

Distribution of U.S. Personal Income— Growth Incidence Curves

Overview

Growth incidence curves (GICs) provide a graphical representation of changes in the level of personal income for households in different segments of the income distribution. First introduced by Ravallion and Chen (2003), they provide a means to compare income growth for households at the top versus the bottom of the income distribution over a certain period of time. Therefore, they are a useful metric for assessing how households share in the nation’s economic growth.

Estimates of GICs from the U.S. Bureau of Economic Analysis’ most recent release of the distribution of personal income show that over the period 2000–2023 (figure 2), low-income households benefitted relatively more from aggregate economic growth than high-income households, on average. The GIC for this period is downward sloping, indicating that equivalized real personal income grew at a faster rate for households in lower deciles of the income distribution. However, there are two main caveats to this finding. First, households in the highest decile of equivalized real personal income experienced higher growth in equivalized real personal income than average over this period. Second, the years 2016–2019 largely accounted for the overall shape of the GIC for 2000–2023. The period 2000–2015, which included the 2001 and 2008 recessions, exhibited much flatter GICs. The period 2020–2023, which included the COVID–19 pandemic and associated recession, saw average real personal income fall for most households in the distribution and exhibited an upward sloping GIC.

Background on growth incidence curves

Economists and policymakers are often interested in understanding the distributional effects of economic growth. Economic growth may or may not be “broad based,” in that it may benefit certain segments of the population relative to others. Additionally, it may be associated with either increases or reductions in the overall poverty rate. The GIC is one method for assessing whether growth is providing greater benefits to households at the bottom of the income distribution or those at the top.

The GIC plots deciles of the income distribution on the horizontal axis versus the rate of personal income growth for that decile on the vertical axis. It is defined for any two points in time and may be expressed as an average annual growth rate or as a total growth rate over the relevant time period (World Bank Group 2024). It is also common to compare the GIC to the average growth rate (or growth rate in the average) of personal income in the period to understand which segments of the income distribution experienced higher or lower than trend growth.¹ Lastly, GICs may be estimated for an arbitrary set of households (anonymous) or the same set of households (nonanonymous) at two points in time.²

The shape of a GIC provides information about inequality and how it has changed over time. For instance, an upward-sloping curve indicates that lower income households experienced slower growth than higher income households. A downward-sloping curve indicates that lower income households experienced faster growth than higher income households. Therefore, reductions in inequality are associated with a downward-sloping GIC, while increases in inequality are associated with an upward-sloping GIC. A flat GIC (no slope) indicates that the benefits of aggregate economic growth were experienced equally by all households, at least in terms of personal income growth. The GIC serves to supplement other measures of inequality such as the Gini coefficient or the shares of personal income going to different deciles because it provides a way to assess changes in inequality over time as opposed to a single point in time (Berman and Bourguignon 2024).

Growth incidence curves for BEA’s distributional accounts

The figures below show GICs for the latest release (December 2024) of BEA’s distribution of U.S. personal income statistics.³ They are generated by taking the average of equivalized real personal income within a certain decile at two points in time, computing the percentage change between the averages, and dividing by the number of years in the respective time period. Although it is more common to use medians instead of averages within income deciles when comparing distributional statistics, figure 1 shows that the median of equivalized real personal income was very close to the average of equivalized real personal income for all deciles, other than deciles 1 and 10. We therefore proceed using averages, as it permits an easier comparison across years. Broadly, the GICs indicate that over the time period 2000–2023, households in the bottom of the income distribution experienced faster rates of equivalized real personal income growth than those in

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1. Note that “growth rate in the average” and “average growth rate” represent two distinct concepts. The former entails calculating average income in each time period and then taking the growth rate between the two averages. The latter entails calculating growth rates of income for households or persons individually and then taking the average of these growth rates (Ravallion and Chen 2003). Furthermore, note that under the latter approach, which is not available without a true panel of individuals, the average household in each time period need not be the same.
 2. Berman and Bourguignon argue that nonanonymous growth incidence curves may be better suited to capturing changes in rank income mobility. That is, how households move *within* the income distribution. BEA’s distribution of personal income estimates use repeated cross sections of households from the U.S. Census Bureau Current Population Survey, therefore, panel data are not available for this analysis. Accordingly, this post studies *anonymized* GIC’s, in which the same household may appear in different deciles of the income distribution at different times.
 3. See Gindelsky (2024) for a detailed methodology on measuring the distribution of personal income. In particular, households are ranked on *equivalized* personal income in order to adjust for household size.

the top of the income distribution. However, concentrating on smaller subperiods reveals that this phenomenon was not uniform across all years.

Figure 2 shows the GIC for the entire period 2000–2023. Over this period, the average annual growth rate of the mean of equivalized real personal income was about 1.7 percent. The GIC is downward sloping, which indicates that households in the bottom few deciles of the income distribution experienced higher average growth rates in equivalized real personal income (about 2.3 percent) than households in the top few deciles of the income distribution (about 1.4 percent). The exception to this pattern is the very top decile, which experienced slightly higher than average growth in equivalized real personal income. Therefore, aggregate economic growth during these years was relatively more beneficial to low-income households, on average.

However, this broad conclusion does not apply uniformly across all subperiods within 2000–2023. Figures 3 and 4 show the GICs for the subperiods 2000–2007 and 2008–2015, respectively. A few patterns stand out. First, the growth rate for the highest (10th) decile is above the average growth rate in both subperiods. Next, the growth rate for the lowest (first) decile is below the average growth rate in the subperiod 2000–2007. Last, the average annual growth rate of mean equivalized real personal income was higher in the first subperiod (about 1.5 percent per year) than in the second subperiod (about 0.9 percent per year). Aside from the behavior that the GICs display at the extremes of the income distribution, they are downward sloping within the middle of the income distribution in each subperiod. Overall, however, the GICs are relatively flatter and lower on average in the subperiods 2000–2007 and 2008–2015 than in the entire period 2000–2023.

Figure 5 shows the GIC for the subperiod 2016–2023, which reflects the most recently available data. Over this time period, the average annual growth rate of the mean of equivalized real personal income was about 2.4 percent, the highest of the three subperiods. This could reflect the strong economic growth the United States experienced over this period after the recoveries from both the Great Recession and COVID–19 pandemic. However, figure 6 shows that the GIC for the period 2020–2023 instead is *upward* sloping.⁴ Moreover, average growth rates in equivalized real personal income were negative across all income deciles except for the top decile during this period.⁵ Therefore, the recovery from the COVID–19 period, if anything, attenuated the shape of the GIC for 2016–2023.

The effects of the COVID–19 pandemic notwithstanding, the GIC for the entire period 2016–2023 was largely negatively sloped. In particular, the growth rate for the first decile is almost 2 percentage points higher than the growth rate for the ninth decile. This indicates that aggregate economic growth in these years was more beneficial to lower income households. Finally, we can see that the pattern in 2016–2023 largely governs the shape of the overall GIC for the years 2000–2023.

4. Note that because transfer receipts during the COVID–19 pandemic increased real personal income substantially in the lower part of the income distribution, the downward sloping and negative GIC for 2020–2023 primarily indicates that real personal income was elevated relative to trend in 2020 and then returned to pre-pandemic levels in 2023, especially for households in the bottom of the income distribution.

5. The increase in the price level between 2020 and 2023 accounts for this pattern. In nominal terms, equivalized personal income increased over this period for all income deciles.

Recent estimates of the distribution of personal income produced by BEA show that economic growth was broadly distributed over the last 25 years, with lower income households experiencing slightly larger increases in real personal income. However, this pattern is largely accounted for by more recent years. While the first two decades of the 21st century saw a moderate degree of growth for low-income households, the past few years of economic growth had much larger benefits for low-income relative to high-income households.

References

Berman, Yonatan and Francois Bourguignon. 2024. “Evaluating the Distributive Incidence of Growth Using Cross-sections and Panels.” *The Review of Income and Wealth* 70 (December 2024): 1252–1275.

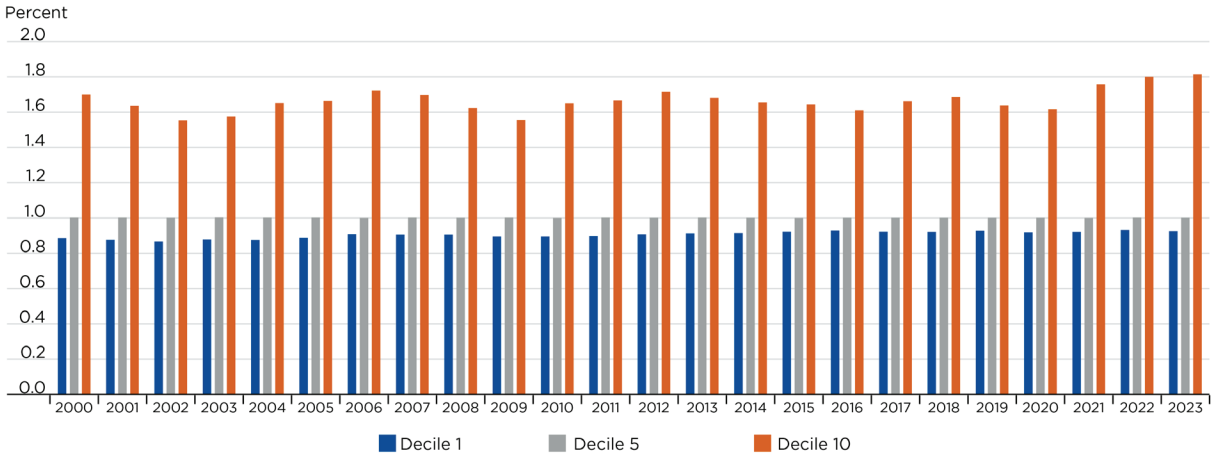
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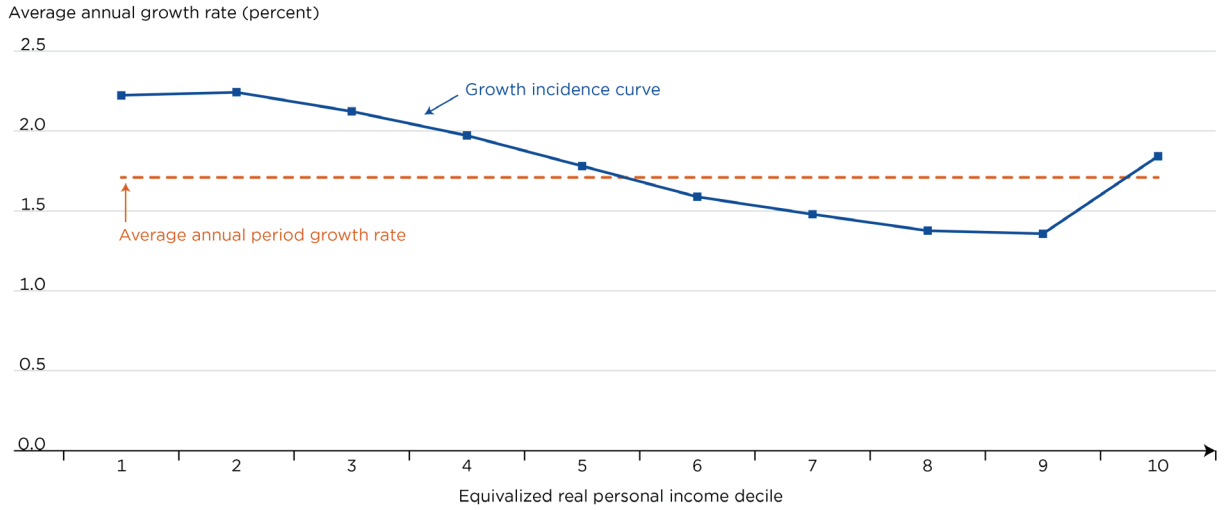
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Figure 1. Ratio of Mean to Median Equivalized Real Personal Income, 2000-2023



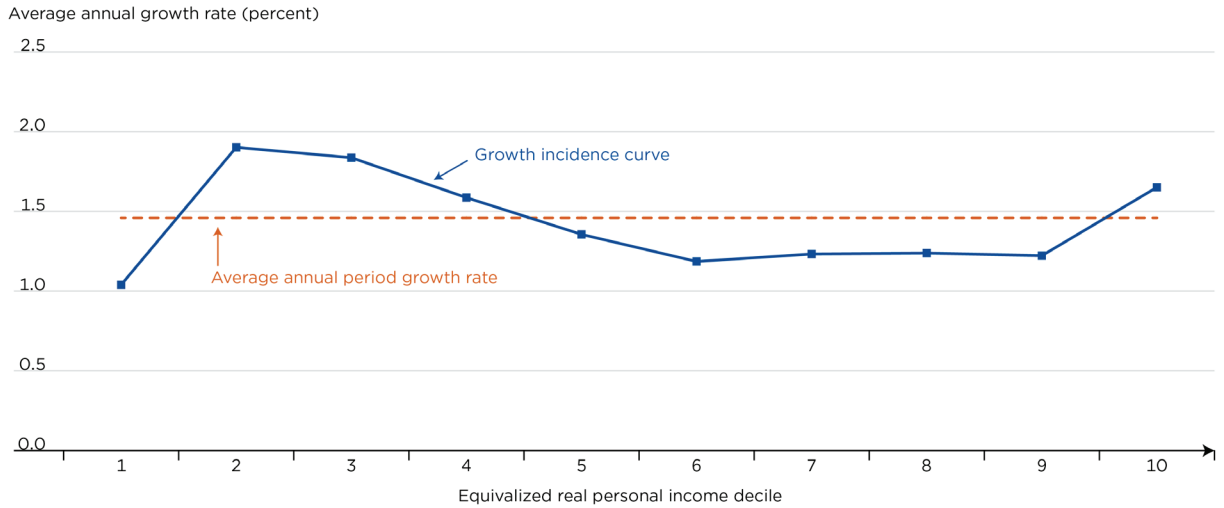
Note. Deciles 2, 3, 4, 6, 7, 8, and 9 not shown. For these deciles, the mean and median values differ by less than 1.5 percent in all years.
U.S. Bureau of Economic Analysis

Figure 2. Change in Equivalized Real Personal Income, 2000-2023



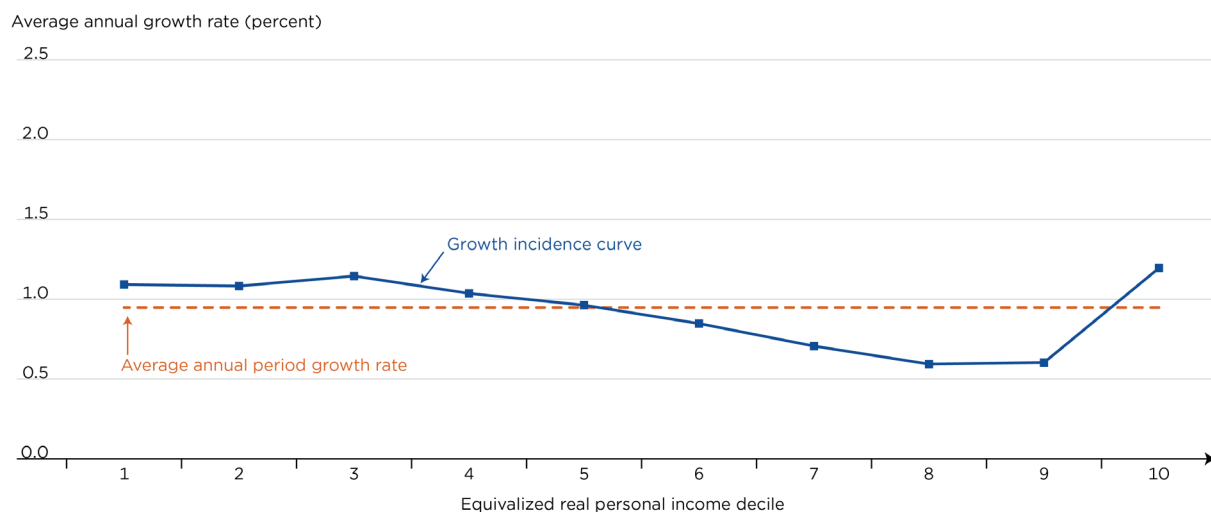
Note. The average annual period growth rate shows the growth rate in average real equivalized personal income for the period divided by the number of years in the period.
U.S. Bureau of Economic Analysis

Figure 3. Change in Equivalized Real Personal Income, 2000-2007



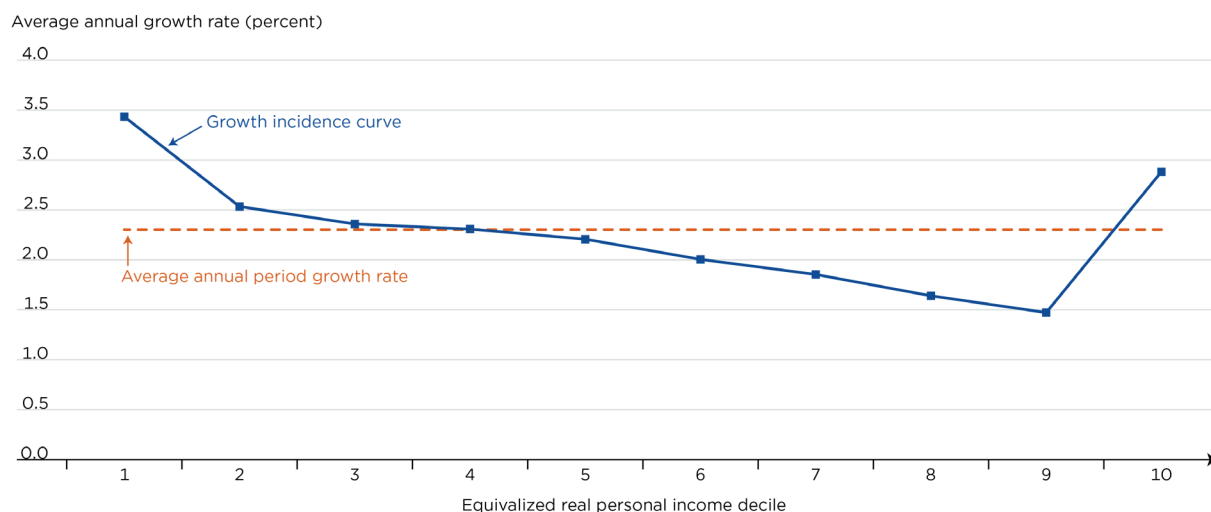
Note. The average annual period growth rate shows the growth rate in average real equivalized personal income for the period divided by the number of years in the period.
U.S. Bureau of Economic Analysis

Figure 4. Change in Equivalized Real Personal Income, 2008–2015



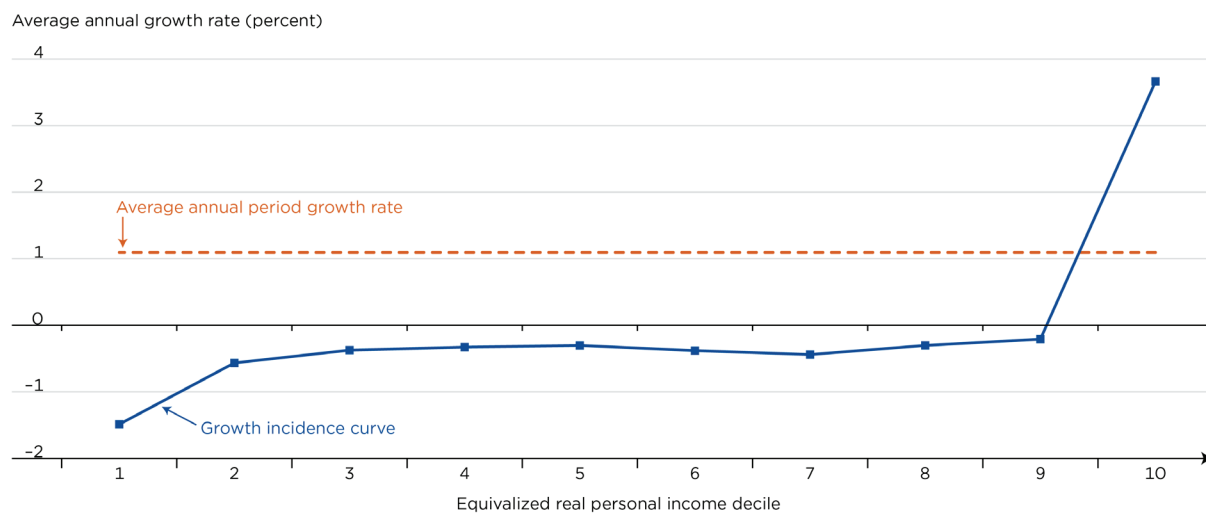
Note. The average annual period growth rate shows the growth rate in average real equivalized personal income for the period divided by the number of years in the period.
U.S. Bureau of Economic Analysis

Figure 5. Change in Equivalized Real Personal Income, 2016–2023



Note. The average annual period growth rate shows the growth rate in average real equivalized personal income for the period divided by the number of years in the period.
U.S. Bureau of Economic Analysis

Figure 6. Change in Equivalized Real Personal Income, 2020–2023



Note. The average annual period growth rate shows the growth rate in average real equivalized personal income for the period divided by the number of years in the period.
U.S. Bureau of Economic Analysis