnings records (see Bollinger et al. 2019; Burkhauser et al. 2018; Rothbaum 2015).

In Fixler, Gindelsky, and Johnson (2018), we examined the usefulness of matching the CPS to the tax data and compared the universe in each. Following the method of Fixler and Johnson (2014) and Fixler et al. (2017), we showed that the substitution of income tax variables for the CPS income variables is not a panacea for misreporting problems. Moreover, we showed that there is little to gain in terms of differences between matched and

1. Details of the Bureau of Economic Analysis (BEA) work can be found at https://www.bea.gov/data/special-topics/distribution-of-personal-income. Note that the methodology and results were most recently updated in December 2020, following the March 2020 CRIW-NBER conference.

2. Rothbaum (2015) recently provides a detailed comparison for each income source.

unmatched files.[3] Accordingly, in this chapter we use the public use file of the CPS and an alternative strategy for adjusting the top tail of the distribution using tax data, described in the next section.[4]

Our goal, as described in earlier research, is to create a distribution for the US National Account concept of PI, which is the income received by persons from participation in production, from government and business transfers, and from holding interest-bearing securities and corporate stocks.

It is natural to look at the PI concept for decision making, especially for consumption, because PI is income accruing to households. Even though PI includes income received by nonprofit institutions serving households, by private noninsured welfare funds, and by private trust funds, household income comprises about 99 percent of PI. PSZ, however, use national income (NI), claiming: "[it is] in our view a more meaningful starting point, because it is internationally comparable, it is the aggregate used to compute macroeconomic growth, and it is comprehensive, including all forms of income that eventually accrue to individuals" (561). PI and NI are fairly close in aggregate and trend.[5]

## 19.2 Data and Methods

Our overall purpose is to move from Census money income in the CPS into the NIPA concept of PI.[6] This entails two fundamental steps: adjusting the Census money income concept to that of PI and then allocating national totals to households. More specifically, the transformation involves four broad categories: adjusted money income (AMI), financial (F), health (H), and other transfers (net) (T). Overall, the strategy used in this exercise was as follows: (1) identify a NIPA total to be distributed, (2) identify one or more CPS variables that can be used to allocate this total, (3) sum all component NIPA totals to subtotals of interest and PI, and (4) construct inequality statistics.[7] Consistent with previous analyses, our exercise starts in 2007 due to the availability of our component data sources, particularly Medicare data (per capita expenditures by state).

3. More specifically we found that the difference between CPS and the IRS Statistics of Income (SOI) variables was not unidirectional across income categories; the differences were positive and negative across income categories.

4. Note that this strategy differs from the strategy of Fixler, Gindelsky, and Johnson (2019), which involved estimating Pareto coefficients on 1040 data. The results that we obtain using the current adjustment method for top shares closely match those we obtained in our earlier analysis.

5. PI = NI – [corporate profits + taxes on production + contributions for government social insurance + net interest + business current transfer + current surplus of government enterprises] + [personal income receipts on assets + personal current transfer receipts]. However, PSZ do not use the components used in the NIPA measure of NI (in the formula above).

6. It is important to note that the income data in the CPS is one year behind the year the CPS is collected ("survey year").

7. For detail on the distribution of each of these categories, see Gindelsky (2020).

### 19.2.1 Outside Data Sources

**SOI:** Before moving from money income to personal income, we enhance the upper tail of the CPS by adjusting certain income sources**.** We utilize data from the IRS Statistics of Income (SOI) program to adjust the top of the income distribution (or "tail") in order to more accurately reflect true inequality (both in the top and overall), thought to be underestimated in the CPS. There are several reasons we make an adjustment to CPS data. (1) As mentioned in section 19.1, the CPS is believed to be unsuccessful in covering those with very high incomes. (2) There is a perception that there is underreporting by those with top incomes. (3) The CPS has top codes, which vary by year, for those with top incomes so as not to risk identification of those individuals. For example, if an individual reports he/she has $10m income annually, for example, he/she may be given a value of $1m. For these reasons, it is prudent to adjust CPS incomes (Bollinger et al. 2019; Burkhauser et al. 2018). The total difference between the NIPA aggregate and the CPS aggregate is proportionally allocated for six components (wages, business income, ordinary dividends, taxable and nontaxable interest income, farm income, and rents and royalties) using information available from the SOI regarding the portion of the income source for those whose income is more than $500,000 and those whose income is below $500,000.[8]

**CBO:** The Congressional Budget Office (CBO) uses an algorithm it developed to assign probabilities of receipt of Supplemental Security Income (SSI), Medicaid, and Supplemental Nutrition Assistance Program (SNAP) to each individual in the CPS for a given survey year. Once the CBO assesses recipience, it assigns values to those households (Habib 2018). We use imputed CBO values available in a crosswalk rather than reported CPS values for these variables in order to correct for underreporting in these important transfer categories.

**SCF:** We use three asset variables from the Summary Extract Public Dataset of the Survey of Consumer Finances (SCF) in order to distribute the three imputed components of personal income.[9] First, households

8. For example, in 2012, 53 percent of adjusted gross income for ordinary dividends in the SOI data is at least $500,000. The NIPA total for dividend income is $808 billion while total weighted CPS dividend income is $123 billion. That leaves $808 billion − $123 billion = $685 billion to be allocated to CPS households as follows: 53 percent of $685 billion = $363 billion to households in Group 1 (incomes above $500,000) and 47 percent of $685 billion = $322 billion to households in Group 2 (incomes below $500,000). Each household then receives extra dividend income proportional to its share of dividend income in its group such that aggregate weighted household dividend income (original + extra) will sum to $808 billion.

9. Because the SCF is triennial, we interpolate the SCF variables for the years in which the SCF is not observed using the Fernández procedure, which extends the Denton and Chow-Lin approaches (see Gindelsky 2020). The results of this method very closely match the results of the Federal Reserve Board's interpolation used in its Distributional Financial Accounts (DFA).

are placed into before-tax income bins. The share of the total asset variable held by all households in the given bin is calculated. The CPS households are placed into the same income bins by adjusted money income. The NIPA totals are then allocated by the distribution of each of these asset variables (e.g., share of asset variable by income bin) to the CPS households in the respective bins.

**CE:** We use the Consumer Expenditure survey from the Bureau of Labor Statistics to impute rental income for owner-occupied housing. Using this data source, we first rank "consumer units" (roughly the same as households) by before-tax income, creating deciles. We next construct a share of rental equivalence to before-tax family income. For example, if a household's income is $100,000 and they report that the expected monthly rental value of their home is $4,000, their rent-to-income share would be: 4,000 × 12 / 100,000 = 0.48. The median share is calculated for each income decile. This share is then applied to income deciles in the CPS for households who own their home to impute a value of rental income for owner-occupied housing based on household income.

### 19.2.2 Computations of Subtotals

**Adjusted money income (AMI)**: In order to move from money income (as defined by the Census) to PI, we first adjust money income in order to be consistent with the concepts using in the NIPA estimates. Though Census money income in many ways is a narrower definition of income, it does include variables that are not in personal income, such as retirement disbursements. Accordingly, we add up the components of Census money income that are in personal income, excluding variables that are not. We call this approximation adjusted money income (AMI).[10] It is primarily composed of income from wages and salaries (and supplements), self-employment (farm and nonfarm), interest, dividends, and Social Security income, which together sum to 95 percent of AMI in 2016. The other 5 percent comprises income from additional sources such as rents and royalties, unemployment insurance, and disability income, among others.

**Financial items (F):** This category is the sum of allocations for pension and profit sharing, life insurance, rental income from owner-occupied housing, and imputed interest.

**Health items (H)**: This category is the sum of allocations for employer

10. Retirement disbursements are one of the main exclusions, constituting approximately 75 percent of money income excluded. AMI also excludes potential sources of intrasectoral transfers, which would net out in the sector and are not associated with current period production, such as other financial assistance (*fin-val*), "other" income (*oi-val*), alimony (*alm-val*), child support (*csp-val*), and "other" noninstitutional educational assistance (*ed-val*). We do include incomes from these sources tied to railroad retirement, "other" retirement, worker's compensation, black lung benefits, and state/local government disability. For more details, see Gindelsky (2020).

contributions for health insurance, Medicare, Medicaid, military medical insurance, and other medical care payment assistance.

**Other transfers (net) (T):** This group imputes transfers in the NIPAs that are not contained in AMI or H to CPS households. These items include employer and employee contributions for government social insurance (net): SNAP, WIC, refundable tax credits, energy assistance, educational assistance, and other transfers.

We then calculate household income as the sum of AMI, F, H, and T. Finally, to calculate PI from household income, *household current transfer receipts from nonprofits* and *nonprofit institution transfer receipts from households* are deducted, and *nonprofit institution income* is added. This residual is distributed equally to all individuals in the CPS.

After all components have been added together to compute PI, equivalized PI is calculated by dividing personal income by the square root of the number of household members.[11] Equivalized PI is used for all income inequality metrics. There are four strategies which involve imputations derived from external datasets.

## 19.3 Results

Our first objective is to create a distribution of NIPA table 2.9, which decomposes PI into several income components. We then analyze the levels and trends in inequality that result from the calculation.

### 19.3.1 Decomposing Personal Income

PI can be decomposed into: compensation of employees, proprietors' income with inventory valuation and capital consumption adjustment, rental income of households with capital consumption adjustment, household income receipts, and household current transfer receipts, less contributions to government social insurance. Households are ranked by equivalized personal income and each income category is distributed, with results by quintile in table 19.1 below.[12]

In table 19.1, we can see that household income receipts on assets dominate the top quintile, whereas government social benefits accrue mainly to the bottom quintiles. At least half the group share of *compensation of employees*, *proprietors' income*, *rental income*, *household income receipts on assets*, and *contributions for government social insurance* is held by the top quintile. However, for *household current transfer receipts*, the share among

11. There are other equivalence scales that are prevalent in the inequality literature which weight children less than adults including the OECD scale, the similar Census Bureau method. Other methods include calculation of inequality based on individuals. The choice of equivalence scale can significantly affect the subsequent inequality estimates.

12. Breakouts by decile are available at https://www.bea.gov/data/special-topics/distribution-of-personal-income.

**Table 19.1 Components of personal income by quintile, 2016**

| | 0–20% | 20–40% | 40–60% | 60–80% | 80–100% |
|---|---|---|---|---|---|
| Personal income | 6% | 10% | 13% | 19% | 52% |
| Household income | 6% | 10% | 13% | 19% | 52% |
| Compensation of employees | 3% | 7% | 13% | 24% | 52% |
| Proprietors' income with inventory valuation | 1% | 1% | 4% | 10% | 85% |
| Rental income of households with capital consumption adjustment | 6% | 10% | 13% | 18% | 52% |
| Household income receipts on assets | 2% | 3% | 5% | 11% | 79% |
| Household interest income | 3% | 4% | 8% | 16% | 70% |
| Household dividend income | 0% | 1% | 2% | 5% | 92% |
| Household current transfer receipts | 18% | 26% | 25% | 16% | 14% |
| Government social benefits | 17% | 27% | 26% | 16% | 14% |
| From business (net) | 18% | 19% | 20% | 21% | 22% |
| From nonprofit institutions | 30% | 13% | 16% | 19% | 22% |
| Less: Contributions for government social insurance, domestic | 4% | 7% | 13% | 25% | 50% |

**Table 19.2 Real growth in major components of personal income by quintile, 2007–16**

| | 0–20% | 20–40% | 40–60% | 60–80% | 80–100% | Overall |
|---|---|---|---|---|---|---|
| Personal income | 15.5% | 14.0% | 15.2% | 16.4% | 20.3% | 17.9% |
| Compensation of employees | −3.8% | 0.7% | 1.6% | 10.8% | 16.7% | 11.1% |
| Proprietors' income with inventory valuation | −41.3% | −35.9% | −23.6% | −3.4% | 37.3% | 25.8% |
| Rental income of households with capital consumption adjustment | 238.0% | 284.5% | 264.7% | 244.8% | 205.1% | 228.1% |
| Household income receipts on assets | −7.4% | −17.7% | −14.1% | −0.8% | 4.8% | 2.0% |
| Household current transfer receipts | 31.7% | 27.6% | 49.4% | 52.3% | 52.4% | 40.5% |
| Less: Contributions for government social insurance, domestic | −0.6% | 2.6% | 3.4% | 12.8% | 19.6% | 13.3% |

the quintiles is more equally distributed. The results of that group are dominated by *government social benefits*, which mainly includes Social Security, Medicare, Medicaid, unemployment insurance, and Veterans Benefits. Business transfer payments is primarily net insurance settlements.

Table 19.2 shows the real growth for the major components by quintile from 2007 to 2016. Real personal income grew for every quintile over the period (approximately 15 percent for the bottom four quintiles and 20 percent for the top). However, while income in every category grew for the top quintile, household income receipts on assets and proprietors' income fell for the bottom four quintiles. Rental income grew strongly across all quintiles.

Figure 19.1 presents an alternative way to examine these categories by quintile. Here we can see that transfer receipts make up the majority of their income. In contrast, compensation and income receipts on assets make up the majority of the income for the top quintiles.

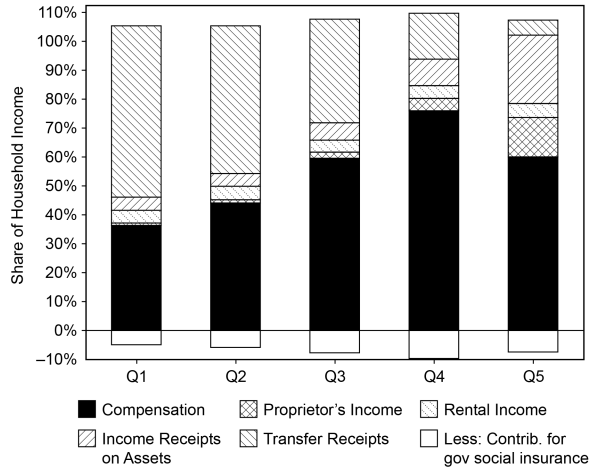


**Fig. 19.1 Share of household income for each contributing component by eq. quintile, 2016**

*Note:* Contributions for government social insurance are a subtraction such that all components sum to 1 for each quintile.

*Source:* US Bureau of Economic Analysis.

**Table 19.3 Percentage point change in contributing components by quintile, 2007–16**

| | 0–20% | 20–40% | 40–60% | 60–80% | 80–100% |
|---|---|---|---|---|---|
| Compensation of employees | −7.7 | −6.0 | −8.2 | −4.1 | −2.0 |
| Proprietors' income with inventory valuation | −0.8 | −0.9 | −1.2 | −0.9 | 1.8 |
| Rental income of households with capital consumption adjustment | 2.8 | 3.3 | 2.9 | 2.7 | 2.6 |
| Household income receipts on assets | −1.2 | −1.7 | −2.1 | −1.5 | −3.4 |
| Household current transfer receipts | 6.0 | 4.6 | 7.6 | 3.5 | 1.0 |
| Less: Contributions for government social insurance, domestic | 0.9 | 0.7 | 0.9 | 0.3 | 0.1 |

Next, we can examine whether this relationship is stable over time in table 19.3 by looking at the percentage point change in quintile from 2007–16.

There have been substantial changes in the contribution of the components of PI. Compensation has decreased as a share of household income over time, while transfers have increased proportionally over time. For example, while 44.1 percent of income for the first quintile is derived from compensation in 2007, only 36.4 percent is derived from compensation in 2016 (a difference of −7.7 percentage points). These trends are especially pronounced for the bottom quintiles. The share of rental income (composed of (1) owner-occupied housing, and (2) rents and royalties) has gone up for

**Table 19.4 Decomposition of personal income for households, 2016**

| | Totals ($ billions) | Equivalized household average |
|---|---|---|
| Money income (Census) | 10,495 | 54,392 |
| Adjusted money income | 11,851 | 61,214 |
| Transfers | 1,299 | 7,466 |
| Plus financial | 1,963 | 10,011 |
| Plus health | 1,936 | 10,138 |
| Transfers | 1,244 | 6,706 |
| Plus other transfers (net)* | 367 | 1,665 |
| Equals: household income | 16,117 | 83,028 |
| Plus NPISH (net) | . . . | . . . |
| Equals: personal income | 16,121 | 83,052 |

*Notes:* * "Other transfers (net)" includes the net of all transfers that are not already included above as part of "adjusted money income" and "health," respectively. NPISH (net) represents a statistical aggregate used to move from household income to personal income.

every quintile, while the share of income receipts on assets (composed of monetary interest and dividends) has gone down for every quintile. Compensation has declined and transfers have increased (relatively) for the bottom quintiles. Another way of looking at the makeup of personal income is to analyze the transition from AMI to PI in table 19.4 above.

Table 19.4 shows that though 65 percent of personal income is composed of adjusted money income, financial items, health items, and transfers also play a significant role in the aggregate. Though transfers are smaller in the aggregate, they are significant in the average (19 percent) and comprise about 66 percent of the health items. These results are consistent with the heavy impact of transfers evident in the previous tables and charts.

### 19.3.2 Inequality

Turning to the results for income inequality, we can examine trends over time, starting with table 19.5. We calculate numerous metrics including income levels (real mean and median), quintiles, top shares, the 90/10 ratio and the Gini index. Note that we further decompose the top quintile into 80–99 percent and top 1 percent. By looking at these measures together, we are able to gain a better understanding of the distribution overall. In real terms, mean (and median) equivalized personal income increased 9.2 percent over the 2007–16 period, as compared to 8.2 percent for equivalized money income (Census).

However, most of that increase takes place over the second half of the period (recovery) after the initial decrease during the Great Recession. Top shares fell slightly during the peak of the recession (2008–9). Indeed, overall inequality changed little from the beginning of the period to the end, as

**Table 19.5** **Inequality metrics for real equivalized personal income (2007–16) in 2012$**

| Income metric | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|---|---|
| Mean ($2012) | 73,072 | 72,892 | 70,678 | 71,909 | 72,932 | 74,378 | 73,743 | 75,873 | 78,663 | 79,788 |
| Median ($2012) | 50,467 | 50,278 | 49,802 | 50,790 | 50,051 | 50,002 | 50,492 | 50,802 | 53,101 | 53,586 |
| 0–20% | 5.7% | 5.9% | 5.8% | 5.9% | 5.9% | 5.6% | 5.6% | 5.5% | 5.6% | 5.6% |
| 20–40% | 10.0% | 10.2% | 10.4% | 10.4% | 10.2% | 9.9% | 9.9% | 9.7% | 9.7% | 9.6% |
| 40–60% | 13.6% | 13.6% | 14.1% | 14.1% | 13.9% | 13.7% | 13.8% | 13.5% | 13.3% | 13.3% |
| 60–80% | 19.5% | 19.5% | 19.9% | 20.1% | 19.5% | 19.3% | 20.0% | 19.5% | 19.3% | 19.3% |
| 80–100% | 51.2% | 50.7% | 49.8% | 49.4% | 50.5% | 51.5% | 50.7% | 51.8% | 52.1% | 52.2% |
| 80–99% | 38.5% | 37.8% | 38.1% | 37.5% | 38.0% | 38.0% | 38.4% | 39.2% | 39.3% | 39.5% |
| Top 1% | 12.7% | 12.9% | 11.7% | 11.9% | 12.5% | 13.4% | 12.3% | 12.6% | 12.9% | 12.6% |
| Top 5% | 26.2% | 26.4% | 24.9% | 24.8% | 25.9% | 27.0% | 25.8% | 26.5% | 26.8% | 27.0% |
| 90/10 | 5.762 | 5.505 | 5.522 | 5.480 | 5.625 | 5.854 | 5.789 | 5.922 | 5.635 | 5.559 |
| Gini | 0.442 | 0.440 | 0.427 | 0.427 | 0.441 | 0.453 | 0.444 | 0.451 | 0.445 | 0.445 |

**Table 19.6 Comparison of Top 1 percent share**

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|
| BEA | 12.7% | 12.9% | 11.7% | 11.9% | 12.5% | 13.4% | 12.3% | 12.6% | 12.9% |
| A&S before tax, after transfer | 12.9% | 12.1% | 11.3% | 12.2% | 11.9% | 13.2% | 12.1% | 12.4% | 12.2% |
| PSZ after taxes and transfers | 15.3% | 15.2% | 15.1% | 16.3% | 16.2% | 17.0% | 15.5% | 15.8% | 15.6% |
| CBO after taxes and transfers | 16.6% | 13.9% | 11.3% | 12.6% | 12.5% | 14.9% | 12.2% | 13.3% | 13.2% |

measured by the Gini and top 1 percent share. In 2016, the distribution is similar to 2007.

Though there are small shifts year to year due to economic conditions and the impacts of tax law change on income reporting (see 2012–14 in particular).[13] For example, between 2010 and 2011, the share received by the top quintile increased from 49.4 to 50.5 percent. This translates into a large share of the growth in 2010–11 for the top quintile (80 percent, as shown in figure 19.4).

Of the overall growth of PI of 17.9 percent over the 2007–16 period, 2 percent went to the top 1 percent and 8 percent went to the 80–99 percent such that the share of the top quintile increased from 51.2 to 52.2. The net effect was a 1 percentage point increase in the share of the top quintile (though not driven by the top 1 percent) accompanied by a slight decrease in the share of the middle quintiles. In 2016, those in the top quintile have real (2012$) equivalized personal income of at least $97,000, while those in the bottom quintile have at most $33,000.

To put these metrics into context, we can compare the top 1 percent share of equivalized personal income to similarly calculated top shares from other studies in table 19.6, including both the before-tax-and-transfer and after-tax-and-transfer measures from PSZ, the A&S before-tax-and-after-transfer measure, and the after-tax-and-transfer measure from CBO (which also included capital gains). Although we utilize some different data sources and methodology (by construction) than A&S, the top 1 percent shares are similar.

In addition, figure 19.2 shows that the overall trends in the PSZ measures are similar to the BEA trends.[14] We can also plot these trends over time (relative to 2007) in figure 19.2 below. BEA estimates generally follow the same trend.

In figures 19.3 and 19.4 below we can see how each income category (quintiles and top 1 percent) of BEA personal income grew over the period. A

13. The American Taxpayer Relief Act of 2012 changed how capital gains were taxed. This led to a change in reporting—some high-income households shifted the realization of some capital gains into the prior tax year to avoid the higher rates, causing income inequality to rise (particularly top shares) in 2012 and subsequently fall in 2013 (CBO 2018).

14. For additional comparisons see Gindelsky (2020).

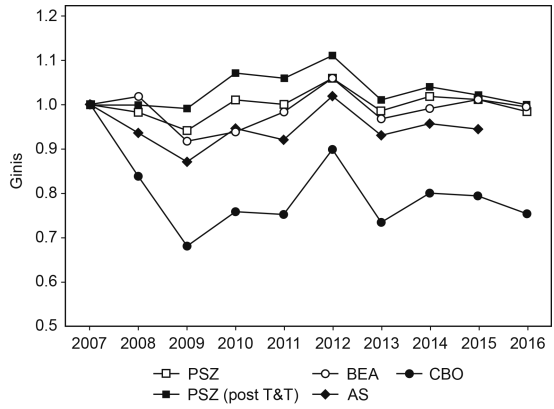


**Fig. 19.2 Relative movements in top 1 percent over time: Comparing across measures (2007 = 1)**

*Source:* US Bureau of Economic Analysis.

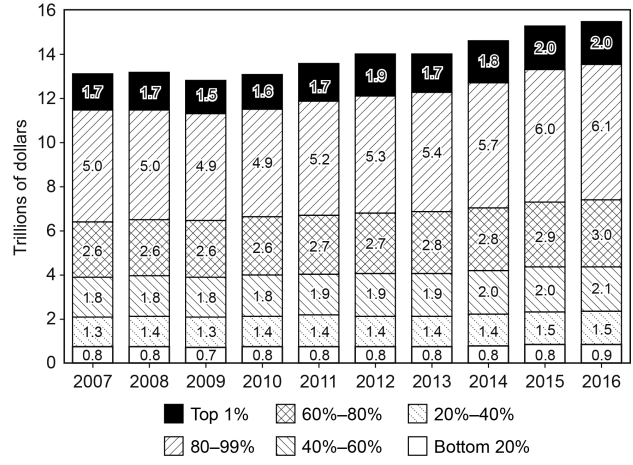


**Fig. 19.3 Real personal income (trillions of dollars) by income category (2012 = 100)**

*Note:* Income category divisions denote quintiles.

distinction must be made between the share of a group as a whole (e.g., total income of those in the third quintile / total income) and total income of the group. Although the lowest three quintiles grew very little over the period, all income groups did grow from 2010 onward as seen in figure 19.3.

In figure 19.4, the height of each stacked bar shows the growth in real personal income over one year. Each portion is the contribution of each quintile (or top 1 percent) from for a given year. For example, the contribu-

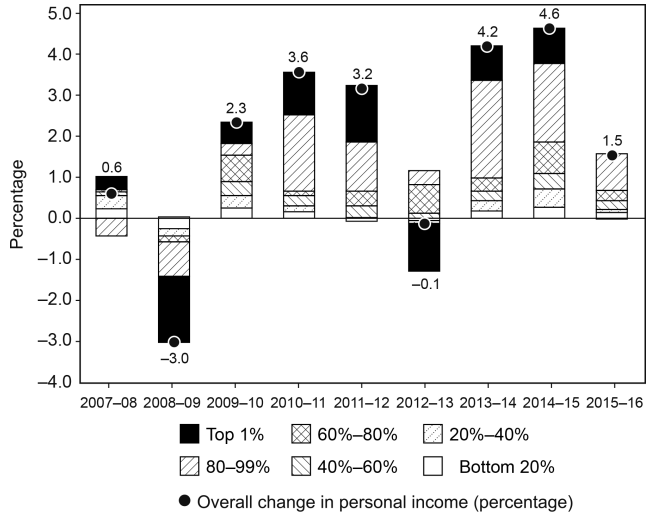


**Fig. 19.4 Annual growth in real personal income by income category**
*Note:* Income category divisions denote quintiles.

tion of the top 1 percent to overall growth in Real PI (2012$) from 2009–10 = Top 1 percent $\text{Share}_{2010}$ * (Real $\text{PI}_{2010}$ / Real $\text{PI}_{2009}$) – Top 1 percent $\text{Share}_{2009}$. Of the 2.3 percent growth in PI from 2009 to 2010, 0.5 percent accrues to the top 1 percent. This means that the top 1 percent receives 0.5/2.3 = 21.7 percent of the growth.

As figures 19.3 and 19.4 show, in addition to table 19.5, there is minimal change in the distribution over this period. As such, over the entire period, the distribution of growth is similar to the distribution in 2007. The overall growth of 17.9 percent for the entire period yields 58 percent for the top quintile; the top quintile share increases from 51.2 percent to 52.2 percent. Across the period, there was some growth for the top quintile during the recovery (1–2 percent annually), for both the 80–99 percent and the top 1 percent. Note that the growth in top 20 percent is not due to the growth in the top 1 percent.

## 19.4 Conclusion

The aim of this chapter is to describe BEA's introduction of a new product, the Distribution of Personal Income, and provide an analysis of inequality levels and trends for 2007–16. In doing so, we have built on several previous works (Fixler, Gindelsky, and Johnson 2018, 2019; Fixler and Johnson 2014; Fixler et al. 2017). The current methodology extends the time series and allocates NIPA totals to households using publicly available

microdata, with the CPS as the base dataset for distribution to households. In doing so, we provide new insights into inequality trends while facilitating transparency and replicability.

Several key results emerge from our analysis. First, inequality has changed little over the 2007–16 period; the slight increase derives from growth in the share of the top quintile. Second, BEA's estimates are in line with other prominent inequality estimates both in level and trend when the definition of "income" is close, even with different methodology and data used. Third, there has been some substantial change in the composition of PI across the period. Over the period, compensation has decreased as a share of household income over time, while transfers have increased proportionally. These trends are seen most strongly in the bottom quintiles. Fourth, real mean and median income have increased over the period, with gains made by every income quintile. Finally, the effects of the Great Recession and subsequent gradual recovery can be seen very clearly to be affecting all income categories.

We view this exercise as an important step in furthering the discussion not only on inequality statistics, but also on working to close the often-cited "macro-micro" gap which exists in estimates of income distributions. While this is an important first step, there remains much more work that can be done in this area.

## References

Atkinson, Anthony B., Thomas Piketty, and Emmanuel Saez. 2011. "Top Incomes in the Long Run of History." *Journal of Economic Literature* 49 (1): 3–71.

Auten, Gerald, and David Splinter. 2019. "Top 1 Percent Income Shares: Comparing Estimates Using Tax Data." *AEA Papers and Proceedings* 109 (1): 307–11.

Bollinger, Christopher R., Barry Hirsch, Charles M. Hokayem, and James P. Ziliak. 2019. "Trouble in the Tails? What We Know about Earnings Nonresponse Thirty Years after Lillard, Smith, and Welch." *Journal of Political Economy* 127 (5): 2143–85.

Boushey, Heather, and Austin Clemens. 2018. "Disaggregating Growth: Who Prospers when the Economy Grows." Washington Center for Equitable Growth Equitable Growth, March.

Burkhauser, Richard V., Nicolas Hérault, Stephen P. Jenkins, and Roger Wilkins. 2018. "Top Incomes and Inequality in the UK: Reconciling Estimates from Household Survey and Tax Return Data." *Oxford Economic Papers* 70 (2): 301–26.

Congressional Budget Office (CBO). 2018. "The Distribution of Household Income, 2014." Research Report. Washington, DC: Congressional Budget Office. https://www.cbo.gov/system/files/115th-congress-2017-2018/reports/53597-distribution-household-income-2014.pdf.

Cunningham, J. Chris. 2015. "Measuring Wage Inequality within and across U.S. Metropolitan Areas, 2003–13." *Monthly Labor Review*, September. US Bureau of Labor Statistics.

Fixler, Dennis, Marina Gindelsky, and David Johnson. 2018. "Towards a Distribution of Household Income: Linking Survey Data to Administrative Data." Paper presented at the 35th IARIW General Conference, Copenhagen.

Fixler, Dennis, Marina Gindelsky, and David Johnson. 2019. "Improving the Measure of the Distribution of Personal Income." *AEA Papers and Proceedings*, May.

Fixler, Dennis, and David S. Johnson. 2014. "Accounting for the Distribution of Income in the U.S. National Accounts." In *Measuring Economic Sustainability and Progress*, edited by Dale W. Jorgenson, J. Steven Landefeld, and Paul Schreyer. Chicago: University of Chicago Press.

Fixler, Dennis, David S. Johnson, Kevin Furlong, and Andrew Craig. 2017. "A Consistent Data Series to Evaluate Growth and Inequality in the National Accounts." *Review of Income and Wealth* 63 (S2): S437–S459.

Gindelsky, Marina. 2020. "Technical Document: A Methodology for Distributing Personal Income." Technical Report. Washington, DC: US Bureau of Economic Analysis. https://www.bea.gov/data/special-topics/distribution-of-personal-income.

Habib, Bilal. 2018. "How CBO Adjusts for Survey Underreporting of Transfer Income in Its Distributional Analyses." CBO Working Paper 2018–07, July. Washington, DC: Congressional Budget Office.

Kuznets, Simon. 1941. *National Income and Its Composition, 1919–1938*. New York: National Bureau of Economic Research.

Kuznets, Simon. 1953. *Shares of Upper Income Groups in Income and Savings*. New York: National Bureau of Economic Research.

Kuznets, Simon. 1955. "Economic Growth and Income Inequality." *American Economic Review* 45 (1): 1–28.

Piketty, Thomas, and Emmanuel Saez. 2003. "Income Inequality in the United States, 1913–1998." *Quarterly Journal of Economics* 118 (1): 1–41.

Piketty, Thomas, Emmanuel Saez, and Gabriel Zucman. 2018. "Distributional National Accounts: Methods and Estimates for the United States." *Quarterly Journal of Economics* 133 (2): 553–609.

Rothbaum, Jonathan L. 2015. "Comparing Income Aggregates: How Do the CPS and ACS Match the National Income and Product Accounts, 2007–2012." SEHSD Working Paper No. WP2015–01. Washington, DC: US Census Bureau.

Stiglitz, Joseph E., Jean-Paul Fitoussi, and Martine Durand. 2018. *Beyond GDP: Measuring What Counts for Economic and Social Performance*. Paris: OECD.

US Office of Business Economics. 1953. "Income Distribution in the United States, by Size." Washington: US Government Printing Office.

Zwijnenburg, Jorrit. 2019. "Unequal Distributions: EG DNA versus DINA Approach." *American Economic Association Papers and Proceedings* 109: 296–301.