Squeezing the middle class: Income trajectories from 1967 to 2016

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Introduction

There is growing concern over both income inequality and the plight of the middle class. But most studies of these questions rely on cross-sectional data, rather than tracking the same people over time.

In this paper I examine changes in income and class position over two fifteen-year periods (1967 to 1981 and from 2002 to 2016). Specifically, for individuals aged 25 to 44 at the start of these periods, I use data from the Panel Study on Income Dynamics (PSID) to examine:

- Group Income growth (average)
- Individual Income losses and gains
- Changes in the size of income classes
- Transitions between income classes
- Income class composition by race
- Income class composition by education

Comparing the two periods, the main findings are as follows:

- The median income growth experienced by prime-age Americans over a fifteen-year period has been cut by almost two thirds, from 27% to 8%.
- The proportion experiencing a large income loss has more than tripled, from 4% to 12%.
- The upper middle class has expanded significantly, while the "middle" middle class (MMC) has shrunk from 50% to 36%.
- Income growth at the top of the distribution has been almost twice as fast as in the middle (48% at the 95th percentile, compared to 26% at the median).
- Upward mobility out of poverty has declined, from 43% to 35%.
- Downward mobility from the MMC has doubled, from 5% to 11%.
- The proportion of Black Americans in the upper middle class has increased significantly, from just 1% to 14%. But large race gaps remain: 39% of whites are in the upper middle class or higher.
- More education has become more closely associated with a higher income; 59% of those with a BA+ are in the upper middle class or higher, up from 37%.

Defining Class Categories

Most Americans consider themselves part of the middle class. For many years, the Pew Research Center has asked people to self-identify their class standing (Pew 2012). The choices are: lower class, lower middle class, middle class, upper middle class, and upper class. Around 90% say they are middle class (with about 20% "lower middle class" and 20% "upper middle class"); fewer than two percent define themselves as upper class; and 8-10% lower class.

The near-complete self-identification with middle class status led me to write in 1978 that "the term middle class is so elastic that it is useless as an analytic category" (Rose 1978). But in order to look at trends over time, it is important that some definition be applied. While class is a complex concept, for practical purposes the easiest way to define the boundaries of the middle class is to use family income (size-adjusted, where a single person is treated as a family of one).

But even among income-based definitions, there are a variety of options. Pew has defined the middle class as households with incomes between two-thirds and 200% of median size-adjusted income (Pew 2015). Under this definition, the middle class shrinks when the income distribution "spreads out." Another approach, adopted by the Brookings Future of the Middle Class Initiative, is a strictly relative definition – in this case, the middle 60% of the income distribution (Reeves, Guyot, and Krause 2018). There are many other approaches. Each have their strengths and weaknesses.

For this paper, I define the middle class in absolute terms, setting real income levels which are held constant across time. Drawing on an earlier paper, I use multiples of the Federal Poverty Level (FPL), which varies by the size of the family, to create five income classes (in 2018 dollars), shown here for a family of three (Rose 2016):

i) Poor and Near Poor (PNP): <\$32,500 (x1.5 FPL)

ii) Lower middle-class (LMC): \$32,500 to \$54,500 (x1.5 to x2.5 FPL)
iii) Middle middle-class (MMC): \$54,500 to \$108,500 (x2.5 to x5 FPL)
iv) Upper middle-class (UMC): \$108,500 to \$380,500 (x5 to x17.5 FPL)

v) Rich: >\$380,500¹

Drawing lines in an income distribution inevitably creates somewhat arbitrary categories. But it is useful to think of the lower middle class as a group that while not poor, does not live as well as those with more income - who are more likely to own their home, have newer cars and appliances, and spend more on recreation. Similarly, the MMC and the upper middle class each encompass a wide range of incomes and lifestyles. Obviously as families have more money, they can afford larger houses, high amounts of discretionary consumption goods, and more travel. Note that the threshold for being defined as "rich" is approximately the same as for the top 1% of the distribution.

Data and methods: PSID

As opposed to cross-sectional data, the PSID panel data follow the experiences of the same respondents year after year. Even from one year to the next, many individuals' incomes change significantly. This is particularly true at the tails of the distribution: nearly one-third of individuals in the bottom and top income quintiles are there temporarily because of an

¹ Numbers rounded to nearest \$500.

unexpected positive or negative event (Rose 1994). Multiyear incomes are therefore more equal than single-year incomes.²

The appendix details a range of technical issues and decisions—including weighting, adjusting for inflation, creating an individual income trend line, and adjusting for family size. The key points are as follows:

- The analyses presented here are for individuals aged between 25 and 44 years of age at the beginning of each period;
- Separate analyses using narrower age bands (25-34 and 35-44) showed similar results, and so are not shown here;
- Individual adults are always in a "family unit", including individuals living alone, who are defined as families of one (two roommates are treated as two families of one);
- Incomes for multi-person families are the pooled sum of the incomes of all family members;
- This sum is adjusted to a family-of-three equivalent income;
- The inflation adjustment applied is the Bureau of Economic Analysis' Personal Consumption Expenditure price deflator;
- All members of the family are treated as having the same standard of living; and
- The only individuals followed are family heads (including singles), spouses, and cohabitants in every year.

Results

Slower income growth in later years

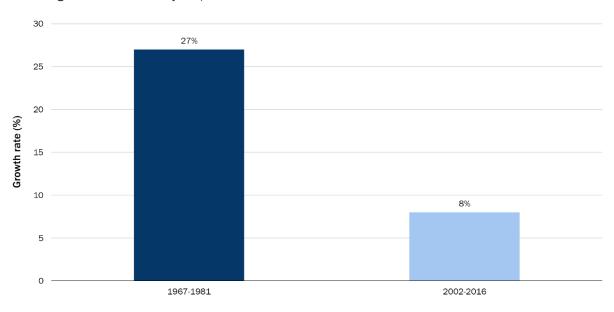
Figure 1 shows the rise in median family incomes from the first to last year (inflation- and size-adjusted to reflect a family of three) over the two periods.³ The later period has higher income levels but much lower growth rates. Between 1967 and 1981, median family income rose by 27%, more than three times as much as the 8% growth experienced in the period between 2002 and 2016. It is interesting to note that in the last period, the steep recession of 2008 and slow recovery did not lead to declining real median incomes for prime-age adults.

² Further, good and bad years are not symmetric because the right tail of higher than normal incomes is flatter that the left tail (which is bounded by zero and more clumped near one's long-term average income). This means that the median of the yearly average of multi-year incomes is higher than the median of single-year incomes.

³ There is variation by age where the younger half start with lower incomes but have faster growth over 15 years. The differences aren't significant, so I chose to present the data as a single group.

Figure 1. Slow income growth in recent years

Income growth rate over 15-year periods



Source: Author's calculations using Panel Study of Income Dynamics dataset.

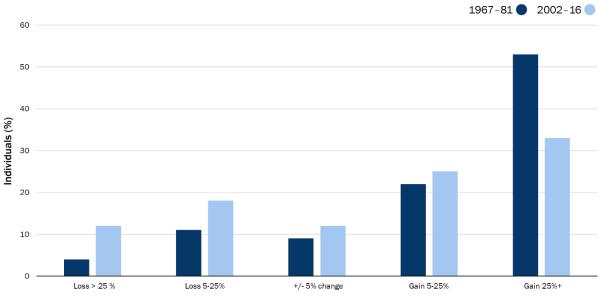
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More income losers, fewer gainers

There is however a good deal of variation between individuals and families. While some will see a big jump in income, others may see a fall. Figure 2 shows the proportion of each cohort experiencing losses or gains in income. Three times as many people in the later 15-year period experienced a large loss, defined as a drop of more than 25%, compared to the earlier period (12% v. 4%). Overall, the share of people losing ground (a loss of income of at least 5%) doubled from 15% to 30% in the last period. Many fewer experienced a large gain (33% v. 53%).

Figure 2. More income losers, fewer gainers

Individual income changes over 15 years



Source: Author's calculations using Panel Study of Income Dynamics dataset.

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The decline in income growth rates in Figure 1 is, then, driven by significant increases in the share of individuals with income losses and decreases in the share with strong gains. Piketty and Saez (2003 and updated yearly since then) argue that middle-class incomes have been stagnating.⁴ But their cross-sectional approach does not reflect individual experiences because they are comparing "similarly-situated people" and not looking at the experiences of the same individuals over time.

Since the years studied here include ones in the life cycle when incomes should be rising, the fact that three-quarters of people in the first period with gains of at least 5% is to be expected. But the lower proportion of people having similar income gains the later period—58% compared to 75%—and the greater share with losses greater than five percent—40% compared to 15%—are strong indicators of the worse experience of many middle-class Americans since 2002.

A growing upper middle class, especially in the earlier period

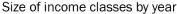
Next, I show the size of the five income classes (as defined above) at the beginning and end of the two periods, i.e. 1967 and 1981; 2002 and 2016.

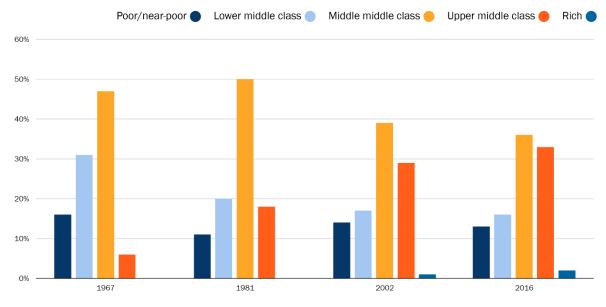
As Figure 3 shows, the higher income classes expanded significantly during the first period. Between 1967 and 1981, the upper middle class tripled in size (from 6% to 18%) and the MMC grew by 3 percentage points (from 47% to 50%). Offsetting these gains were a corresponding

⁴ Piketty, Saez, and Zucman, 2017 report that after-tax median income grew by 33% from 1979 to 2014.

shrinkage of the lower middle class (LMC) from 31% to 20% and the poor/near-poor (PNP) from 16% to 11%.

Figure 3. A growing upper middle class





Source: Author's calculations using Panel Study of Income Dynamics dataset.

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In the later period (2002 to 2016), the changes were in the same direction, but more modest. The upper middle class (UMC) grew by 4 percentage points, the size of the MMC declined by 3 points, while the shares of the LMC and PNP were largely unchanged.

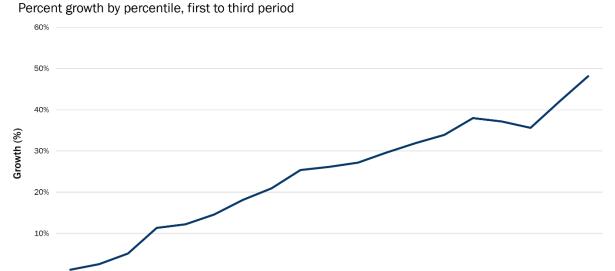
In previous work, I argued that the differences between the UMC and those with lower incomes were the key driver of rising inequality (Rose 2015). This is borne out here by the much larger UMC size in the last period versus the first period. The general trend towards growing inequality near the top of the distribution is also reflected in wealth statistics. The share of households with a net worth of at least \$1 million hit an all-time high of nearly 12% in 2016 (Survey of Consumer Finances 2016). A more recent data point is the explosive growth in the share of homes worth at least \$1 million, going from 1.5% of all homes in 2012 to 3.6% in 2018 (Davidson 2018).

Faster growth at the top of the distribution

Another way to show the rise in inequality is presented in Figure 4. For each period, people are ordered by the size- and inflation-adjusted family income from the bottom one percentile to the top 99th percentile. The lines on this graph track the size of the gains in income from the 5th percentile to the 95th percentile. This is a cross-sectional structural approach and shows the incomes of similarly situated people across the income ladder from the 5th to 95th percentiles. The upward sloping line means that higher-income individuals gained more income than lower-

income individuals. For example, the gains are tiny at the 20^{th} percentile (11%), modest at the 50^{th} percentile (26%), but much bigger at the top of distribution – 48% at the 95^{th} percentile.

Figure 4. Fastest income growth at the top



Source: Author's calculations using Panel Study of Income Dynamics dataset.

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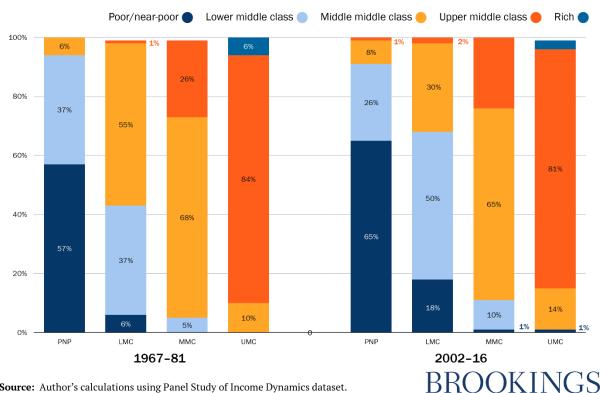
Less upward mobility, more downward mobility, in later years

Income Percentile

Next, I examine the transitions of individuals between income classes over the course of the two 15-year periods. Figure 5 shows two transition matrices, one for each period (the rows show which class people are in at the beginning of the period, and the columns show which class they were in at the end of the period). Note that because the income classes are defined in absolute terms, this is not a zero-sum situation where the numbers moving down must equal the numbers moving up, though they must total to 100%.

Figure 5. Declining upward mobility

Income class transitions



Source: Author's calculations using Panel Study of Income Dynamics dataset.

The overall picture is of much greater upward income mobility in the first than in the last period, as we would expect given the income trends described earlier. During the first period, 43% of those starting out as PNP moved up the income ladder; compared to 35% in the latter period. For the LMC, just 6% moved down to the PNP in the first period versus 18% in the later period, showing a much more economically precarious existence for those in low- to moderateearnings jobs. About two thirds of those starting in the MMC remained in that income bracket in both periods. But the risk of downward mobility for this group was twice as high in the later period (11% v 5%).

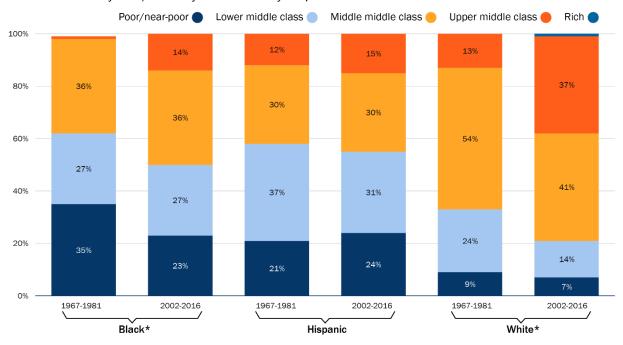
There was very little change in the transitions for those who started in UMC; in both periods, the overwhelming majority (84% and 81%) remained in that income class – and some became rich (6% and 3%).

Big race gaps, but more Black Americans in higher income classes

Next, I show the class distribution of different racial groups, specifically Black, Hispanic, and white, in the two periods, allocating class position using average income over all the years of each period. The first figure shows the proportion of each of the three racial groups in the four income classes in the period 1967 to 1981; the second shows the same for the period 2002 to 2016. (Asian Americans and other groups are not shown because of insufficient data).

Figure 6. Class mobility by race

Income classes by race/ethnicity over both 15-year periods



Source: Author's calculations using Panel Study of Income Dynamics dataset.

Notes: *Non-Hispanic

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The data show stark race gaps in income, even against a background of some real improvements, especially for Black Americans. In the first period, 62% of Black people and 58% of Hispanic people were in the bottom two income brackets, compared to 33% of white people. White people were almost twice as likely as Black people to be in one of the top three income brackets (67% v. 37%). Just one in a hundred Black people were in the UMC.

In the later period, the picture for Hispanic people is largely unchanged. We should note however, that that there are many fewer Hispanic people in the dataset in the first period. But many more Black people are in higher income classes, with 14% now in the UMC, for example. At the same time, the income position of white people has improved more dramatically, with 37% now in the UMC, compared to 13% in the earlier period, and just 21% in the PNP group, down from 33%. White people are still more likely than Black people to be in one of the top three income brackets or higher, but the relative gap has narrowed somewhat (79% v. 50%).

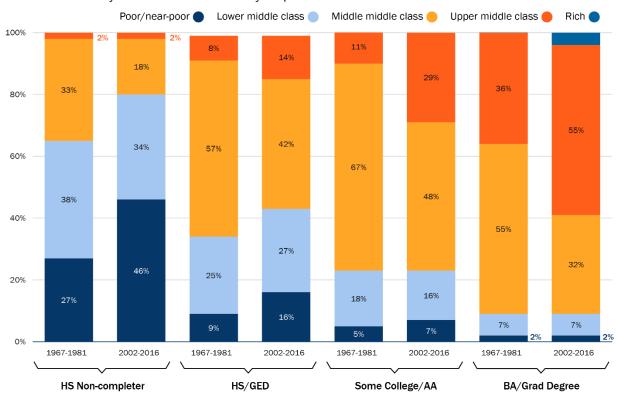
Education matters even more for income

Education is of course a big factor influencing both income levels and income mobility. There was a significant increase in the overall level of education between the two periods. Education also became more closely tied to income class status. In Figure 7, the class distribution in the

two periods is shown for three different educational groups: those with a high school diploma (or GED), with some college or an associate degree, and with at least a four-year degree. ⁵

Figure 7. Education matters more for mobility

Income classes by education over both 15-year periods



Source: Author's calculations using Panel Study of Income Dynamics dataset.

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Unsurprisingly, the biggest improvement has been seen at the top of the education ladder. In the later period, 55% of those with at least a BA were in the UMC, and another 4% counted among the rich – up from 36% and 1% in the earlier period. These results are consistent with the rising BA earnings premium over the last 40 years (Hamilton Project 2017).

For those in the middle educational category, the gains were more modest, with the share in the UMC rising from 11% to 29%. For those with no more than a high school diploma, the outlook worsened, with 41% in one of the bottom two income classes in the later period, compared to 34% in the earlier period.

⁵ Those who did not complete high school are not shown because the numbers are so low in the later period. Their class position deteriorates significantly, however, with almost half 46% in the PNP bracket in the later period, compared to 27% in the earlier period.

Conclusion

The analyses presented here confirm the broadly accepted picture of rising income inequality and slowing income growth for middle-class Americans. But a few additional points are worth drawing out. First, while the benefits of economic growth have not accrued equally, they have not gone solely to the top 1%. The upper middle class has grown. Second, the main reason for the shrinking of the middle class (defined in absolute terms) is the increase in the number of people with higher incomes. Third, while there has been some narrowing of racial income gaps, and an improvement in the position of Black people in particular, they remain wide. Fourth, education matters more than ever in terms of securing a place in a high or even middle income bracket. Fifth, there has been a significant increase in the number of Americans experiencing downward mobility. Sixth, the growth of median incomes for working-age adults over a fifteen-year period has declined sharply.

The advantage of using longitudinal data is that it tracks the actual economic trajectory of individuals over time. It may therefore provide a better guide to how Americans, especially those in the middle class, experience their own economic position and progress. People are likely to use their own economic history as a benchmark for their progress, as well as an assessment of how well other people are doing. The big winners in recent decades have been those in the mainly college-educated upper middle class. Slower income growth for of the rest of the population, combined with a heightened risk of losing economic ground over time, may help explain the current discontent of many in the American middle class.

Technical Appendix

Methodology

This paper uses the Panel Study of Income Dynamics (PSID) run by the University of Michigan. The PSID started in 1968 and was conducted annually through 1997 and every other year up to 2017. The income question refers to the previous year and reflects family income from all members and all sources. It is self-replicating in that the children of original participants become the adults who are followed in the ensuing years. Because of immigration, especially among Hispanic people, some additional survey participants have been added.

Each year reported incomes are adjusted for inflation and family size (a single person living alone is considered a family of one and two roommates are considered two families of one). People who are cohabiting for more than 12 months are considered married while cohabitors of less than 12 months are considered single.

Time periods and population characteristics

Two 15-year periods are used: 1967 to 1981 and 2002 to 2016. The first period starts with the first year of PSID income data, while the last year includes the last available income data when this paper was written. Ideally, it would be best to have each period start and end at the same point of the business cycle. This is basically impossible. But, by using the 15-year trajectories of prime-age people, the distortions of different short-term macroeconomic environments have a smaller effect. For example, the median incomes of the last group rose by 2% between 2006 and 2008 despite the deep recession of 2008.

Not surprisingly, the composition of American adults has changed over the 49 years covered in this report. First, the share of non-Hispanic whites decreased significantly (15 percentage points) as the share of Hispanics and Asians/other races grew by 9 and 4 percentage points respectively. Black people started with 9% of prime-age adults in 1981 and then added 2 percentage points by 2016.

Second, there was a remarkable upgrading of educational attainment. The share of those with no college instruction went from 66% in 1981 to 36% in 2016. The share of adults without at least a high school diploma has gone down while the shares of those with a bachelor's or graduate degree have gone up. Finally, women's participation in the paid labor—fewer years out of labor force and more years working full-time, full-year—has increased substantially (Rose and Hartmann, 2018). Since some of these shifts tend to increase incomes (e.g., higher education attainment and more married women working) and other factors tend to lower incomes (more disadvantaged minorities and more single-adult households), there will be no attempt to adjust for demographic changes.

Demographically, there were multiple changes that affected the share of the population in the middle class. First the share of Black and Hispanic people nearly doubled to comprise almost 30% of the adults followed in the last period. Since these individuals tended to have lower

incomes than whites and Asians, this race/ethnicity change leads to lower shares in MMC and the UMC. Second, another negative effect on family incomes was the decreasing share of individuals consistently married: in the last period, 63% of the sample were married at least 11 years out of 15; this was 23 percentage points lower than the comparable share in the first period.

Appendix Table 1: Changing Demographics

	2002-2016	Change from 1967- 1981
	Percent	Percentage Points
White	68%	-15
Black	11%	2
Hispanic	15%	9
Asian/other	6%	4
Education		
Did not finish HS	10%	-13
HS diploma or GED	26%	-17
Some College or AA degree	27%	11
BA or Graduate Degree	38%	19
Years Married		
Rarely (0-5 years)	24%	17
Some (6-10 years)	13%	6
Mostly (11-15 years)	63%	-23

Third, a positive factor was the increase in educational attainment from the first to last periods. The share of individuals with no college attendance was 36% in the last period versus 66% in the first period. The share with a BA or graduate degree almost doubled to just under 38%. Finally, another positive factor not shown on this table was the rising participation of women with and without young children.

Definition of income

The basic measure of class position is family income over 15 years. However, if income is used as a proxy for standard of living then the number of people in the family matters (a single person is treated as a family of one and two roommates are treated as two families of one). Just as poverty thresholds vary by the size of the family, researchers who study income distribution account for economies of scale with each additional person in the family by using the square root of the number of family members.

All incomes in this study are reported as "family of three" equivalents in 2018 dollars. The process started in 2014 when \$100,000 was five times the Federal Poverty Level. Instead of using the official FPL in each year, the \$100,000 cut-point separating the MMC from the UMC was adjusted using the Personal Consumer Expenditures price deflator from the Bureau of Economic Analysis. This means that each person's family of three-equivalent income is computed with this formula:

Family of three equivalent=inflation adjusted of family income X square root (3)/ square root (family size).

Appendix Table 2 shows the nominal dollars in 2016 and 1981 that was the minimum income to qualify to be in the UMC. A three-person family with an income of \$104,950 is equivalent to a four-person family with an income of \$115,470 and a single person with an income of \$60,593. This approach decreases the gap between the median incomes of married couples and those of non-family households cited. With the unadjusted numbers, the median for single-person households is 60% less than the married-couple median. But the gap is narrowed to 30% using size-adjusted incomes. In 1981, it only took \$42,519 to qualify for the UMC.

Appendix Table 2: Nominal dollars by family size to be in the UMC, 1981 and 2016

Family Size	2016	1981
1	\$60,593	\$24,548
2	\$85,691	\$34,716
3	\$104,950	\$42,519
4	\$121,185	\$49,096
5	\$135,489	\$54,891
6	\$148,421	\$60,130
7	\$160,314	\$64,949

PSID surveys

Because of the switch to biannual surveying in 1997, there are only 8 years of family income information in the last period. Therefore, this study only uses 8 years of observations in the first period even though 15 years are available. This switch does not affect long-term average incomes because the average inflation-adjusted incomes over 15 years in the first period is almost identical when using 15 years of observations and 8 years of observations.

The second issue involves weighting measures. Originally, the PSID oversampled low-income individuals (because the survey was created to trace the trajectory of this group). Further, people quit the survey either permanently or skipped some years. The PSID adjusts for this

problem by assigning each observation a different weight in each year to align the weighted observations with that of the population as reflected in the Census' Current Population Survey.

The recommended procedure for multi-year data is to use these PSID-assigned weights in the last year of the period. However, in each 15-year period, respondents are only included in this research if they have participated in all 8 studied years. This creates a biased sample of more diligent respondents who also tend to more educated, more female, whiter, and have higher incomes. To deal with this problem, new weights were created to align the demographics and median incomes of each period with comparable figures in the CPS in the final year of the period.

Stratification and trajectories of incomes

Longitudinal data show that there are many fluctuations of individuals' income trajectories with some unusually good years and some unusually bad years. This pattern means that in any given year, nearly one-third of individuals in the bottom income quintile and one-third of individuals in the top quintile are there temporarily and then leave these extreme quintiles and move up or down one or two quintiles in the following year. These movements can skew results on income gains and losses based on one's place in the income ladder.

For example, it might seem that the best way to know how individuals with different incomes do in future years is to put them in quintiles based on their incomes in a specific year and then measure their income gains and losses in the ensuing five or ten years. But this approach always finds that the lowest income quintile has the highest income growth because all the individuals who were temporarily in the bottom quintile will have very strong income growth once they return to their more common income level. Conversely, those in the top quintile have the lowest growth because those who were there temporarily will revert to a lower income level.

One way many researchers avoid this is to use incomes over multiple years to define the starting and ending years of income. For the current study with 8 income observation points, individual OLS regression analyses are used to create trend lines of income trajectories devoid of temporary good or bad years. Based on these individual "adjusted" incomes in each year, changes over time (the percent difference of the last period from the first period) are grouped into 5 categories: large loss (at least 25 percent), small losses (5-25%), no change (-5% to +5%), small gains (5-25% gains), and large gains (at least 25% gain). Since modest gains are the norm, a further simplification is to look at the share with large gains (a good event) and those with losses of 5% or greater (a bad event).

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