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A NEW LOOK AT INEQUALITY

Has the Rise in American Inequality Been Exaggerated?

Robert J. Gordon

The author argues that, with proper adjustments, the conventional view about the rise in inequality has been exaggerated. Indeed, in recent periods, most of the inequality can be attributed to gains by a small proportion of very high-income individuals. He proposes a variety of aggressive policies to counteract the levels of inequality found by his analysis.

THE EVIDENCE IS INCONTROVERTIBLE that income inequality has increased in the United States since the 1960s.¹ This paper shows that the rise in inequality has been exaggerated in two senses. First, the conventional measure showing a large gap between growth of median real household income and productivity greatly overstates the relevant increase compared to a conceptually consistent alternative concept. Second, the increase of inequality is not a steady, ongoing process. After widening most rapidly between 1981 and 1995,

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the growth of inequality reversed itself and became negative during 2000–2007.

Measuring the Gap Between Income and Productivity Growth

Previous commentators have noted the sharply slower growth of median real household incomes than of productivity. A typical comparison would lament that median real household income as reported by the Census Bureau grew between 1967 and 2007 at a mere 0.65 percent per year, while productivity in the nonfarm private business (NFPB) sector grew nearly three times faster at 1.88 percent per year.² The implication is that the entire gap between the 0.65 and 1.88 percent growth rates can be explained by increased skewness of the income distribution.

Alternative Concepts of Median Income and Productivity

However, this gap compares apples with oranges, and then oranges with bananas. There are four key conceptual differences between median real household income and private-sector productivity that are ignored in the typical comparison: (1) changes in the number of people per household, (2) differences among price deflators, (3) changes in the number of hours worked per person, and (4) slower growth of productivity in the total economy than in the NFPB sector. In contrast to the total difference of 1.23 percentage points between the growth rates of NFPB productivity and median real household income implied by the typical apples-oranges-bananas comparison, there is a much smaller 0.19-point gap in an apples-to-apples comparison of total economy productivity with median real income per capita deflated by the gross domestic product (GDP) deflator.

Table 1 provides detail on the growth rates of alternative concepts of income and of productivity over the four decades between 1967 and 2007, as shown in column 1, and also over selected subintervals.

Table I

Annual Growth Rates over Selected Intervals of Median and Mean Income and of Productivity, 1967–2007

	1967– 2007	1967– 1981	1981– 1995	1995– 2007	1995– 2000	2000– 2007
	(1)	(2)	(3)	(4)	(5)	(6)
1. Census median household income	0.65	0.52	0.70	0.73	1.87	–0.09
2. Census mean household income	1.11	1.00	1.41	0.90	2.50	–0.25
3. Mean minus median (line 2 minus line 1)	0.46	0.47	0.71	0.17	0.63	–0.16
4. Deflator used by census (CPI-RS)	4.23	6.49	3.44	2.51	2.30	2.65
5. PCE deflator	4.06	6.37	3.42	2.09	1.76	2.32
6. GDP deflator	4.03	6.47	3.17	2.19	1.64	2.58
7. Median HH income with GDP deflator (line 1 plus line 4 minus line 6)	0.85	0.54	0.98	1.04	2.53	–0.02
8. Persons per household	–0.60	–1.28	–0.20	–0.28	–0.50	–0.11
9. Median income per person with GDP deflator (line 7 minus line 8)	1.45	1.82	1.18	1.32	3.03	0.09
10. Total economy output per hour	1.64	1.64	1.29	2.04	2.10	2.00
11. Nonfarm private business sector output per hour	1.88	1.67	1.59	2.46	2.52	2.42
12. Conventional income-productivity gap (line 11 minus line 1)	1.23	1.14	0.88	1.74	0.65	2.52
13. Alternative income-productivity gap (line 10 minus line 9)	0.19	–0.18	0.12	0.72	–0.93	1.91
14. Alternative gap as percent of conventional gap (line 13/line 12)	15.8	–16.2	13.0	41.6	–143.1	76.0

	1967– 2007	1967– 1981	1981– 1995	1995– 2007	1995– 2000	2000– 2007
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Memo Items</i>						
15. Mean income per person with GDP deflator (line 3 plus line 9)	1.91	2.30	1.88	1.49	3.66	−0.07
16. Hours per person	0.30	0.30	0.63	−0.08	0.76	−0.69
17. Output per person (line 10 plus line 16)	1.94	1.94	1.92	1.96	2.86	1.31
18. Gap of income growth minus output growth (line 15 minus line 17)	−0.03	0.36	−0.04	−0.47	0.80	−1.38
19. Employee compensation minus GDP growth	−0.02	0.16	−0.24	0.02	0.85	−0.56
Consisting of:						
19a. GDI minus GDP growth	0.03	−0.03	−0.03	0.16	0.53	−0.10
19b. Employee compensation minus GDI growth	−0.04	0.19	−0.20	−0.14	0.32	−0.46

Sources: Lines 1 and 2: Carmen DeNavas-Walt, Bernadette D. Proctor, and Jessica C. Smith, *Income, Poverty, and Health Insurance Coverage in the United States: 2007* (Washington, DC: U.S. Census Bureau, 2008), August, available at www.census.gov/prod/2008pubs/p60-235.pdf, table A-1, p. 31; line 4: *ibid.*, unnumbered table on p. 30; lines 5 and 6: www.bea.gov, NIPA table I.1.9, line 1 and 2; line 8: households: same as lines 1 and 2; population: *Statistical Abstract of the U. S. 2009*, table 2, p. 7; line 10: real GDP divided by total-economy hours of work, an unpublished series obtained from the BLS; line 11: www.bls.gov; line 16: total economy hours; line 10; population: same as line 8; lines 19a and 19b: www.bea.gov, NIPA table I.1.10.

Over the full period in column 1, census median real household income grew at 0.65 percent per year versus 1.11 percent for mean real household income, implying a contribution of distributional skewness of 0.46 points (lines 1 through 3).³ But this 0.65 median growth rate understates growth in the real-income concept that is comparable to productivity growth. We must first switch from the price deflator used by the Census Bureau to measure real income (the research series for the Consumer Price Index [CPI], or CPI-RS) to the GDP deflator that is used to measure productivity.⁴ Note that most of the 0.20 point correction is accounted for by the tendency of the

CPI to exaggerate consumer price inflation relative to the deflator for personal consumption expenditures (PCE). The difference between the consumption and GDP deflators contributes almost nothing to the reconciliation. While in some historical periods like 1981–95 (column 3) the consumption deflator rose faster than the GDP deflator, the reverse was true in both 1967–81 and 1995–2007.

More important than differences among deflators is the decline in the size of households over the past four decades from 3.29 in 1967 to 2.59 in 2007, representing an annual growth rate of -0.60 percent per year.⁵ Thus median real income per *person* grew faster than per *household*, and in fact median real income per capita deflated by the GDP deflator grew at 1.45 percent per year (line 9), more than double the initial median income measure (line 1). The average size of households fell consistently over the past four decades and in every sub-period, not just because the birth rate declined, but also because the incidence of divorce and broken families increased.⁶ When a couple breaks apart while their employment status remains unchanged, their income per person remains the same while their income per household falls by half. The resulting slow growth in median real income per household is due to personal behavior, not what we normally mean by a rise of inequality.

The key income concept on line 9—median income per person deflated by the GDP deflator—can now be compared with growth in productivity. Most commentators then point to the rapid growth of productivity in the nonfarm private business sector (NFPB, line 11), which is the standard version of productivity, published every quarter by the Bureau of Labor Statistics. However, for comparisons with median income across the entire economy, the correct productivity concept should refer not to a part of the economy but rather to the total economy. Productivity in the total economy (line 10), which unfortunately is not published, consistently grows more slowly than productivity in the NFPB sector, because the narrower concept excludes the government, households, and institutions, where productivity growth is negligible.⁷ When the preferred income concept on line 9 of Table 1 is compared with the appropriate productivity concept on line

10, the conceptually consistent gap between income and productivity growth is only 0.19 percent per year (line 13), less than one-sixth of the conventional gap of 1.23 percent (line 12).

One reason that the corrected gap is so small is that *mean* real income per capita grew at 1.91 percent (line 15), substantially faster than total-economy productivity. This was possible because hours of work grew 0.30 points faster than the population (line 16). There was virtually no difference in the growth of census income and GDP as compiled in the NIPA (line 15 vs. line 17). Overall, rising inequality as measured by the median-mean income gap of 0.46 points contributed well under half the conventional 1.23-point gap between median real (CPI-RS) household income and NFPB productivity growth.

Income and Productivity Growth Across Subperiods

The same conclusion that the conventional gap measure greatly exaggerates the alternative gap concept holds for the 1967–81 and 1981–95 subperiods in columns 2 and 3 of Table 1. In fact, the alternative gap measure is *negative*, i.e., median income per person grew *faster* than total economy productivity, in the initial 1967–81 interval. Note that the contribution of inequality as measured by the mean-to-median growth gap was 0.47 points during 1967–81, the same as over the full four decades, and a substantially greater 0.71 points during 1981–95. As shown below in Figure 3, inequality grew fastest during 1981 and 1986, with continued inequality growth through the mid-1990s.

However, the contrast between the conventional and alternative gap measures is less clear-cut in the final subperiod between 1995 and 2007 (Table 1, column 4). Growth in total-economy productivity speeded up relative to the full four-decade average, while growth in median real income per capita slowed slightly, thus increasing the alternative gap to 41 percent of the conventional gap (line 14). The role of inequality decreased, as the mean-to-median growth difference declined from 0.71 points in 1981–95 to 0.17 points in 1995–2007 (line 3). Far more important than growing inequality as a cause of the 0.71-point alternative gap was a shortfall in the growth of census mean income

per person (1.49 points on line 15) relative to National Income and Product Accounts (NIPA) real GDP per person (1.97 points on line 17). Changes in the NIPA statistical discrepancy, i.e., the growth rate of GDP minus gross domestic income (GDI), actually went the wrong way in explaining this discrepancy (line 19a).

The most startling aspect of the third (1995–2007) interval is the sharp difference between the first and second parts of this subinterval, 1995–2000 compared with 2000–2007, as shown in columns 5 and 6 of Table 1. The break at the year 2000 shows how little the income-productivity gap has to do with inequality. Median income performed exceptionally well during 1995–2000, with a *negative* alternative gap between income and productivity growth, despite an increase of inequality (line 3) almost as rapid as during 1981–95. Then, after 2000, median income performed abysmally with an alternative gap of 1.91 percent, despite the fact that inequality actually *decreased*.

The exceptionally large conventional and alternative gaps, together with the decline of inequality, raise puzzling questions about the 2000–2007 period in column 6. The problem is that some income seems to be missing. Census mean income per person with the GDP deflator actually fell during this period, exhibiting an annual growth rate of –0.07 percent (line 15), far less than the 1.31 percent positive growth in real GDP per person. Only 0.56 percent per year of this income-growth shortfall can be explained by slower growth in employee compensation than in GDP, which in turn is due primarily to a shrinkage in the share of employee compensation in GDI. But this leaves a growth rate of –0.82 percent per year as an unexplained shortfall of income, or 6 percent when cumulated over the seven-year period 2000–2007. Further research is needed into the sources of this missing income.

Overall this exploration reinforces our initial theme—how little the gap between median real household income and business-sector productivity has to do with growth of inequality. Between 1967 and 1995 inequality grew rapidly, yet the alternative income-productivity



Figure 1. Share of Employee Compensation in Net Domestic Factor Income, With and Without Labor's Share of Proprietor's Income, 1960:Q1–2008:Q4

Source: NIPA table I.10, where the denominator is net domestic factor income, which is equal to employee compensation plus operating surplus. The labor share of proprietor's income is taken from Mishel, Bernstein, and Allegretto (2005, table I.24, p. 95). The fraction of the total proprietors' income that we use from this table is linearly interpolated between the selected years that they display. The raw values of both lines plotted in Figure 1 exhibit a one-quarter spike in 2005:Q3 due to the depressing effect of the Katrina disaster on the denominator; this spike is eliminated by substituting for the actual value of 2005:Q3 an interpolation between the values of 2005:Q2 and 2005:Q4.

growth gap was zero. Between 1995 and 2000 inequality grew rapidly, but the alternative growth gap was strongly *negative*. Then the period of the largest alternative growth gap in 2000–2007 witnessed a *decline of inequality*. How could the growth gap be near zero when inequality was rising before 2000? This occurred because, by coincidence, hours per person grew, allowing income per person to grow faster than productivity, and this benefit of rising hours per person was offset by an increase of inequality that was in part related. To the extent that higher hours per person reflected higher labor-force participation of women and teenagers prior to 1995, the labor-force entry of these inexperienced workers helped to hold down growth in median relative to mean income.

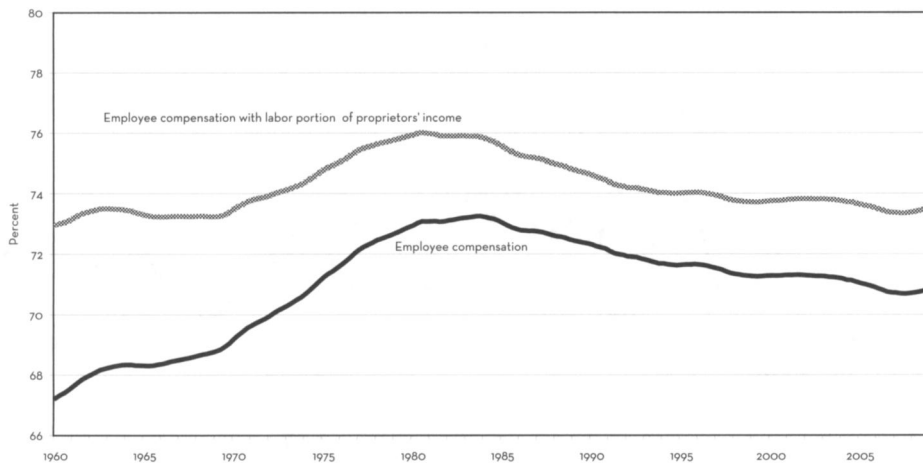


Figure 2. Ten-Year Moving Average of Share of Employee Compensation in Net Domestic Factor Income, With and Without Labor's Share of Proprietor's Income, 1960:Q1–2008:Q4

Source: A ten-year trailing moving average of the two series plotted in Figure 1.

The Recent Behavior of Income Shares: Labor, Bottom, and Top

The Decline and Rebound of Labor's Income Share

The rise of American inequality is not about the income shares of labor versus capital, but recent commentary has pointed to the decline in labor's share since 2000 as one more symptom, along with stagnant median household income, of rising inequality. Is this an accurate implication? Figure 1 plots two measures of labor's share.⁸ The lower line plots the share of employee compensation, and the upper line adds in a portion of proprietors' income. The upper line is a more comprehensive indicator and suggests that labor's share has been stable for the last fifty years, in the sense that the average share over the final ten years, 1998–2008 (73.5 percent) is almost identical to the average share over the first ten years, 1950–60 (73.0 percent). Even if labor's share were observed to increase, this would not indicate that inequality has declined, because such an increase could reflect simultaneously a sharp increase in the labor income of

the highest-paid workers together with a decline in the real income of the median workers.

Figure 1 provides a partial antidote to the laments that labor's bargaining strength relative to capital has become weaker and that this trend became exacerbated after 2000. Indeed the comprehensive share measure (upper line) declined from 75.1 percent in mid-2001 to 71.4 percent in mid-2006. But the same decline occurred in the expansion period of 1994–97 and was followed by a turnaround, and this has happened again, a turnaround that is too recent to be noticed in published commentaries. Both measures of labor's share increased by 3.7 percentage points during 2006–8, and the 2008:Q4 value of the comprehensive share was identical to that in mid-2001.

The dynamics of labor's share reflect the cyclical timing of productivity growth rather than any fundamental tug-of-war between labor and capital. Labor's share declines and the profit share increases during the early part of the recovery when productivity growth, which spills into profits, is most rapid (see Gordon 2003). Thus the decline in labor's share in 2001–6 in large part reflects the rapid productivity growth of that interval, and the labor's share turnaround after mid-2006 is a normal response to the slowdown in productivity growth that occurred roughly at the same time.

As a crude method to eliminate the cyclical fluctuations of labor's share, Figure 2 displays 10-year moving averages of the two series from Figure 1. Thus the first observation plotted in Figure 2 is the average for 1950:Q2–1960:Q1, and the final observation is the average for 1999:Q1–2008:Q4. This provides a more interesting fifty-year history. Labor's share started relatively low in the 1950s and early 1960s and then increased sharply between 1965 and 1975. The increase during the late 1960s can be plausibly explained by some combination of tight labor markets and union power. The continued high level of labor's share in the 1970s and the subsequent decline after 1985 can be explained by the systematic inverse correlation of labor's share with an acceleration or deceleration of trend productivity growth (see Dew-Becker and Gordon 2005, 96). Slowing trend productivity growth between 1965 and 1980 boosted labor's share and rising trend

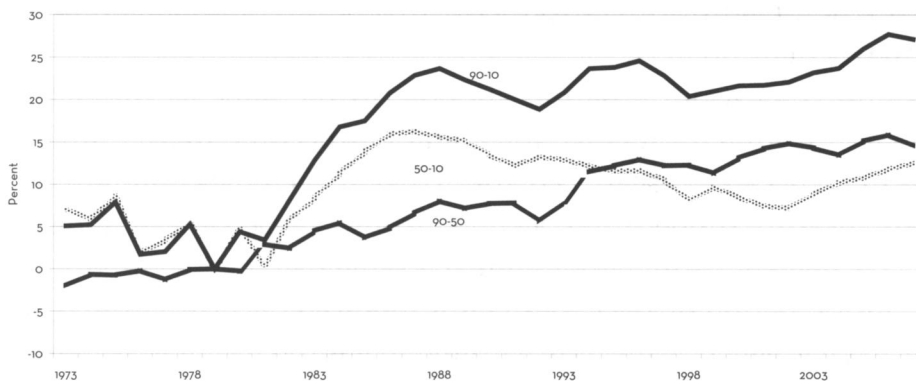


Figure 3. CPS Percentile Income Ratios for Both Men and Women, Log Percent Ratio, 1979 = 0, 1973–2007

Source: Economic Policy Institute, updated for 2006–7 from charts 3K, 3L, and 3M in Mishel et al. (2009).

productivity growth after 1985 reduced labor's share. Thus the slight decline in the ten-year moving average from 74.0 in 1996 to 73.4 in 2008 reflects healthy productivity growth in the past decade, not a defeat of labor at the bargaining table. The stability of labor's share in the United States stands in marked contrast to the recent decline of labor's share in some European countries.⁹

Inequality in the Bottom 90 Percent: Previous Explanations and Recent Data

Previous research has tended to focus on either the bottom 90 percent or the top 10 percent but not both together, due to data limitations. The Current Population Survey (CPS) data, typically used to examine the evolution of incomes in the bottom 90 percent, is top-coded and provides little information on what is happening within the top 10 percent. Similarly most studies of top incomes are based on tax data that provide little insight on incomes below the median where many households do not file tax returns at all. Our 2005 paper was one of the first to use tax data uniformly across the income distribution and showed a monotonic increase in the 1966–2001 growth rate of real

income across the percentiles, from 0.48 percent per year at the 20th percentile to 5.63 percent per year at the 99.99th percentile.

Because of its greater coverage of the bottom half of the income distribution, CPS data are suitable for evaluating hypotheses regarding the evolution of the income distribution in the bottom 90 percent, where it is important to distinguish the incomes of males and females. While the 90–50 ratio for both men and women increased slowly and steadily from 1979 to 2005, the 50–10 ratio showed a sharp jump in 1979–86 that was twice as large for women as for men. To save space in this paper, these ratios are displayed in Figure 3 only for both sexes combined.

The steady rise of the 90–50 log percent ratio (expressed as an index with 1979 = 0), from zero in 1979 to 14.6 percent in 2007, seems consistent with the hypothesis of skill-biased technical change (SBTC). However, the SBTC hypothesis has been criticized by Mishel et al. (2009), based on data from Goldin and Katz (2008), because the growth in the demand for college graduates was relatively steady in 1950–90 and declined in 1990–2005, yet as shown in Figure 3 the 90–50 ratio actually increased more after 1990 than before.

The most convincing attempt to rescue the SBTC hypothesis from timing inconsistencies has been achieved by David Autor et al. (2006, 2008). Their key distinction is between interactive work at the top, whether lawyers in courtrooms or investment bankers making deals in person, and interactive work at the bottom, whether nursing home attendants, waiters, or bartenders. These jobs at the top and bottom cannot be outsourced. But jobs can be outsourced in the broad middle where people do routine, easily duplicated jobs, such as airline reservations agents or, at a higher education level, radiologists reading electronic test results.

Returning to the 90–10 ratio for both sexes plotted in Figure 3, the sharp rise between 1981 and 1987 was followed by a stable plateau, with the 2003 90–10 log percent ratio of 23.2 percent roughly equal to the 22.8 percent of 1987. However, the middle years of the current decade have witnessed a further increase in the 90–10 log percent ratio to new high values of 27.7 percent in 2006 and 27.1 percent in 2007.

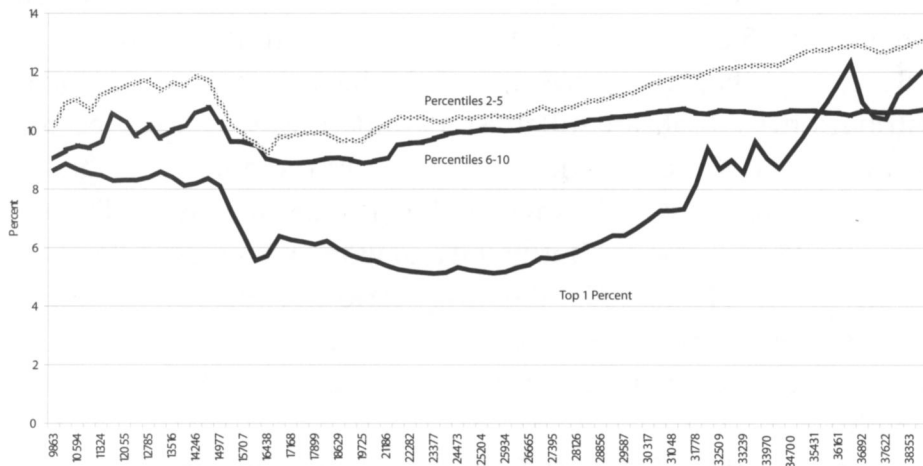


Figure 4. Wage Income Shares of Top 1 Percent, Percentiles 2–5, and Percentiles 6–10, 1927–2006

Source: Piketty and Saez (2003), data updated to 2006, <http://elsa.berkeley.edu/~saez/>. This is a replotted and relabeled version of figure 9 from the Saez Web site. Wage income includes bonuses as well as profits from exercised stock options.

This appears mainly to be related to a reversal in the 50–10 ratio, with a decline during 1987–2002 decline followed by a substantial increase from 7.2 to 12.5 percent between 2002 and 2007. While the 1987–2002 decline in the relative income at the 50th percentile seems roughly consistent with the Autor et al. (2008) hypothesis of outsourcing in the middle tier of occupations, the post-2002 turnaround so far has not been explained.

Inequality Above the 90th Percentile: Previous Explanations and Recent Data

Above the 90th percentile SBTC is a major explanation of increased skewness of labor incomes at the top, where we distinguish three different types of top incomes. The first two groups include entertainment/sports superstars and top professionals (investment bankers, lawyers, management consultants, surgeons, textbook authors); in both groups, incomes are driven by the market. The most contentious questions about top-bracket pay are regarding the third category, that

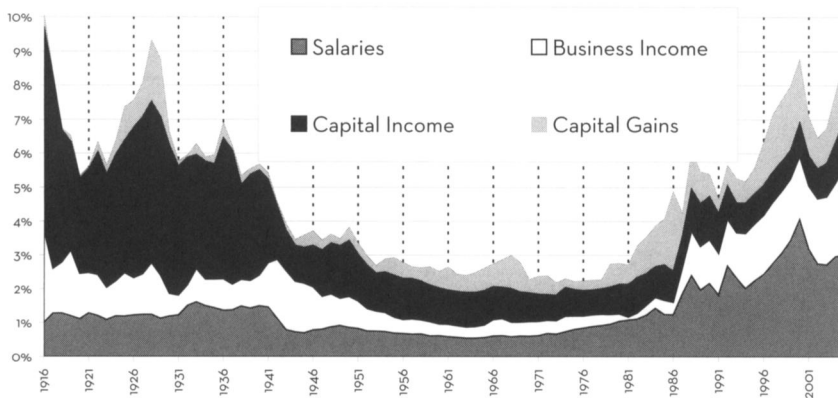


Figure 5. The Top 0.1 Percent Income Share and Its Composition, 1916–2005

Source: Same as Figure 4, this is “Figure 4–new” from the Saez Web site.

is, the sources of the enormous increases in the ratio of top executive compensation to that of average workers, both over time and between the United States and other developed nations. While superstars and top professionals have their incomes chosen by the market, CEO compensation is chosen by their peers, a system that gives CEOs and their hand-picked boards of directors, rather than the market, control over top incomes.

This idea that the principal-agent control of stockholders has been reversed through managerial power helps to explain some of the out-sized gains in CEO pay. However, the close correlation between stock market outcomes and CEO pay suggests that stock options created an automatic spillover from the stock market gains of the 1990s and mid-2000s into executive pay.

Our presentation of the data begins with updated graphs from Piketty and Saez (2003) on the evolution of top incomes over most of the twentieth century. Their work exploits the oversampling of high incomes in the IRS micro data files and tells a fascinating story of the U-shaped evolution of top incomes. Figure 4 plots the latest Piketty–Saez shares of wage income (including bonuses and stock option income but excluding capital gains) extending from 1927 to 2006. The time series for the top 1 percent has become familiar, with

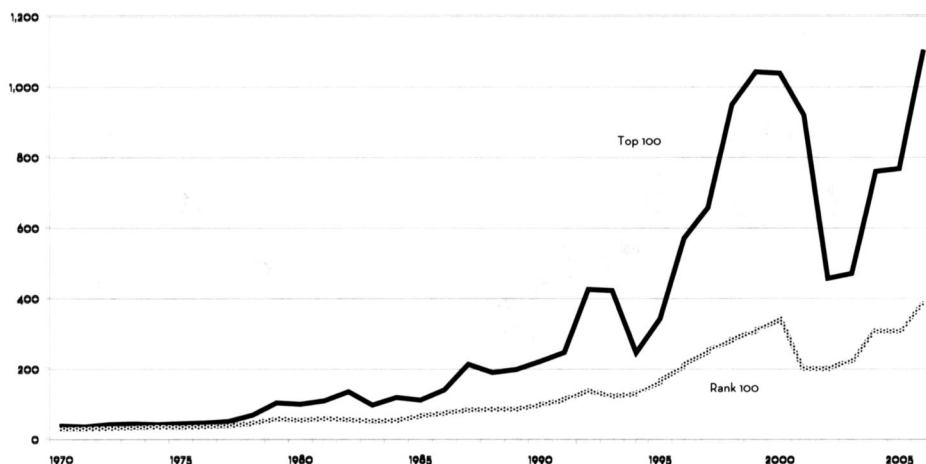


Figure 6. Average Pay of Top 100 CEOs and of Rank 100 CEOs Relative to Average Pay for All Employees, 1970–2005

Source: Same as Figure 4, new calculations of CEO ratios from the sheet “data-Fig11” that gives the raw income numbers rather than the ratios.

its U-shaped trajectory that declines during World War II, maintains a plateau until the late 1970s, and then rises in 1980–2000 to over 12 percent, well above the 1927–40 average of 8.5 percent.

Less familiar in Figure 4 are the shares for the other percentiles that make up the top tenth of the income distribution, that is, percentiles 91–95 and 96–99. Perhaps the most surprising aspect of Figure 4 is that the share of the 91–95 group did not increase at all between 1983 and 2006, with an identical share of 10.6 percent in both years. In contrast the 96–99 group enjoyed a steady increase from 10.5 percent in 1967 to 13.1 percent in 2006. The time path for the 96–99 group appears to be roughly a weighted average of the 91–95 and 99+ groups. This result, that income shares increased monotonically from the lowest to highest groups, echoes the findings for 1966–2001 of Dew-Becker and Gordon (2005, table 8).

An important development in the first half of this decade is the U-shaped pattern of the top 1 percent share, indicating a response to the decline in stock prices of 2000–2002 and the post-2002 recovery. This continues the influence of soaring stock market prices between

1982 and 2000, when the annual average of the S&P 500 index rose from 120 to 1,420. The 2000–2002 decline in the top 1 percent share is only faintly echoed in the 96–99 percentile share and is not visible at all in the 91–95 percentile share. Not only do stock options provide a channel by which the stock market influences top incomes, but also stock options became much more important as a source of executive compensation in the 1990s (increasing from roughly 40 to 70 percent of executive compensation between 1990 and 2000).

Figure 4 includes labor income only, including bonuses and stock option income but excluding income from business proprietorships, capital income, and capital gains. The impact of excluding the non-labor sources of income is shown in Figure 5 for the top 0.1 percent, in contrast to the top 1 percent share plotted in Figure 4. Whereas the top 1 percent wage income share more than doubled from 5.3 percent in 1966 to 12.3 percent in 2000, the top 0.1 percent wage income share rose by a factor of more than 6 from 0.6 percent in 1966 to 4.1 percent in 2000. This implies that the top 0.1 percent earned only 11 percent of the income of the top 1 percent in 1966 (this seems implausibly low) but fully one-third in 2000.

Piketty and Saez (2003) use their version of Figure 5 to emphasize how the source of income in the top 0.1 percent shifted from capital income in the 1920s to labor income after 1990. In the final year of 2005 the total share of 8.8 percent was divided up into 1.8 percent for capital gains, 1.4 percent for capital income, 2.6 for business income, and 3.0 percent for labor income. The U-shaped pattern during 2000–2005 is exhibited not just by labor income (due to stock options) but also by capital gains. Business proprietor income increased steadily during this interval without exhibiting a single year of a declining share. An apparent puzzle is that capital-gains income was positive during 2001 and 2002 when stock prices were declining; this must reflect the gains on shares sold during these years but bought before 1998 when stock prices were much lower.

In Figure 6 we turn from top-share pay to the pay of CEOs, who make up a sizable proportion of top incomes.¹⁰ The solid black line plots the ratio of average pay of the top 100 CEOs to average worker pay, and

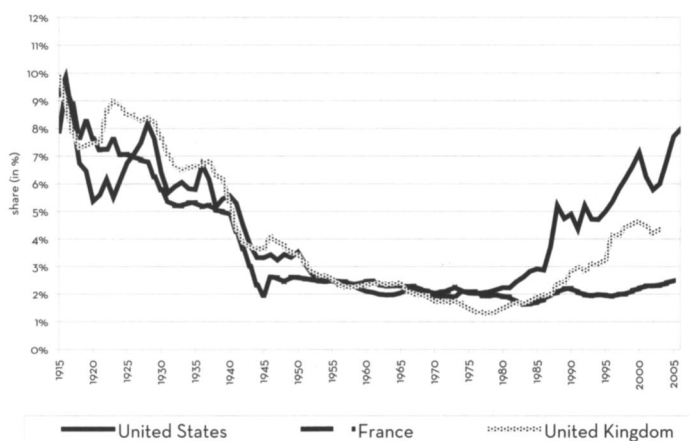


Figure 7. Top 0.1% Income Shares in the United States, France, and the UK, 1915–2005

Source: Same as Figure 4, this is “Figure 12” from the Saez Web site. Sources of data for France and the UK are given in the notes to that figure. In all three countries, income is defined as before individual taxes and excludes capital gains.

this exhibits an even more pronounced U-shape response to the stock market than do the top wage income shares of Figures 4 and 5. This top-100 ratio increased by a factor of five between 1990 and 2000 and then dropped by more than half between 2000 and 2002–3. The lower gray line displays the same ratio for the CEO whose income is ranked 100. This ratio is substantially lower, increased by 3.4 times from 1990 to 2000, and fell by somewhat less than half between 2000 and 2002–3. The relations between the lines plotted in Figures 4, 5, and 6 suggest that corporate CEOs, with their incomes dependent on stock options that fluctuate with the stock market, may make up as much as half of top incomes (including top officers of both “Main Street” and “Wall Street” firms, in the language of Kaplan and Rauh [2007]).

International Differences

Some of the most interesting remaining issues in the area of increased inequality involve cross-country differences. The post-1970 upsurge in U.S. inequality, particularly in top incomes, is much greater than in continental Europe or Japan, with the UK and Canada somewhere

in between. Figure 7 provides the latest available figures for the income share of the top 0.1 percent in the United States, the UK, and France. The data are similar to those displayed in Figure 5 and include all sources of income except for capital gains. Compared to the sharp 1980–2006 ratio for the United States, the stability of the French ratio all the way back to 1945 is quite remarkable. The UK share was roughly equal to the U.S. and France shares between 1953 and 1970, then fell below France until a recovery began around 1980 that boosted the share through 2000 by about half the increase observed in the United States.

We have proposed a mix of institutional and market-driven explanations to explain the divergence in Figure 7. An important institutional difference is the earlier and more pervasive introduction of stock options in the United States and prohibitions on the use of stock options until relatively recently in some countries, for example, Japan. In Germany and Scandinavia a tradition of corporatism and cooperative bargaining constrains management compensation excess. Other institutional factors include the larger role of unions and a higher real minimum wage in some European countries. But the market matters also; gains in profits and price-earnings ratios in the U.S. stock market in the 1990s and again in 2003–7 spilled over to executive compensation, interacting with the large increase in the share of executive compensation taking the form of stock options.

New Research Insights Related to the Inequality Debates

We now turn to a brief review of some of the recent research literature that is related to the explanation of rising American inequality. To what extent do recent contributions reinforce the theme of this paper that the growth of inequality has been exaggerated and has largely ceased? This section is divided into research that is relevant to the bottom 90 percent, relevant to top incomes, and relevant to other topics including health and geographical inequality.

The Bottom 90 Percent

An interesting feature of the data discussed above is that the 90–10 ratio from the CPS data displayed in Figure 3 exhibits almost all of its increase between 1980 and 1993, whereas the Piketty and Saez data on the top income classes displayed in Figures 4 and 5 continues its increase in inequality from 1993 to 2000 and then exhibits a U-shaped pattern after 2000 that is not evident at all in the CPS data. Burkhauser et al. (2008) ask whether this difference is real or is an artifact of top-coding in the CPS public-use data that artificially lowers the level of inequality and of its trends over time.

These authors have obtained access to previously confidential internal data containing most of the top-coded observations, and they obtain from it new measures of inequality. They conclude that, “at least for the poorest 99 percent of the income distribution,” the increase in inequality since 1993 has been significantly slower in the United States than in the previous two decades. Their results can be compared with Figure 4 above based on Piketty-Saez data, where we noticed that there is no increase at all in the 91–95 percentile share after 1987, and the 96–99 share exhibits most of its increase between 1970 and 1989. Overall, the time path of the top 1 percent is unique and justifies the methodology in this and our past papers of treating the sources of rising inequality in the bottom 90 percent (or perhaps better stated as the bottom 99 percent) and the top 1 percent as separate topics with separate explanations.

Autor and Dorn (2008) have produced new research that supports the earlier polarization hypothesis of Autor, Katz, and Kearney (2006, 2008). As we have seen, the polarization hypothesis creates at least three segments in the labor force, with skilled interaction in the top group, unskilled interaction in the bottom group, and a middle group doing routine repetitive work that can be replaced by computers or outsourced. In their new paper, Autor and Dorn focus on the apparent paradox that in a world of widening earnings inequality between high- and low-skilled workers, both employment and relative wages have grown in manual service jobs. In their view the computerization

of routine white-collar jobs has pushed relatively unskilled workers into routine but interactive manual jobs, and this occurs to a greater extent in geographical areas that initially had a larger share of employment in routine repetitive occupations.

The Top 1 Percent

We have seen that the timing and interpretation of increases in top incomes at the 1.0 and 0.1 percent levels are different from those in the bottom 99 percent. Much of the within-group increase in inequality in the bottom 99 percent occurred before 1993, whereas between 1993 and 2000 there continued to be an increase in the income share of the top 1 percent, and a continuing shift toward the top 0.1 and 0.01 percent groups within the top 1 percent segment. We have previously suggested that the timing of the increased shares in the top groups appears consistent with an important role for stock options as a major source of CEO pay and the gyrations of its share in response to stock market price fluctuations.

Recently Frydman and Saks (2008) have extended their previous research on executive compensation that extends back to the 1930s. They call attention to the sharp change in behavior before and after the mid-1970s. In the three previous decades the median real value of compensation was surprisingly flat and seemed unresponsive both to macroeconomic fluctuations and growth of individual firms. Then in the three subsequent decades median real compensation has increased sharply, as is evident in Figures 4, 5, and 6. Among the results based on their micro evidence is that, while the cross-sectional relationship between executive pay and firm size has remained stable over the past thirty years, there has been a sharp increase in the correlation between the level of pay and the average market value of firms in the past thirty years to roughly 1.0 (the Gabaix-Landier 2008 result) from a previous 0.1 to 0.3 before 1980.

Frydman-Saks apply their results to several theories of executive pay. The small response of executive pay to the economy and to firm size before the 1970s is inconsistent with “theories of managerial rent-

seeking, a competitive labor market for executives, and increases in managerial incentives" (2008). Their explanation for the post-1970s shift include changes in social norms, which we have previously invoked to explain part of the differing evolution of inequality at the top in the United States as compared with some foreign countries. For instance, the presence of strong unions in Germany and other corporatist nations appears to have limited CEO pay through a form of moral suasion, and the same may have been true in the United States before the 1970s when unions were strong.

Health Outcomes and Inequality

One of the most surprising discoveries of our previous search through the inequality literature was the quantitative importance of differences in health outcomes by education and income group. An important research result of Singh and Siahpush (2006) revealed that life expectancy in the "least deprived" top-decile group increased between 1980 and 2000 by 3.4 years, fully double the 1.7 year increase in life expectancy of the "most deprived" bottom-decile group.

Meara, Richards, and Cutler (2008) go further and show that over the same 1980–2000 period, life expectancy at age twenty-five grew by 1.6 years for highly educated people and 0.5 years, less than one-third as much, for people with low education. They attribute a substantial part of their findings to differential trends in smoking use among high- and low-educated groups, with much greater declines in tobacco use among the highly educated. A second factor that differentiates the high- and low-education groups is a growing tendency toward obesity among the low-education groups.

A more comprehensive study that pulls together much of the previous evidence has been released recently by Cutler et al. (2008). There is no implication in this research that increased income inequality causes the disparity of health outcomes, but rather that differences in educational attainment have separate impacts on relative incomes and relative life expectancy that go in the same direction. The major influence of socioeconomic status (SES) on health occurs in childhood,

and “once childhood health is set, the effect of economic resources on health diminishes” (2008, 35).

As in the two studies summarized above, education is a powerful determinant of health, but mainly because of its effect on behaviors like smoking and obesity rather than its association with access to medical care. An important direction of causation works in the opposite direction from health to socioeconomic status. “Unhealthy adults earn less, spend less time in the labor force, and retire earlier” (Cutler et al. 2008, 36).

Turning finally to geographic inequality, a stunning new data set undermines our previous conclusion that real income per capita had increased significantly in superstar bicoastal metropolitan areas. Very recently the Bureau of Economic Analysis has released data on price-level differences across states, and this is the first time that a systematic measure of *level* differences has been published (as contrasted to long-available measures of differences in CPI *growth rates* across cities). Without adjustment for price-level differences, per capita incomes in Massachusetts and New York are respectively 26.1 percent and 20.0 percent above the national average. With correction for regional price disparities, these percentages drop to 10.7 and -0.2 percent respectively.

In an important and related piece of research, Enrico Moretti (2008) notes that college graduates disproportionately cluster in metropolitan areas that have a high cost of housing. He finds that *fully two-thirds* of the previously documented increase in the return to college between 1980 and 2000 vanishes when he corrects for differences in the cost of living across metropolitan areas. His cross-area price measures are comprehensive and ingenious and take account of differences in housing costs, housing quality (e.g., smaller apartment sizes in New York than in St. Louis), and price differences of non-housing goods and services (pizza and haircuts are more expensive in New York).¹¹

Moretti then asks why college graduates migrate to expensive cities. He carries out an empirical analysis that distinguishes between supply and demand factors and concludes that college graduates move to expensive cities because jobs for college graduates are increasingly

located in those cities, not because they particularly like living in those cities. His results are tempered by the likelihood that the agglomeration of college graduates, even though initially driven by demand rather than a shift of supply, carries with it a set of externalities such as the opening of new restaurants and shops that cater to people with college-educated tastes. However, strengthening his basic result is the fact that the federal tax system is based on nominal income and thus penalizes those who move to high-priced locations. Further, several of the popular bicoastal states (New York, Massachusetts, and California) have relatively progressive state income taxes.

Conclusion

Quantitative Evidence

The rise of American inequality has been exaggerated in magnitude, and its impact is now largely in the past. Standard commentary laments the slow growth of median real household income and concludes that over the past four decades (1967–2007) the gap between growth of income and productivity has been 1.23 percent per year. But this “conventional” gap measure is riddled with measurement and conceptual inconsistencies. Our “alternative” gap measure grows at only 0.19 percent over the four decades and does not grow at all during the pre-2000 period when inequality was growing fastest. In fact, we show that income-productivity gaps have virtually nothing to do with inequality. The alternative growth gap is zero when inequality grew fastest before 1995, became negative when inequality grew further during 1995–2000, and was strongly positive in 2000–2007 when inequality *decreased*.

Previous writers have lamented the absence of any growth in median household income after 2000. Indeed our preferred measure of median income per person deflated with the GDP deflator is stagnant after 2000 and lags far behind the robust growth of productivity during this period. But this is not a by-product of rising inequality, because mean income actually grew *more slowly* than median income after 2000. What happened is that census measures of real income grew

much more slowly than real GDP after 2000 after tracking real GDP almost exactly before 2000. Why this happened is a measurement puzzle to be investigated further.

Not only has the increase of inequality been exaggerated, it has ceased. The excess growth of mean relative to median income reversed itself after 2000. The income shares of the top 1 percent and of CEOs, which had exploded before 2000, went down and back up with stock market gyrations between 2000 and 2006 but did not rise on balance. The decline in the U.S. stock market since mid-2007 is now more severe than in 2000–2002 and has doubtless already reduced the income share of the top 1 percent and of CEOs by more than occurred then. To the extent that shifting social norms fostered the rise in top incomes in the past three decades, as argued by Frydman and Saks (2008), the attack on executive bonuses and perks by the Obama administration may lead to a decline in top income shares even more than would be expected in light of the stock market decline.

Other measures suggest that the rise of inequality ceased well before 2000. Our examination of labor's income share shows virtually no change over the past two decades once an allowance is made for the business cycle. Labor's share in 2008:Q4 was virtually the same as in 1983, 1991, and 2001. The 50–10 ratio in CPS data is lower now than in 1986, while the 90–50 ratio has barely budged from a plateau reached in 1993. The income share of the 90–95 percentile group has been stable since 1988.

Recent Research Results

The paper provides a mini-survey of very recent papers that have emerged since our previous survey (Gordon and Dew-Becker 2008). These either question long-standing hypotheses in the inequality literature, support our theme that the rise of inequality had been exaggerated, or both. The hypothesis of skill-biased technical change (SBTC) as an explanation of rising inequality has a hard time coping with the data when expressed in terms of two dimensions of skill. Autor et al. (2006, 2008) have provided a convincing three-way

polarization hypothesis that explains a hollowing-out of wages and employment opportunities in a middle occupational group where skills can be outsourced to machines and to foreign workers.

To explain the rise in the income share of the top 1 percent, two hypotheses seem essential, even though at first glance they appear to be in conflict. CEO pay is determined by peers, not by the market, giving support to the managerial-power hypothesis. But the clear correlation of CEO pay premiums with the stock market, together with separate evidence on the higher share of stock options in CEO pay, support a market-driven view that CEO pay responds to market capitalization. However, the work of Frydman and Saks (2008) cautions that this connection only exists in the period since the mid-1970s and was mysteriously absent between 1936 and 1976. They argue that this profound change in behavior reflects a shift in social norms. This emphasis on social norms seems consistent with the differences in CEO pay multiples between the United States and Europe. It also heralds a possible future decline in CEO pay multiples not only as a result of the 2007–9 stock market collapse but also due to newly intense scrutiny of executive compensation practices emerging from Washington.

The theme of previous exaggeration of the rise of inequality is supported by the recent research of Moretti (2008), who shows that the increase in the wage premium of college over high school has been overstated by half to two-thirds due to higher inflation in metropolitan areas where college graduates congregate. Moretti's work is further supported by the fact that progressive taxes, particularly in bicoastal states, hit the high nominal incomes of college graduates over and above the bite they pay in a higher cost of living. Newly released cross-state cost of living data yield the complementary conclusion that the excess of per-capita income in New York State over the national average vanishes when translated from nominal to real terms and that in Massachusetts it falls by half.

The most significant ongoing increase of American inequality takes the form of faster growth in life expectancy for the top 20 percent of the income distribution than for the bottom 20 percent. Yet even

here the interpretation of Cutler et al. (2008) shifts the emphasis from unfair gains by the rich at the expense of the poor, to the role of low educational attainment in causing both poor economic outcomes and poor health outcomes at the bottom of the distribution. The toll taken by smoking and obesity among the low-income groups reflects behavioral choices and is in a different category than most other causes of rising inequality, just as behavior drives divorce as a factor that reduces income per household relative to income per person.

Political and Policy Implications

There is a simple solution to growing inequality at the top, and this does not require administrative interference with executive compensation committees. Let the top 1 percent earn its millions but then let the government substantially boost the taxation of those rewards, not just in the form of much higher (not just 39 percent, how about 50 percent?) top-bracket income tax rates, but also a reversal of all the reductions in tax rates on dividends and capital gains of the past thirty years. To those who complain that higher tax rates would stifle innovation and growth, the obvious response is that rapid economic growth from 1947 to 1973 took place in an era of top-bracket tax rates ranging from 70 to 90 percent. High top-bracket tax rates are not incompatible with healthy growth.

Dealing with inequality in the bottom 90 percent requires targeted initiatives. The failure of poorly educated people to achieve the gains of income and life expectancy enjoyed by highly educated people can be at least partially mitigated by early childhood education and universal health care. It is no coincidence that the 90–10 income percentile ratio widened most rapidly during the Reagan-Bush I years but then stopped rising during the Clinton years. A whole set of policies from changes in tax rates to favor the poor instead of the rich, to government expenditures emphasizing early education and health care, to increases in the real minimum wage can alter inequality outcomes for the length of an eight-year presidency and beyond.

Except for the buoyant effect of the stock market on CEO pay,

at least until 2007, inequality has increased relatively little since the early 1990s. The policy proposals of the Obama administration are, at least so far, meek in contrast to the more radical needed increases in top-income tax rates and in contrast to the need for universal medical care that is a right of citizenship rather than of full-time employment. Will we see measures of inequality finally turn around and decline between 2010 and 2020? The stock market collapse has already started that process, and enlightened policies can continue it.

Notes

1. Indeed Ian Dew-Becker and I developed the striking result that over the period 1966–2001 only the top 10 percent of the income distribution had a gain in real income equal to growth in labor productivity (Dew-Becker and Gordon 2005). See also Gordon and Dew-Becker (2007, 2008). The 2007 paper is a version, drastically shortened for publication, of the comprehensive longer 2008 paper. In addition to providing a more complete treatment of each topic in the shorter paper, the longer paper covers several topics that are absent from the short version, including consumption and geographical inequality.

2. All data in this section of the text come from Table 1 and are identified below by column and line number.

3. The census concept of income includes all cash income before taxes but excludes in-kind income. Thus employee-financed health and pension benefits are included, while employer-financed benefits are excluded. See DeNavas-Walt et al. (2008, 29).

4. The CPI-RS is compiled by the Bureau of Labor Statistics and applies a consistent methodology of the late 1990s that corrects several sources of bias in the official CPI extending back to 1977. The Census Bureau extrapolates the CPI-RS series back from 1977 to 1967 by using the conventional CPI-U. The GDP deflator is that used to deflate the numerator of total-economy productivity (line 10 in Table 1). We do not discuss here the nonfarm private business deflator used to create the numerator of NFPB productivity, as we reject that concept as irrelevant to income comparisons involving the entire economy.

5. All references to “population” or “per person” refer to the total U. S. population, not the working-age population relevant to discussions of employment, unemployment, and labor-force participation.

6. The divorce rate per 1,000 population more than doubled from 2.2 in 1960 to 5.3 in 1981. Its average was then 4.8 during 1981–95 and 4.0 during 1996–2006. See *Statistical Abstract of the U.S. 2009*, table 77, p. 63.

7. Output in the nonfarm private business sector in 2008:Q4 was 75.2 percent of GDP (NIPA table 1.3.5, www.bea.gov).

8. The denominator of labor’s share is domestic net factor income (i.e., gross

domestic income minus business taxes and depreciation) and is taken from NIPA table 1.10.

9. For instance, labor's share in Germany fell from 80 percent in 2000 to 73 percent in 2007. The UK share fell from 92 percent in 1990 to an average of 82 percent in 1997–2007. The Netherlands share fell from 83 percent in 1993 to 76 percent in 2007. However, the French share has been stable since 1988. See Krämer (2008), figures 1 and 2.

10. Kaplan and Rauh (2007) and Gordon and Dew-Becker (2008) debate the relative importance of CEO pay in the pay of all top income earners, including superstars and high-paid lawyers and investment bankers.

11. The rental cost of an apartment with a given number of bedrooms and bathrooms is obtained from survey evidence, as are the quality attributes of these apartments. Nonhousing costs are estimated from a regression of nonhousing costs on housing costs for a small number of metro areas that have CPI indexes on the level of the cost of living.

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