

# **CEO compensation surged 14% in 2019 to \$21.3 million**

CEOs now earn 320 times as much as a typical worker

**Report** • By [Lawrence Mishel](#) and [Jori Kandra](#) • August 18, 2020

**What this report finds:** Corporate boards running America’s largest public firms are giving top executives outsize compensation packages that have grown much faster than the stock market and the pay of typical workers, college graduates, and even the top 0.1%. In 2019, a CEO at one of the top 350 firms in the U.S. was paid \$21.3 million on average (using a “realized” measure of CEO pay that counts stock awards when vested and stock options when cashed in rather than when granted). This 14% increase from 2018 occurred because of rapid growth in vested stock awards and exercised stock options tied to stock market growth. Using a different “granted” measure of CEO pay, average top CEO compensation was \$14.5 million in 2019. In 2019, the ratio of CEO-to-typical-worker compensation was 320-to-1 under the realized measure of CEO pay; that is up from 293-to-1 in 2018 and a big increase from 21-to-1 in 1965 and 61-to-1 in 1989. CEOs are even making a lot more—about six times as much—as other very high earners (wage earners in the top 0.1%). From 1978 to 2019, CEO pay based on realized compensation grew by 1,167%, far outstripping S&P stock market growth (741%) and top 0.1% earnings growth (which was 337% between 1978 and 2018, the latest data year available). In contrast, compensation of the typical worker grew by just 13.7% from 1978 to 2019.

**Why it matters:** Exorbitant CEO pay is a major contributor to rising inequality that we could safely do away with. CEOs are getting more because of their power to set pay—and because so much of their pay (about three-fourths) is stock-related, not because they are increasing productivity or possess specific, high-demand skills. This escalation of CEO compensation, and of executive compensation more generally, has fueled the growth of top 1.0% and top 0.1% incomes, leaving less of the fruits of economic growth for ordinary workers and widening the gap between very high earners and the bottom 90%. The economy would suffer no harm if CEOs were paid less (or were taxed more).

**How we can solve the problem:** We need to enact policy solutions that would both reduce incentives for CEOs to extract economic concessions and limit their ability to do so. Such policies could include reinstating higher marginal income tax rates at the very top; setting corporate tax rates higher for firms that have higher ratios of CEO-to-worker compensation; establishing a luxury tax on compensation such that for every dollar in compensation over a set cap, a firm must pay a dollar in taxes; reforming corporate governance to give other stakeholders better tools to exercise countervailing power against CEOs’ pay demands; and allowing greater use of “say on pay,” which allows a firm’s shareholders to vote on top executives’ compensation.

## Introduction and key findings

Chief executive officers (CEOs) of the largest firms in the U.S. earn far more today than

they did in the mid-1990s and many times what they earned in the 1960s or late 1970s. They also earn far more than the typical worker, and their pay—which relies heavily on stock-related compensation— has grown much more rapidly than typical worker pay. Importantly, rising CEO pay does not reflect rising value of skills, but rather CEOs’ use of their power to set their own pay. And this growing earning power at the top has been driving the growth of inequality in our country.

## About the CEO pay series and this report

This report is part of an ongoing series of annual reports monitoring trends in CEO compensation. In this report, we examine current trends to determine how CEOs of the top 350 largest U.S. firms (by sales) are faring compared with typical workers through 2019. We also compare top CEO pay with earnings of workers in the top 0.1% (through 2018), and look at the relationship between CEO pay and the stock market.

For most of our analyses, we use two measures of CEO compensation, one based on compensation as “realized” and the other based on compensation as “granted.” Both measures include the same measures of salary, bonuses, and long-term incentive payouts. The difference is how each measure treats stock awards and stock options, major components of CEO compensation that change value from when they are first provided, or granted, to when they are realized. The realized measure of compensation includes the value of stock options as realized (i.e., exercised), capturing the change from when the options were granted to when the CEO invokes the options, usually after the stock price has risen and the options values have increased. The realized compensation measure also values stock awards at their value when vested (usually three years after being granted), capturing any change in the stock price as well as additional stock awards provided as part of a performance award. The granted measure of compensation values stock options and restricted stock awards by their “fair value” when granted.

We have changed our definition of CEO compensation in the realized measure from that employed in earlier reports. Previous reports used the value of stock awards as granted in both the realized and granted compensation measures, so that the measures differed in only their treatment of stock options. As noted in our previous report (Mishel and Wolfe 2019) the increased importance of stock awards in executive pay and the increased divergence between the value of stock awards when granted (measured as “fair value” when granted) versus when vested means that excluding the realized gains from stock awards increasingly understates total CEO compensation. We therefore have incorporated a realized measure of stock awards along with the realized measure of stock options in our realized compensation metric. This first metric can be compared with the second metric, compensation granted, whose measurement is the same as in prior reports.

## CEO compensation growth in 2019 and recent years

Both measures of CEO compensation grew strongly in 2019. Realized CEO compensation

grew to \$21.3 million in 2019, which was \$2.6 million or 14.0% higher than in 2018. The growth in realized CEO compensation was driven by a 19.5% growth in vested stock awards and a 17.5% growth in exercised stock options. Granted CEO compensation grew \$1.1 million or by 8.6% to \$14.5 million in 2019.

## Long-term trends

Realized CEO compensation grew 105.1% from 2009 to 2019, the period capturing the recovery from the Great Recession; in that period granted CEO compensation grew 35.7%. In contrast, typical workers in these large firms saw their average annual compensation grow by just 7.6% over the last 10 years. (Typical workers in these firms are production and nonsupervisory workers in the industries that the top 350 firms operate in. Their compensation measure includes wages and benefits.)

CEO compensation attained its peak in 2000, at the height of the late 1990s tech stock bubble, at \$21.9 million (in 2019 dollars) based on either measure. That same year the CEO-to-typical-worker compensation ratio was 366-to-1 (realized) or 386-to-1 (granted).<sup>1</sup> CEO compensation fell in the early 2000s after the stock market bubble burst, but mostly recovered by 2007, at least for the realized compensation measure (the measure using compensation granted remained substantially below the 2000 level). Realized CEO compensation fell again during the financial crash of 2008–2009 and rose strongly after 2009 and with the strong growth in 2019 regained and exceeded its 2007 pre-financial crisis level but in 2019 still remained below the 2000 peak level. CEO compensation continues to be dramatically higher than it was in the decades before the turn of the millennium. Realized CEO compensation was 1,167% higher in 2019 than in 1978 and granted CEO compensation was 1,033% higher. Correspondingly, the CEO-to-average-worker pay ratio, using the realized compensation measure, was 320-to-1 in 2019, far higher than the ratios in earlier years: 118-to-1 in 1995, 61-to-1 in 1989, 31-to-1 in 1978, and 21-to-1 in 1965.

## The relationship between CEO pay and the stock market

CEO pay has become closely associated with the growth of the stock market. The generally tight link between stock prices and CEO compensation indicates that CEO pay is not being established by a “market for talent,” as pay surged with the overall rise in profits and stocks, and not with the better performance of a CEO’s particular firm *relative* to the performance of that firm’s competitors.

## The relationship between CEO pay and the pay of other top earners; the rise of inequality

Amid a healthy recovery on Wall Street following the Great Recession, CEOs enjoyed outsized gains in compensation even relative to other very-high-wage earners (those in

the top 0.1%); CEOs of large firms earned 6.0 times as much as the average top 0.1% earner in 2018, up from 4.4 times as much in 2007 and 3.3 times as much in 1979. This is yet another indicator that CEO pay is more likely based on CEOs' power to set their own pay, not on a market for talent.

To be clear, these other very-high-wage earners aren't suffering: Their earnings grew 337% between 1978 and 2018. CEO pay growth has had spillover effects, pulling up the pay of other executives and managers, who constitute more than 40% of all top 1.0% and 0.1% earners.<sup>2</sup> Consequently, the growth of CEO and executive compensation overall was a major factor driving the doubling of the income shares of the top 1% and top 0.1% of U.S. households from 1979 to 2007 (Bakija, Cole, and Heim 2012; Bivens and Mishel 2013). Income growth has remained unbalanced. As profits and stock market prices have reached record highs, the wages of most workers have grown very modestly, including in the recovery from the Great Recession (Bivens et al. 2014; Gould 2020b).

## Key findings

The measures analyzed in the report and associated key findings include the following:

- **CEO compensation in 2019 (realized compensation measure).** Using the realized compensation measure, the average compensation of CEOs of the 350 largest U.S. firms was \$21.3 million in 2019. Compensation grew 14.0% in 2019 following a 1.5% loss in 2018. Top CEO compensation doubled over the recovery from 2009 to 2019, growing 105.1%.
- **CEO compensation in 2019 (granted compensation measure).** Using the granted compensation measure, the average compensation of CEOs of the 350 largest U.S. firms was \$14.5 million in 2019, up 8.6% from \$13.3 million in 2018 and up 35.7% since the recovery from the Great Recession began in 2009.
- **Growth of CEO compensation (1978–2019).** Using the realized compensation measure, compensation of the top CEOs increased 1,167% from 1978 to 2019 (adjusting for inflation). Top CEO compensation growth was roughly 50% greater than stock market growth during this period and far eclipsed the painfully slow 13.7% growth in a typical worker's annual compensation. CEO granted compensation rose 1,033% from 1978 to 2019.
- **Changes in the CEO-to-worker compensation ratio (1965–2019).** Using the realized compensation measure, the CEO-to-worker compensation ratio was 21-to-1 in 1965. It peaked at 366-to-1 in 2000. In 2019 the ratio was 320-to-1, up from 293-to-1 in 2018. Most important, the ratio was far higher than at any point in the 1960s, 1970s, 1980s, or 1990s. Using the CEO granted compensation measure, the CEO-to-worker compensation ratio rose to 223-to-1 in 2019 (up from 212-to-1 in 2018), significantly lower than its peak of 386-to-1 in 2000 but still many times higher than the 45-to-1 ratio of 1989 or the 15-to-1 ratio of 1965.
- **Changes in the composition of CEO compensation.** The composition of CEO compensation is shifting away from the use of stock options and toward the use of

stock awards. Vested stock awards and exercised stock options totaled 16.7 million in 2019 and accounted for 78.6% of average realized CEO compensation.

- **Changes in the CEO-to-top-0.1% compensation ratio.** Over the last three decades, compensation grew far faster for CEOs than it did for other very highly paid workers (the top 0.1%, or those earning more than 99.9% of wage earners). CEO compensation in 2018 (the latest year for which data on top wage earners are available) was 6.04 times as high as wages of the top 0.1% of wage earners, a ratio 2.86 points greater than the 3.18-to-1 average CEO-to-top-0.1% ratio over the 1947–1979 period.
- **Implications of the growth of CEO-to-top-0.1% compensation ratio.** The fact that CEO compensation has grown far faster than the pay of the top 0.1% of wage earners indicates that CEO compensation growth does not simply reflect a competitive race for skills (the “market for talent”) that also increased the value of highly paid professionals: Rather, the growing pay differential between CEOs and top 0.1% earners suggests the growth of substantial economic rents (income not related to a corresponding growth of productivity) in CEO compensation. CEO compensation appears to reflect not greater productivity of executives but the power of CEOs to extract concessions. Consequently, if CEOs earned less or were taxed more, there would be no adverse impact on the economy’s output or on employment.
- **Growth of top 0.1% compensation (1978–2018).** Even though CEO compensation grew much faster than the earnings of the top 0.1% of wage earners, that doesn’t mean the top 0.1% did not fare well. Quite the contrary. The inflation-adjusted annual earnings of the top 0.1% grew 337% from 1978 to 2018. CEO compensation, however, grew three times as fast!
- **CEO pay growth compared with growth in the college wage premium.** Over the last three decades, CEO compensation increased more relative to the pay of other very-high-wage earners than did the wages of college graduates relative to the wages of high school graduates. This finding indicates that the escalation of CEO pay does not simply reflect a more general rise in the returns to education.

## Analysis

This section provides detailed analysis of our findings. We examine several decades of available data to identify recent and historical trends in CEO compensation.

### Trends in CEO compensation growth

**Table 1** presents recent trends in CEO compensation and for the key underlying components over the 2016–2019 period. It shows the average compensation of CEOs at the 350 largest publicly owned U.S. firms (i.e., firms that sell stock on the open market) by revenue.<sup>3</sup> To analyze current trends, we use two measures of compensation, one based on compensation “granted” and the other based on compensation as “realized.” Both measures include the same measures of salary, bonuses, and long-term incentive payouts (columns 3, 4 and 5). The difference is how each measure treats stock awards and stock

options, major components of CEO compensation that change value from when they are first provided, or granted, to when they are exercised or realized. The first measure, realized compensation (column 1), includes the value of stock options as realized (buying stocks at a previously set price and reselling them at the current market price) shown in column 8. The realized compensation measure also values stock awards at their value when vested (usually three years after being granted), capturing any change in the stock price as well as additional stock awards provided as part of a performance award (column 6). The second measure, compensation granted, values stock options and restricted stock awards by their “fair value” when granted (columns 9 and 7).<sup>4</sup> (For details on the construction of these measures and benchmarking to other studies, see Sabadish and Mishel 2013.)

Table 1

## Change in CEO compensation and components, 2016–2019

Year	Average annual compensation		Components of compensation							
	Realized (1)=3+4+5+6+8	Granted (2)=3+4+5+7+9	Salary (3)	Bonus (4)	Nonequity incentives (5)	Stock awards		Stock options		Stock-related realized items (10)=6+8
						Awards, vested (6)	Awards, fair value granted (7)	Options, value realized (8)	Options, fair value granted (9)	
<b>CEO compensation levels (2019\$)</b>										
2016	\$17,005,000	\$12,723,000	\$1,339,000	\$360,000	\$2,873,000	\$7,259,000	\$6,594,000	\$5,175,000	\$1,557,000	\$12,433,000
2017	\$18,954,000	\$12,137,000	\$1,320,000	\$344,000	\$2,978,000	\$7,406,000	\$6,055,000	\$6,906,000	\$1,441,000	\$14,313,000
2018	\$18,663,000	\$13,339,000	\$1,305,000	\$254,000	\$3,020,000	\$8,490,000	\$7,276,000	\$5,594,000	\$1,484,000	\$14,084,000
2019 projected	\$21,283,000	\$14,487,000	\$1,325,000	\$337,000	\$2,901,000	\$10,149,000	\$8,455,000	\$6,571,000	\$1,492,000	\$16,720,000
2018 FH	\$17,933,000	\$12,881,000	\$1,276,000	\$254,000	\$2,912,000	\$8,261,000	\$6,958,000	\$5,230,000	\$1,481,000	\$13,491,000
2019 FH	\$20,450,000	\$13,990,000	\$1,273,000	\$324,000	\$2,788,000	\$9,752,000	\$8,164,000	\$6,314,000	\$1,441,000	\$16,066,000
<b>Composition of realized pay</b>										
2016	100.0%	—	7.9%	2.1%	16.9%	42.7%	—	30.4%	—	73.1%
2017	100.0%	—	7.0%	1.8%	15.7%	39.1%	—	36.4%	—	75.5%
2018	100.0%	—	7.0%	1.4%	16.2%	45.5%	—	30.0%	—	75.5%
2019 projected	100.0%	—	6.2%	1.6%	13.6%	47.7%	—	30.9%	—	78.6%
2018 FH	100.0%	—	7.1%	1.4%	16.2%	46.1%	—	29.2%	—	75.2%
2019 FH	100.0%	—	6.2%	1.6%	13.6%	47.7%	—	30.9%	—	78.6%
<b>Change, 2017–2018</b>										
Level	-\$292,000	\$1,202,000	-\$15,000	-\$90,000	\$42,000	\$1,084,000	\$1,221,000	-\$1,313,000	\$44,000	-\$229,000
Percentage	-1.5%	9.9%	-1.1%	-26.1%	1.4%	14.6%	20.2%	-19.0%	3.0%	-1.6%
<b>Change, 2018–2019</b>										
Level	\$2,620,000	\$1,148,000	\$20,000	\$83,000	-\$119,000	\$1,659,000	\$1,179,000	\$977,000	\$8,000	\$2,636,000
Percentage	14.0%	8.6%	1.5%	32.6%	-3.9%	19.5%	16.2%	17.5%	0.5%	18.7%
<b>Change, 2016–2019</b>										
Level	\$4,277,000	\$1,765,000	-\$14,000	-\$23,000	\$28,000	\$2,890,000	\$1,861,000	\$1,396,000	-\$65,000	\$4,286,000
Percentage	25.2%	13.9%	-1.0%	-6.5%	1.0%	39.8%	28.2%	27.0%	-4.2%	34.5%

**Notes:** Average annual compensation for CEOs at the top 350 U.S. firms ranked by sales is measured in two ways. Both include salary, bonus, and long-term incentive payouts, but the "granted" measure includes the value of stock options and stock awards when they were granted, whereas the "realized" measure captures the value of stock-related components that accrues after options or stock awards are granted by including "stock options exercised" and "vested stock awards." FH=First half.

**Source:** Authors' analysis of data from Compustat's ExecuComp database, the Bureau of Labor Statistics' Current Employment Statistics data series, and the Bureau of Economic Analysis NIPA tables.

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We have changed our definition of CEO compensation in the realized measure from that employed in earlier reports. Previous reports used the value of stock awards as granted in both our measures, so that the measures only differed in their treatment of stock options. As noted in our previous report (Mishel and Wolfe 2019) the increased importance of stock awards in executive pay and the increased divergence between the value of stock awards when granted versus when vested means that excluding the realized gains from stock awards increasingly understates total CEO compensation. We therefore have incorporated a realized measure of stock awards along with the realized measure of stock options in our realized compensation metric. This first metric can be compared with the second metric, compensation granted, whose measurement is the same as in prior reports. More explanation of this measurement change and the impact on measured trends is provided in the Appendix, “Revising the stock awards component of our CEO compensation measure.”

Note that Table 1 provides a projection for data for 2019. The data now available for 2019 are limited to the executive compensation disclosed by firms filing proxy statements through June of 2019. To provide data for CEO compensation in 2019 that are consistent with the historical data, we construct our estimates by looking at the growth of compensation from 2018 to 2019 using the first-half-year samples of data available each year and then applying that growth rate to the compensation for 2018 based on the full-year sample. This method corrects for the fact that full-year samples show higher average CEO compensation than samples for the first half of a year. It allows us to avoid artificially lowering the estimated change in CEO compensation in 2019 relative to last year and earlier years.<sup>5</sup>

Both measures of CEO compensation grew strongly in 2019. CEO realized compensation grew to \$21,283,000 in 2019, \$2,621,000 or 14.0% higher than in 2018. The compensation granted measure grew \$1,148,000, or by 8.6%, to \$14,487,000 in 2019.

This growth in CEO compensation in 2019 was entirely driven by stock-related components: salary, bonuses, and nonequity incentives remained stable throughout the 2016–2019 period while stock options and stock awards grew.<sup>6</sup> Stock options granted (column 9) did not grow much (up only \$8,000) in 2019 though realized stock options (column 8) increased by roughly a million dollars (\$977,000). The bigger growth was in stock awards, \$1,179,000 for stock awards granted (column 7) and a larger 19.5% boost of \$1,659,000 for vested stock awards (column 6).

The stock-related components of CEO compensation constitute a large and increasing share of total compensation: realized stock awards and stock options (column 10) were 73.1% of total compensation in 2016 and 78.6% in 2019. Vested stock awards (the realized metric, column 6) alone were nearly half (47.7%) of all CEO compensation in 2019.

There is a simple logic behind companies’ decisions to shift from stock options to stock awards, as Clifford (2017) explains. With stock options, CEOs can only make gains: They realize a gain if the stock price rises beyond the price of the initial options granted and they lose nothing if the stock price falls. The fact that they have nothing to lose—but potentially a lot to gain—might lead options-holding CEOs to take excessive risks to bump

up the stock price. Stock awards, on the other hand, promote better alignment of a CEO's goals with shareholders' goals. A stock award has the value when given, or vested, and can increase or decrease in value as the firm's stock price changes. If stock awards have a lengthy vesting period, say three to five years, then the CEO has an interest in lifting the firm's stock price over that period while being mindful to avoid any implosion in the stock price—to maintain the value of what they have.

The growth of these stock-related components from 2016 to 2019, up 34.5%, or \$4,286,000, was the sole reason that CEO realized compensation grew \$4,277,000, or 25.2%. The smaller growth of CEO granted compensation (up \$1,765,000) in the same period, 2016–2019, reflects the smaller growth of stock awards granted (\$1,861,000) and the failure of stock options granted to grow. This pattern, as explored further below, mirrors the strong growth of the stock market between 2016 and 2019, up 30.6% in the S&P 500.

**Table 2** presents the longer-term trends in CEO compensation for selected years from 1965 to 2019 using the same two measures used in Table 1.<sup>7</sup>

For comparison, Table 2 also presents the average annual compensation (wages and benefits of a full-time, full-year worker) of private-sector production/nonsupervisory workers (a group covering more than 80% of payroll employment, see Gould 2020a), allowing us to compare CEO compensation with that of a typical worker. From 1995 onward, the table also identifies the average annual compensation of production/nonsupervisory workers in each of the industries of the firms included in the sample. We take this compensation as a proxy for the pay of typical workers in these particular firms and use it to calculate the CEO-to-worker compensation ratio for each firm.

Finally, the table shows changes in the stock market, as measured by the Dow Jones Industrial Average and S&P 500 Index. **Figure A** uses data from all years since 1965 to show what happened to average annual CEO compensation and the S&P 500 Index over the last five and a half decades. It uses the realized CEO compensation measure.

Although the stock market fell by roughly half between 1965 and 1978, realized CEO compensation increased by 78.9%. Typical worker pay saw relatively strong growth over that period (relative to subsequent periods, not relative to CEO pay or the pay of other earners at the top of the wage distribution). Annual worker compensation grew by 19.9% from 1965 to 1978, only about a fourth as fast as CEO compensation growth.

Realized CEO compensation grew strongly throughout the 1980s but exploded in the 1990s. It peaked at the end of the stock market bubble, in 2000, at about \$21.9 million, a 261% increase over just five years earlier in 1995 and a 1,204% increase over 1978. This latter increase exceeded even the growth of the booming stock market (513% for the S&P 500 and 439% for the Dow) between 1978 and 2000. In stark contrast to both the stock market and CEO compensation, private-sector worker compensation increased just 0.6% over the same period.

When the stock market bubble burst in the early 2000s there was a substantial paring back of CEO compensation. By 2007, however, when the stock market had mostly

Table 2

## CEO compensation, CEO-to-worker compensation ratio, and stock prices (2019\$), selected years, 1965–2019

	CEO annual compensation		Private-sector production/ nonsupervisory workers annual compensation		Stock market (indexed to 2019\$)		CEO-to-worker compensation ratio	
	Realized	Granted	All private-sector workers	Workers in the firms' industries*	S&P 500	Dow Jones	Realized	Granted
<b>1965</b>	\$939,000	\$715,000	\$42,700	NA	626	6,469	21.1	15.4
<b>1973</b>	\$1,227,000	\$934,000	\$50,100	NA	554	4,766	23.4	17.2
<b>1978</b>	\$1,680,000	\$1,279,000	\$51,200	NA	347	2,961	31.4	23.0
<b>1989</b>	\$3,130,000	\$2,383,000	\$48,800	NA	645	5,011	61.4	45.0
<b>1995</b>	\$6,072,000	\$6,745,000	\$48,800	\$55,000	905	7,519	117.6	131.0
<b>2000</b>	\$21,910,000	\$21,931,000	\$51,500	\$57,500	2,125	15,965	365.7	386.1
<b>2007</b>	\$19,428,000	\$14,353,000	\$53,600	\$59,900	1,826	16,289	330.9	242.0
<b>2009</b>	\$10,375,000	\$10,676,000	\$55,700	\$62,100	1,132	10,614	177.6	178.3
<b>2017</b>	\$18,953,000	\$12,137,000	\$57,000	\$65,700	2,554	22,684	302.1	193.2
<b>2018</b>	\$18,662,000	\$13,339,000	\$57,300	\$65,700	2,796	25,501	293.3	212.3
<b>Projected 2019</b>	\$21,283,000	\$14,487,000	\$58,200	\$66,800	2,913	26,398	320.0	222.8
<b>2018 FH</b>	\$17,932,000	\$12,880,000	\$57,300	\$65,500	2,796	25,501	282.5	203.9
<b>2019 FH</b>	\$20,450,000	\$13,990,000	\$58,200	\$66,800	2,913	26,398	309.2	214.3
<b>Percent change</b>								
<b>1965–1978</b>	78.9%	78.9%	19.9%	NA	-44.6%	-54.2%	10.3	7.6
<b>1978–2000</b>	1,204.0%	1,614.7%	0.6%	NA	512.4%	439.1%	334.3	363.1
<b>2000–2019</b>	-2.9%	-33.9%	13.0%	16.2%	371%	65.3%	-45.8	-163.3
<b>2009–2019</b>	105.1%	35.7%	4.5%	7.6%	157.3%	148.7%	142.4	44.4
<b>1978–2019</b>	1,166.8%	1,032.7%	13.7%	NA	739.5%	791.5%	288.6	199.8
<b>2018–2019</b>	14.0%	8.6%	1.6%	1.7%	4.2%	3.5%	26.7	10.5

\* Average annual compensation of the workers in the key industry of the firms in the sample.

**Notes:** Average annual compensation for CEOs at the top 350 U.S. firms ranked by sales is measured in two ways. Both include salary, bonus, and long-term incentive payouts, but the "granted" measure includes the value of stock options and stock awards when they were granted, whereas the "realized" measure captures the value of stock-related components that accrues after options or stock awards are granted by including "stock options exercised" and "vested stock awards." FH=First half. CEO-to-worker compensation ratios are based on averaging specific firm ratios in samples and not the ratio of averages of CEO and worker compensation. Ratios prior to 1992 are constructed as described in the CEO pay series [methodology](#) (Sabadish and Mishel 2013).

**Source:** Authors' analysis of data from Compustat's ExecuComp database, the Federal Reserve Economic Data (FRED) database from the Federal Reserve Bank of St. Louis, the Bureau of Labor Statistics' Current Employment Statistics data series, and the Bureau of Economic Analysis NIPA tables.

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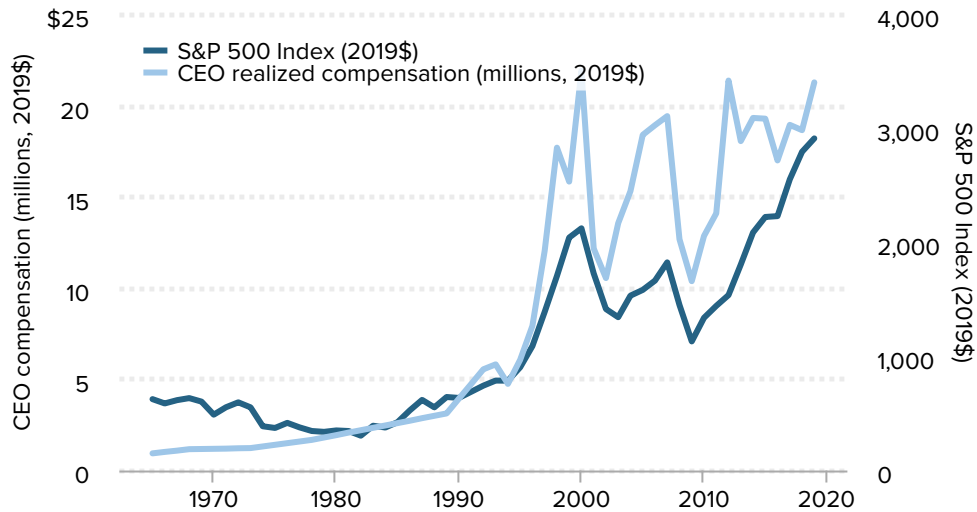
recovered, realized CEO compensation reached \$19.4 million, just \$2.5 million below its 2000 level. However, granted CEO compensation remained down, at \$14.4 million in 2007, a substantial \$7.6 million fall from the 2000 level.

The stock market decline during the 2008 financial crisis also sent CEO compensation tumbling, as it had in the early 2000s. After 2009, realized CEO compensation resumed an upward trajectory, as shown in Figure A. It stalled from 2014 to 2018. The strong growth in CEO compensation in 2019 raised it to \$1.9 million above where it was in 2007, before the 2008 financial crisis. Although Figure A does not track the trajectory of the change in

Figure A

## CEO compensation tracks the stock market

Realized CEO compensation and the S&P 500 Index, 1965–2019



**Notes:** Realized average annual CEO compensation is computed using salary, bonus, vested stock awards, options realized, and long-term incentive payouts for CEOs at the top 350 U.S. firms ranked by sales.

**Source:** Authors' analysis of data from Compustat's ExecuComp database and the Federal Reserve Economic Data (FRED) database from the Federal Reserve Bank of St. Louis.

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granted CEO compensation, we know from the data behind Tables 1 and 2 that it also shot up until 2013 and then leveled out over the 2013–2017 period before a \$1.2 and 1.1 million growth, respectively, in 2018 and 2019, leaving granted CEO compensation in 2019 slightly (\$134,000) above the pre-2008-financial crisis level.

For the period from 1978 to 2019, realized CEO compensation increased 1,166.8%—roughly 50% as fast as stock market growth (depending on the market index used) and substantially faster than the painfully slow 13.7% growth in the typical worker's compensation over the same period. CEO granted compensation grew 1,032.7% over this period. Realized CEO compensation in 2019 remained below its stock market bubble 2000 peak, but was only off the peak by \$627,000, or 2.9%.

Figure A shows how realized CEO compensation historically fluctuates in tandem with the stock market, as measured by the S&P 500 Index, confirming that CEOs tend to cash in their options when stock prices are high and accumulate unexercised options when stock prices are low. The growth of stock prices also increases the value of stock awards between when they are granted and when they vest, usually three years later. The financial crisis of 2008 and the accompanying stock market tumble knocked CEO compensation down 46.6% from 2007 to 2009. By 2014 the stock market had recouped more than all of the ground lost in the downturn. Not surprisingly, CEO compensation also made a strong recovery. The close connection between stock market growth and CEO compensation loosened a bit over the 2014–2017 period as realized CEO compensation

did not follow the sharp upward trajectory of the stock market in those years. However, as shown in Figure A and Table 2, the growth of both realized and granted CEO compensation from 2017 to 2019 closely mirrors the growth of the stock market.

The normally tight relationship between overall stock prices and CEO compensation, as shown in Figure A, casts doubt on the theory that CEOs are enjoying high and rising pay because their individual productivity is increasing (e.g., because they head larger firms, have adopted new technology, or for other reasons). CEO compensation often grows strongly when the overall stock market rises and individual firms' stock values rise along with it. This is a marketwide phenomenon, not one of improved performance of individual firms: Most CEO pay packages allow pay to rise whenever the firm's stock value rises; that is, they permit CEOs to cash out stock options regardless of whether the rise in the firm's stock value was exceptional relative to comparable firms in the same industry. Similarly, vested stock awards will increase in value when the firm's stock price rises and simply corresponds to a marketwide escalation of stock prices.

## Trends in the CEO-to-worker compensation ratio

Table 2 also presents historical and current trends in the ratio of CEO-to-worker compensation, using both measures of CEO compensation. This ratio, which illustrates the increased divergence between CEO and worker pay over time, is computed in two steps. The first step is to construct, for each of the 350 largest U.S. firms, the ratio of the CEO's compensation to the annual average compensation of production and nonsupervisory workers in the key industry of the firm (data on the pay of workers at individual firms are not available).<sup>8</sup> The second step is to average that ratio across all 350 firms. Note however that trends before 1995 are based on the changes in average top-company CEO and economywide private-sector production/nonsupervisory worker compensation.

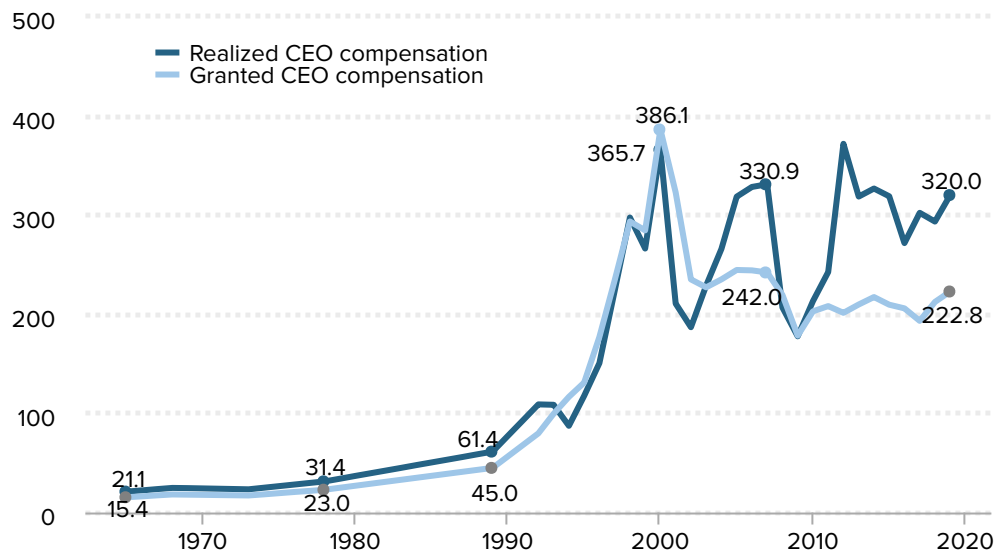
The last two columns in Table 2 show the resulting ratio for both measures of CEO pay. We adjust the ratio for 2019 to reflect the percentage-point growth between the ratios in the first-half-year samples in 2018 and 2019 and add that growth to the ratio estimated for the full-year sample in 2018 to derive the 2019 ratio consistent with the historical data (this corresponds to how we project CEO compensation for 2019 based on first half data in 2018 and 2019). The trends are depicted in **Figure B**.

The Securities and Exchange Commission (SEC) now requires publicly owned firms to provide a metric for the ratio of CEO compensation to that of the median worker in a firm, as mandated by the Dodd-Frank financial reform bill of 2010 (SEC 2015). Those ratios differ from those in this report in several ways. First, because of limitations in data availability, the measure of worker compensation in our ratios reflects workers in a firm's key industry, not workers actually working for the firm. The ratios reported to the SEC will reflect compensation of workers in the specific firm. Second, our measure reflects an exclusively domestic workforce; it excludes the compensation of workers in other countries who work for the firm. The ratios reported to the SEC may include workers in other countries. Third, our metric is based on hourly compensation annualized to reflect a full-time, full-year worker (i.e., multiplying the hourly compensation rate by 2,080). In contrast, the measures

Figure B

## CEOs make 320 times as much as typical workers

CEO-to-worker compensation ratio, 1965–2019



**Notes:** Average annual compensation for CEOs at the top 350 U.S. firms ranked by sales is measured in two ways. Both include salary, bonus, and long-term incentive payouts, but the “granted” measure includes the value of stock options and stock awards when they were granted, whereas the “realized” measure captures the value of stock-related components that accrues after options or stock awards are granted by including “stock options exercised” and “vested stock awards.” Projected value for 2019 is based on the percent change in CEO pay in the samples available in June 2018 and in June 2019 applied to the full-year 2018 value. “Typical worker” compensation is the average annual compensation (wages and benefits of a full-time, full-year worker) of production/nonsupervisory workers in the industries that the top 350 firms operate in.

**Source:** Authors’ analysis of data from Compustat’s ExecuComp database, the Bureau of Labor Statistics’ Current Employment Statistics data series, and the Bureau of Economic Analysis NIPA tables.

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firms provide to the SEC can be and are sometimes based on the actual annual (not annualized) wages of part-year (seasonal) or part-time workers. As a result, comparisons across firms may reflect not only hourly pay differences but also differences in annual or weekly hours worked. Fourth, our metric includes both wages and benefits, whereas the SEC metric solely focuses on wages. Finally, we use consistent data and methodology to construct our ratios; our ratios are thus comparable across firms and from year to year. The SEC allows firms flexibility in how they construct the CEO-to-median worker pay comparison; this means there is not comparability across firms—and ratios may not even be comparable from year to year for any given firm, if the firm changes the metrics it uses.

There is certainly value in the new metrics being provided to the SEC, but the measures we rely on allow us to make appropriate comparisons between firms and across time. The text box provides more information on the ratios firms are providing to the SEC.

### **CEO-to-worker pay ratios: The new SEC rule and EPI's methodology**

As of 2018, all publicly traded companies are required to disclose CEO total compensation alongside the median annual total compensation for all employees other than the CEO. These disclosures must be made in annual proxy statements submitted to the Securities and Exchange Commission. In addition, these companies are required to provide the ratio of CEO-to-worker compensation (SEC 2015).

Advocates, investors, and researchers alike have welcomed the disclosure of this information, because these disclosures offer previously unavailable insight into compensation inequality within firms. Historically, constructing a firm-specific CEO-to-worker pay ratio was impossible without the cooperation of the firm, although sector-specific estimates were possible (see Mishel and Schieder 2018). The new CEO-to-worker compensation ratios contained in proxies in 2018 and in 2019 shine a ray of sunlight onto the compensation of the typical worker.

According to the authors of a report titled *Rewarding or Hoarding? An Examination of Pay Ratios Revealed by Dodd-Frank*, from the office of former Congressman Keith Ellison (D-Minn.), “These new data give us a much clearer picture as to which corporations are sharing the wealth and which are not” (Staff of Congressman Keith Ellison 2018).

However, fierce business resistance to the mandate to report the CEO-to-worker compensation ratio has watered down the ratios’ potential use. Many corporations have implausibly contended that constructing these ratios is too difficult. The SEC has given these claims far too much credence, providing firms tremendous leeway in how to construct the ratios. This SEC capitulation diminished the utility of these new median worker compensation measures for making comparisons across firms and will diminish the utility of comparing the measures over time when additional years of data are available.

Specifically, the SEC’s rule grants firms significant discretion in reporting median worker pay, which makes the reported ratios incompatible across firms. A company’s reported “median worker” may, for example, work part time or full time, reside in the U.S. or abroad, and have worked for the firm for a limited number of weeks during the previous year. The data on median compensation are not provided on a per-hour basis or annualized to that of a full-time, full-year worker. Without such information, or simply the annual hours worked by the median worker, it is not possible to standardize the compensation for comparisons across firms. In addition, firms may not adhere to the same metric each year, limiting the ability to make historical comparisons in the future.

Given the limitations of the metrics used for SEC reporting, the SEC compensation data do not supplant the need for our annual CEO compensation

series. Our examination of CEO compensation continues to provide crucial data points for evaluating current CEO compensation as well as trends in CEO compensation over time. Our methodology (described in Sabadish and Mishel 2013) has a number of advantages over the SEC-prescribed methodology for constructing ratios. First, our methodology compares CEO compensation to the compensation of the typical worker in the main industry of the CEO's company rather than just within one specific firm. It thereby eliminates artificial reductions in a company-reported CEO-to-worker pay ratio that could arise from the extensive use of subcontracting.

Second, our worker compensation series reflects annualized compensation (multiplying an estimate of hourly compensation by 2,080 hours), eliminating the ambiguity that arises when weeks worked and hours per week are not specified or when they differ across firms (as can be the case for the SEC ratios). This assumption also likely makes our ratio a more conservative estimate of the true ratio than the ratios reported to the SEC. Third, our analysis captures the ratio of CEO compensation to compensation of U.S. domestic workers only, which makes the ratios comparable in a way that the SEC-required ratios are not (given that ratios provided to the SEC may or may not include workers in other countries). Fourth, our series is able to extend back to 1965, allowing us to analyze trends in executive compensation over time. The consistent basis of the measurement of our ratios permits historical comparisons on a year-to-year basis. These (and other) benefits are why we continue to produce our CEO-to-worker pay series—although it is our hope that with time the ambiguities of the SEC ratio will be addressed and adjusted to produce a more reliable time series for investors and the public to use.

As Figure B shows, using the realized measure of CEO compensation, CEOs of major U.S. companies earned 21 times as much as the typical worker in 1965. This ratio grew to 31-to-1 in 1978 and 61-to-1 by 1989. It surged in the 1990s, hitting 366-to-1 in 2000, at the end of the 1990s recovery and at the height of the stock market bubble.<sup>9</sup> The fall in the stock market after 2000 reduced CEO stock-related pay such as realized stock options and caused CEO compensation to tumble in 2002 before beginning to rise again in 2003. Realized CEO compensation recovered to a level of 331 times worker pay by 2007, still below its 2000 level. The financial crisis of 2008 and accompanying stock market decline reduced CEO compensation between 2007 and 2009, as discussed above, and the CEO-to-worker compensation ratio fell in tandem. By 2014 the stock market had recouped all of the value it had lost following the financial crisis, and the CEO-to-worker compensation ratio in 2014 had recovered to 327-to-1. Because CEO compensation was relatively stable between 2014 and 2016 while worker compensation experienced moderate growth, the CEO-to-worker pay ratio fell. Over the 2016–2019 period CEO pay resumed its upward trajectory and the 14% surge in realized CEO compensation in 2019 brought the ratio to 320-to-1, not far from its 2007 level. Though the realized CEO-to-worker compensation ratio remains below the value achieved in 2000, at the peak of a stock market bubble, it is



far higher than it was in the 1960s, 1970s, 1980s, and most of the 1990s.

The pattern using the granted measure of CEO compensation is similar. The CEO-to-worker pay ratio peaked in 2000, at 386-to-1, even higher than the ratio with the realized compensation measure. The fall from 2000 to 2007 was steeper than for the other measure, hitting 242-to-1 in 2007. The stock market decline during the financial crisis drove the ratio down to 178-to-1 in 2009. It recovered to 217-to-1 by 2014 and, after dipping a bit over the next three years, ended back up at 212-to-1 in 2018 before rising to 223-to-1 with the strong 8.6% growth of CEO granted compensation in 2019. This level is far lower than its peak in 2000 but still far greater than the 1989 ratio of 45-to-1 or the 1965 ratio of 15-to-1.

The exponential growth in the CEO-to-worker compensation ratio reflects the strikingly different trajectories of the pay of CEOs and that of the typical worker. On the one hand, there has been very little growth in the compensation of a typical worker since the late 1970s, growing just 15.1% over the 40 years from 1979 to 2019, despite a corresponding growth of economywide productivity of 70% (Bivens and Mishel 2015, updated at EPI 2019). The 1,167% growth in realized CEO compensation from 1978 (there are no data for 1979) to 2019 far exceeded the growth in productivity, profits, or stock market values in that period.

## **Dramatically high CEO pay does not simply reflect the market for skills**

This section reviews competing explanations for the extraordinary rise in CEO compensation over the past several decades. CEO compensation has grown a great deal since 1965, but so has the pay of other high-wage earners. To some analysts, this suggests that the dramatic rise in CEO compensation has been driven largely by the demand for the skills of CEOs and other highly paid professionals. In this interpretation, CEO compensation is being set by the market for “skills” or “talent,” not by managerial power or rent-seeking behavior.<sup>10</sup> This explanation lies in contrast to that offered by Bebchuk and Fried (2004) or Clifford (2017), who claim that the long-term increase in CEO pay is a result of managerial power.

The “market for talent” argument is based on the premise that “it is other professionals, too,” not just CEOs, who are seeing a generous rise in pay. One prominent example of this argument comes from Kaplan (2012a, 2012b). In the prestigious 2012 Martin Feldstein Lecture at the National Bureau of Economic Research, he claims:

Over the last 20 years, then, public company CEO pay relative to the top 0.1% has remained relatively constant or declined. These patterns are consistent with a competitive market for talent. They are less consistent with managerial power. Other top income groups, not subject to managerial power forces, have seen similar growth in pay. (Kaplan 2012a, 4)

In a follow-up paper for the Cato Institute, published as a National Bureau of Economic

Research working paper, Kaplan expands this point:

The point of these comparisons is to confirm that while public company CEOs earn a great deal, they are not unique. Other groups with similar backgrounds—private company executives, corporate lawyers, hedge fund investors, private equity investors and others—have seen significant pay increases where there is a competitive market for talent and managerial power problems are absent. Again, if one uses evidence of higher CEO pay as evidence of managerial power or capture, one must also explain why these professional groups have had a similar or even higher growth in pay. It seems more likely that a meaningful portion of the increase in CEO pay has been driven by market forces as well. (Kaplan 2012b, 21)

However, the argument that CEO compensation is being set by the market for “skills” does not square with the available data corresponding to what Kaplan employed. Bivens and Mishel (2013) address the larger issue of the role of CEO compensation in generating income gains at the very top and conclude that substantial rents are embedded in executive pay. According to Bivens and Mishel, CEO pay gains are not the result of a competitive market for talent but rather reflect the power of CEOs to extract concessions.

Here we draw on and update the Bivens and Mishel (2013) analysis to show that the evidence does not support Kaplan’s claim that “professional groups have had a similar or even higher growth in pay” than CEOs (Kaplan 2012b). CEO compensation grew far faster than compensation of very highly paid workers over the last few decades, which suggests that the market for skills was not responsible for the rapid growth of CEO compensation. To reach this finding, we use Kaplan’s series on CEO compensation and compare it with the wages of top wage earners (reflecting W-2 annual earnings, which includes the value of exercised stock options and vested stock awards), rather than the household income of the top 0.1% as Kaplan did.<sup>11</sup> The wage benchmark seems the most appropriate one because it avoids issues of changing household demographics (e.g., increases in the number of two-earner households over time) and limits the income to labor income (i.e., it excludes capital income, which is included in household income measures). We update Kaplan’s series (Kaplan 2012b) beyond 2010 using the growth of our measure of realized CEO compensation.

The data presented in **Table 3** show the result of our analysis: It shows that, contrary to Kaplan’s findings, the compensation of CEOs has far outpaced that of the top 0.1% of earners. Specifically, it shows the ratio of the average compensation of CEOs of large firms (the series developed by Kaplan, incorporating stock options realized) to the average annual earnings of the top 0.1% of wage earners (based on a series developed by Kopczuk, Saez, and Song 2010 and updated by Mishel and Kassa 2019). The comparison is presented as a simple ratio and logged (to convert to a “premium,” defined as the relative pay differential between two groups). Both the simple ratios and the log ratios understate the relative pay of CEOs, because CEO pay is a nontrivial share of the denominator, a bias that has probably grown over time as CEO relative pay has grown. If we were able to remove top CEOs’ pay from the top 0.1% category, it would reduce the average for the broader group.<sup>12</sup>

Table 3

### CEO-to-top-0.1% and college-to-high-school ratios, 1979–2018

Year	Ratio		Log ratio	
	CEO compensation to top 0.1% wage earners	College-to-high-school wages	CEO compensation to top 0.1% wage earners	College-to-high-school wages
1979	3.26	1.41	1.18	0.35
1989	2.63	1.59	0.97	0.46
1993	3.05	1.64	1.11	0.49
2000	7.77	1.75	2.05	0.56
2007	4.36	1.77	1.47	0.57
2009	4.61	1.74	1.53	0.55
2017	6.10	1.82	1.81	0.60
2018	6.04	1.81	1.80	0.59
<i>Change</i>				
1979–2007	1.10	0.35	0.29	0.22
1979–2018	2.77	0.39	0.62	0.25
1989–2018	3.41	0.22	0.83	0.13

**Note:** Wages of top 0.1% of wage earners reflect W-2 annual earnings, which includes the value of exercised stock options and vested stock awards. The college-to-high-school wage ratios compare hourly wages of workers who have a college degree with hourly wages of workers who have only a high school education.

**Source:** Authors' analysis of EPI State of Working America Data Library data on top 0.1% wages in Mishel and Kassa 2019; data on wages by educational attainment from the EPI State of Working America Data Library; and data on CEO compensation from an extrapolation of Kaplan's (2012b) CEO compensation series.

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The very highest earners—those in the top 0.1% of all earners—saw their compensation grow fantastically though far less than the compensation of the CEOs of large firms (note that the gains from exercised stock options are taxed as W-2 wage income and so are reflected in measures of wages in the data we analyze).

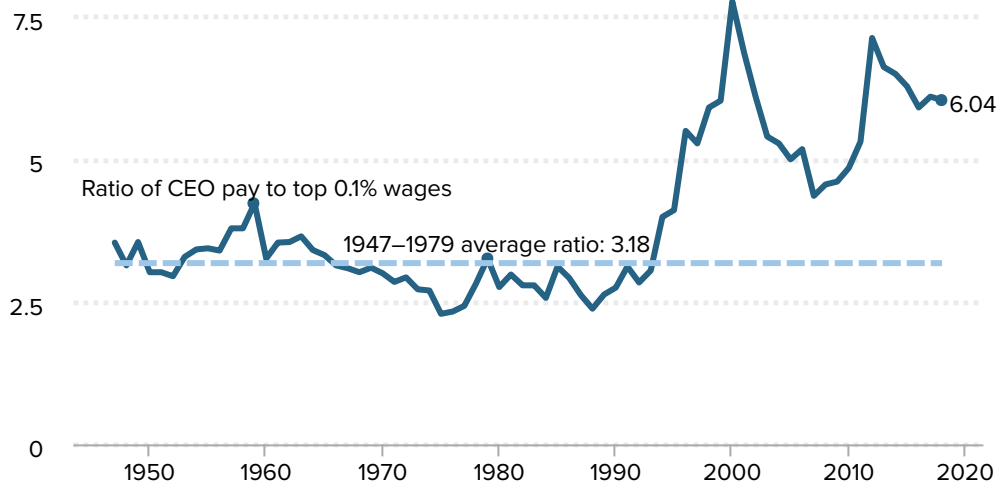
CEO realized compensation was 6.04 times the pay of the top 0.1% of wage earners in 2018, a bit below the 6.10 ratio in 2017 and substantially higher than the 4.36 ratio in 2007. CEO compensation grew far faster than that of the top 0.1% of earners over the recovery from 2009 to 2018, as the ratio spiked from 4.61 to 6.04. CEO compensation relative to the wages of the top 0.1% of wage earners in 2018 far exceeded the ratio of 2.63 in 1989, a rise (3.41) equal to the pay of more than three very-high-wage earners.<sup>13</sup> The log ratio of CEO relative pay grew 83 log points from 1989 to 2018 with respect to wage earners in the top 0.1%.

Is this increase large? As noted earlier, Kaplan (2012a, 4) concludes in his prestigious Martin Feldstein Lecture that CEO relative pay “has remained relatively constant or declined.” In another paper, Kaplan (2012b, 21), claimed that high earning professional groups such as “private company executives, corporate lawyers, hedge fund investors, private equity investors, and others” had a “similar or even higher growth in pay” as CEOs. Kaplan’s historical comparisons are inaccurate, however. **Figure C** compares the ratios of CEO compensation to top 0.1% earnings back to 1947. In 2018 this ratio was 6.04, 2.86

Figure C

## CEO compensation relative to top 0.1% earners is much higher than it was in the 1947–1979 period

Ratio of CEO compensation with top 0.1% wages, 1947–2018



**Note:** Wages of top 0.1% of wage earners reflect W-2 annual earnings, which includes the value of exercised stock options and vested stock awards.

**Source:** Authors' analysis of EPI State of Working America Data Library data on top 0.1% wages in Mishel and Kassa 2019 and data on CEO compensation from an extrapolation of Kaplan's (2012b) CEO compensation series.

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points higher than the historical average of 3.18 in the 1947–1979 period (a relative gain in wages earned by the equivalent of 2.9 very-high-wage earners).

That CEO compensation grew much faster than the earnings of the top 0.1% of wage earners is not because the top 0.1% did not fare well. The inflation-adjusted annual earnings of the top 0.1% grew 337% from 1978 to 2018 (Mishel and Kassa 2019). CEO compensation, however, grew more than three times faster than that, up 1,167%!

If CEO pay growing far faster than that of other high earners is evidence of the presence of rents, as Kaplan suggests, one would conclude that today's top executives are collecting substantial rents, meaning that if they were paid less there would be no loss of productivity or output in the economy. The large discrepancy between the pay of CEOs and other very-high-wage earners also casts doubt on the claim that CEOs are being paid these extraordinary amounts because of their special skills and the market for those skills. It is unlikely that the skills of CEOs of very large firms are so outsized and disconnected from the skills of other high earners that they propel CEOs past most of their cohort in the top one-tenth of 1%. For everyone else, the distribution of skills, as reflected in the overall wage distribution, tends to be much more continuous so this discontinuity is evidence that factors beyond skills drive the compensation levels of CEOs.

For comparison purposes, Table 3 also shows the changes in the gross (not regression-

adjusted) college-to-high-school wage premium. This premium is simply how much higher are the hourly wages of workers with a (four-year) college degree (but not an advanced degree) relative to hourly wages of workers with just a high school diploma. This premium is useful because some commentators, such as Mankiw (2013), assert that the wage and income growth of the top 1% reflects the general rise in the return to skills, as reflected in higher college wage premiums. (The comparisons end in 2018 because 2019 data for top 0.1% wages are not yet available).

Since 1979, and particularly since 1989, the increase in the logged CEO pay premium relative to other high-wage earners far exceeded the rise in the college-to-high-school wage premium, which is widely and appropriately considered to have had substantial growth: The logged college wage premium grew from 0.46 in 1989 to 0.59 in 2018, a far smaller rise than the logged ratio of CEO-to-top-0.1% earnings, a rise from 0.97 to 1.80. Mankiw's claim that top 1% pay or top executive pay simply corresponds to the rise in the college-to-high-school wage premium is unfounded (Mishel 2013a, 2013b). Moreover, the data we present here would show even faster growth of CEO relative pay if Kaplan's historical CEO compensation series (which we use as the basis for the ratios in Table 3) had been built using the Frydman and Saks (2010) series for the 1980–1994 period rather than the Hall and Liebman (1997) data.<sup>14</sup>

## Conclusion and the connection to overall inequality

Some observers argue that exorbitant CEO compensation is merely a symbolic issue, with no consequences for the vast majority of workers. However, the escalation of CEO compensation, and of executive compensation more generally, has fueled the growth of top 1.0% and top 0.1% incomes, generating widespread inequality.

In their study of tax returns from 1979 to 2005, Bakija, Cole, and Heim (2010) establish that the increases in income among the top 1% and top 0.1% of households were disproportionately driven by households headed by someone who was either a nonfinancial-sector “executive” (including managers and supervisors, hereafter referred to as “nonfinance executives”) or a financial-sector worker (executive or otherwise). Forty-four percent of the growth of the top 0.1%'s income share and 36% of the top 1%'s income share accrued to households headed by nonfinance executives; another 23% for each group accrued to households headed by financial-sector workers (some portion of which were executives).

Together, finance workers (including some share who are executives) and nonfinance executives accounted for 58% of the expansion of income for the top 1% of households and 67% of the income growth of the top 0.1%. Relative to others in the top 1%, households headed by nonfinance executives had roughly average income growth; those headed by someone in the financial sector had above-average income growth; and the remaining households (nonexecutive, nonfinance) had slower-than-average income growth. These shares may actually understate the role of nonfinance executives and the financial sector,

because they do not account for increased spousal income from these sources in those cases where the head of household is *not* an executive or in finance.<sup>15</sup>

High CEO pay reflects economic rents—concessions CEOs can draw from the economy not by virtue of their contribution to economic output but by virtue of their position. Alluding to the fictional town in the radio program “A Prairie Home Companion,” Clifford (2017) describes the Lake Wobegon world of setting CEO compensation that fuels its growth: Every firm wants to believe its CEO is above average and therefore needs to be correspondingly remunerated. But, in fact, CEO compensation could be reduced across the board and the economy would not suffer any loss of output.

Another implication of rising pay for CEOs and other executives is that it reflects income that otherwise would have accrued to others: What these executives earned was not available for broader-based wage growth for other workers. (Bivens and Mishel 2013 explore this issue in depth.) It is useful, in this context, to note that wage growth for the bottom 90% would have been nearly twice as fast over the 1979–2018 period had wage inequality not grown.<sup>16</sup> Most of the rise of inequality took the form of redistributing wages from the bottom 90% (whose share of wages fell from 69.8% to 61.0%) to the top 1.0% (whose wage share nearly doubled, rising from 7.3% to 13.3%, with most of the increase among the top 0.1% whose share of all wages grew from 1.6% to 5.1%) (Mishel and Kassa 2019).

Although the analyses in this report predate the economic shock of the coronavirus pandemic, there is a renewed focus on CEO pay because so many American workers are out of work or have seen their hours or wages cut. As our analyses show, CEOs who volunteer to take salary cuts aren’t giving up a lot given how much of their pay comes from stock awards and options. Moreover, the inflation-adjusted growth of the stock market, as reflected in the S&P 500, was about 8% higher in mid-2020 (last half of June and first half of July) than it was in 2019, indicating that CEO compensation in 2020 will very likely grow over its 2019 levels.

Several policy options could reverse the trend of excessive executive pay and broaden wage growth. Some involve taxes. Implementing higher marginal income tax rates at the very top would limit rent-seeking behavior and reduce the incentives for executives to push for such high pay.<sup>17</sup> Another option is to set corporate tax rates higher for firms that have higher ratios of CEO-to-worker compensation. Clifford (2017) recommends setting a cap on compensation and taxing companies on any amount over the cap, similar to the way baseball team payrolls are taxed when salaries exceed a cap. Other policies that could potentially limit executive pay growth are changes in corporate governance, such as greater use of “say on pay,” which allows a firm’s shareholders to vote on top executives’ compensation. Baker, Bivens, and Schieder (2019) review policies to restrain CEO compensation and explain how tax policy and corporate governance reform can work in tandem: “Tax policy that penalizes corporations for excess CEO-to-worker pay ratios can boost incentives for shareholders to restrain excess pay,” but, “to boost the power of shareholders [to restrain pay], fundamental changes to corporate governance have to be made. One key example of such a fundamental change would be to provide worker representation on corporate boards.”

The CEOs examined in this report head large firms. These large firms, almost by definition, enjoy a degree of market power that has grown in recent decades. It seems that CEOs and other executives may have been prime beneficiaries of these firms' greater market power. This suggests using the tools of anti-trust enforcement and regulation to restrain these firms' market power. This not only promotes economic efficiency and competition, but might help restrain executive pay as well.

## About the authors

**Lawrence Mishel** is a distinguished fellow and former president of the Economic Policy Institute. He is the co-author of all 12 editions of *The State of Working America*. His articles have appeared in a variety of academic and nonacademic journals. His areas of research include labor economics, wage and income distribution, industrial relations, productivity growth, and the economics of education. He holds a Ph.D. in economics from the University of Wisconsin at Madison.

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## Appendix: Revising the stock awards component of our CEO compensation measure

In this report we have revised our realized measure of CEO compensation to reflect the growth of the value of stock awards from the time they are granted to when they are vested—growth capturing both rising stock prices and the awarding of more stock based on meeting performance targets. With this change, our realized metric includes the realized value of stock awards as well as of stock options, as recommended in Hopkins and Lazonick (2016). Our other metric of CEO compensation—granted CEO compensation—captures the “fair value” of both stock options and stock awards.

The need for this change in measurement was described in last year’s report on CEO compensation (Mishel and Wolfe 2019),

Analyses of the underlying components of CEO compensation over the 2016–2018 period... showed a strong growth in stock awards, which are simply stocks granted to employees. Stock awards can increase or decrease in value depending on the trend in the firm’s stock price. Stock awards, which are included in both definitions of CEO compensation, rose to \$7.5 million in 2018, a substantial amount of income alone. The composition of CEO compensation has been shifting toward stock awards and away from stock options since the end of the last cycle in 2006–2007. These two stock-related items—stock options and stock awards—together still make up the bulk of CEO compensation, at 74% and 68%, respectively, of options-exercised and options-granted CEO compensation measures in 2018....

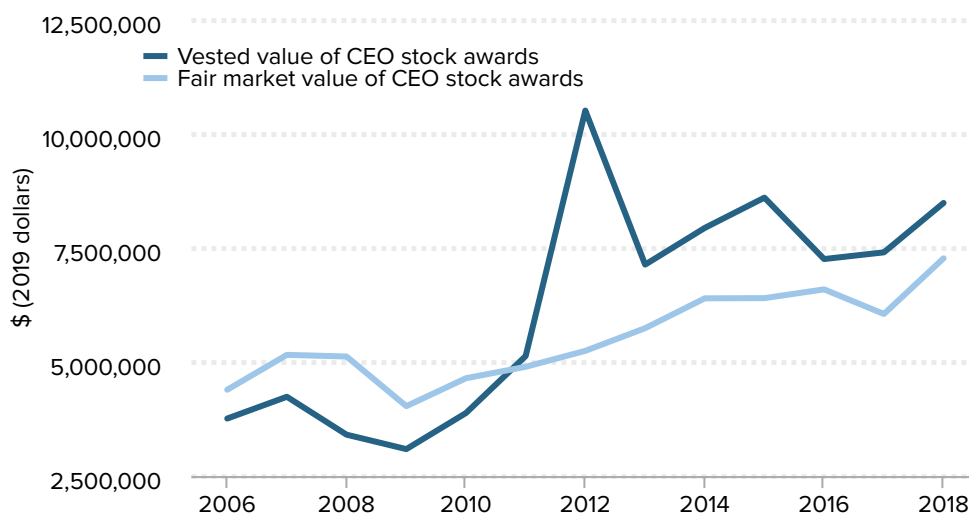
As the share of CEO compensation represented by stock options declines, and the share represented by stock awards grows, CEO compensation levels and growth will possibly be increasingly understated in our measures as well as in other measures, including those used by companies to construct the CEO-to-worker ratios reported to the SEC. The reason is this: The exact compensation earned through stock options is measurable—the exercised-options measure of compensation captures any rise in the stock price from the time the options are granted. But for stock awards, the value is determined at the time stocks are granted; any future gains in the value of the stock that accrue to the CEO are not captured by data disclosed by the firms. Nor are they captured in the SEC measure. Because stock awards have become more important, and stock options less important, there is increased likelihood that measures of CEO compensation will not fully capture CEOs’ gains going forward. This increased understatement of CEO compensation in turn tamps down measures of CEO compensation growth.

The measure of stock awards used in both of our CEO compensation metrics was the fair value of stock awards: the number of shares granted times the stock price at the grant



Appendix  
Figure A

## Fair market value and vested value of CEO stock awards, 2006–2018



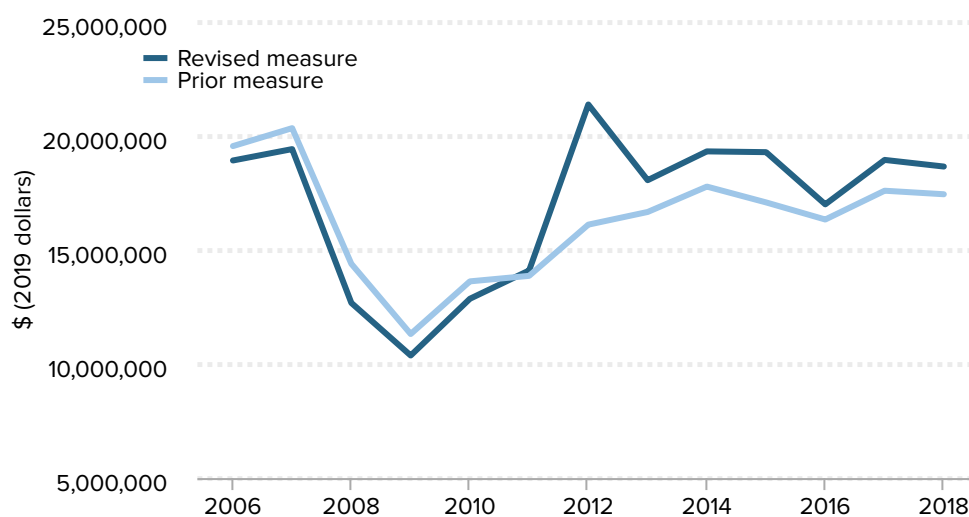
Source: Authors' analysis of data from Compustat's ExecuComp database.

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date. Now, in our realized CEO compensation measure, we are using a realized value measure of stock awards which reflects the value of stock awards when vested. This will capture both the rise and fall of the value of the stock awards between grant and vesting and any increase in the stock awards due to performance equity programs that award more shares for exceeding performance targets (Francis 2019, Hodak 2019). Hodak (2019) reports that executives are likely to receive at least half their awards after three years based on performance programs rather than time since award. So, using a fair market value measure of stock awards at the time awards were granted understates the compensation actually received by executives—and this understatement is increasingly acute in recent years as stock awards have become a greater share of compensation, necessitating a change in how we measure CEO compensation.

**Appendix Figure A** shows the trend in the fair market value of stock awards when granted and the vested value of stock awards that is now incorporated into our realized pay CEO compensation metric, both set in 2019 dollars. This allows us to assess how the change in the stock award measure affects CEO compensation trends since 2006, which is the first year for which the vested value of stock awards is available. We use data through 2018, which is the latest year for which we have a full year of data. Whereas the vested value of stock awards was \$632,000 less than that of the fair value of stock awards in 2006 (\$3,761,000 versus \$4,393,000) the vested value measure grew faster so that by 2018 it was \$1,214,000, or 16.7%, more than the fair market value of stock awards (\$8,490,000 versus \$7,276,000). This shows both the sizable growth of the value of stock awards and the even faster growth in the value of stock awards when the rising value of individual shares is combined with an increase in the number of shares awarded from performance programs and thus counted in the vested measure.

## Realized CEO compensation, revised measure vs. prior measure, 2006–2018



**Note:** The revised measure of realized CEO compensation includes the value of realized stock options and vested stock awards. The prior measure of realized CEO compensation includes the value of realized stock options and the fair value of stock awards when granted.

**Source:** Authors' analysis of data from Compustat's ExecuComp database.

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**Appendix Figure B** shows how the use of the vested value rather than the fair value of stock awards affects the overall trend of CEO compensation. Figure B displays our new realized metric of CEO compensation, capturing both realized stock options and vested stock awards, and the prior measure of realized CEO pay used in earlier reports, which captures realized stock options but measures stock awards as granted not as vested.<sup>18</sup> Again, we show the trends between 2006 and 2018 in \$2019.

Changing measures of stock awards means a lower value of CEO compensation in 2006 by \$632,000 million from \$19,560,000 to \$18,929,000. By 2018, however, the revised CEO compensation measure is \$18,663,000, \$1,214,000, or 7.0%, greater than the unrevised measure, \$17,448,000. Revising the measurement of CEO compensation to include the realized value of stock awards increases the level of CEO compensation in the latest full year, 2018, and also shows greater growth since 2006.

The change in measurement of CEO compensation in this report creates a discontinuity between 2005 and 2006, the year that the data for both the fair value and vested value of stock awards are first available. Before 2006 the value of stock awards was a "restricted stock grant" measure capturing the "value of restricted stock awarded during fiscal year, determined at grant date as share price times the number of shares granted" (Hopkins and Lazonick 2016). The pre-2006 measure is similar conceptually to the fair market value but not exactly the same. In 2006, two stock award measures were tracked: the "fair value" and the "vested value." Restricted stock grants were valued at \$2,988,000 (\$2019) in 2005. The fair market value of stock awards in 2006 was \$4,393,000. It is not possible to

## Changes in realized CEO compensation, prior vs. revised measure, 1978–2018

Percent change	Prior measure	Revised measure
	Realized stock options and granted stock awards	Realized stock options and vested stock awards
<b>1978–2018</b>	937.7%	1,009.9%
<b>2000–2018</b>	-20.4%	-14.8%
<b>2007–2018</b>	-14.2%	-3.9%
<b>2009–2018</b>	54.2%	79.9%

**Source:** Authors' analysis of data from Compustat's ExecuComp database.

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know how much of the jump between 2005 and 2006 is due to a change in definition rather than part of the trend toward increased use of stock awards. This discontinuity, and associated possible measurement error, does not matter a great deal for our analysis since our focus is on longer-term trends, analyzing CEO compensation trends since 2007, the year before the financial crisis that sparked the Great Recession, or since 2009, the beginning of the recovery from the Great Recession. We also make comparisons of CEO pay in recent years to CEO pay in 2000 and 1978. Since stock awards were far less popular in the earlier years—in 2000 and certainly in 1978—our judgment is that the discontinuity over 2005–2006 is not a major concern, especially since the discontinuity already necessarily was embedded in our prior metric (as the data switched from restricted grants to fair market value of stock awards).

**Appendix Table 1** provides an assessment of how the growth of CEO compensation over key periods is affected by our change of metrics.

Compared with the old measure, the revised measure shows a smaller decline of CEO compensation from 2007 to 2018, 3.9% versus 14.2%, and a much larger growth of CEO compensation over the 2009–2018 recovery period (79.9% versus 54.2%). Because the revised measure is greater in 2018 than our prior metric, the growth measured over the longer term will be greater: specifically, the growth between 1978 or 2000 and now is greater (less of a fall since 2000, which was the stock bubble–related peak of CEO compensation, and much more since 1978) because of the change in measurement.

# Endnotes

1. It may seem counterintuitive that the granted and realized CEO-to-worker pay ratios for 2000 are different from each other when the average CEO compensation is the same. As we describe later in this report, we do not create the ratio from the averages; rather we construct a ratio for each firm and then average the ratios across firms.
2. There were 38,824 executives in publicly held firms and 9,692 people in the top 0.1% of wage earners in 2007, according to the Capital IQ database (tabulations provided by Temple University professor Steve Balsam).
3. Each year's sample includes the largest 350 firms for which ExecuComp provides data.
4. We use Compustat estimates of the fair value of options and stock awards as granted. These estimates are determined using the Black Scholes model. See Sabadish and Mishel 2013 for more information about our data sources and methodology.
5. Most Fortune 500 companies release annual financial data in early spring; the data are included in samples limited to the first half of the year. However, the data we present for previous years include all of the data that were released during each calendar year. This creates a bias in comparing data for the first half of the year relative to the full year's data in the prior or earlier years: Compensation levels for the full year's data are higher than compensation in the data limited to the first half. A comparison of data available in June thus shows a smaller increase when compared with the previous year's full data than a comparison with the data that were available at the same time a year earlier. We analyze the impact of this bias and find that the vast majority of top firms remain unchanged between the samples for the first half and the full year. However, there is churn among the smaller firms in the sample. Among firms with lower net annual sales, average CEO compensation tends to be higher in the full-year sample. Additionally, in recent years firms reporting later in the year have tended to be firms with lower worker compensation levels and therefore higher CEO-to-worker compensation ratios.
6. In order to calculate the projected full-year 2019 value of the vested stock awards we assume that the vested stock awards as a share of CEO realized compensation for first-half-year 2019 remains consistent for the full-year 2019. We then multiply the share of vested stock awards by the projected full-year 2019 CEO realized compensation. We use the projected full-year 2019 value to calculate the growth rate of the vested stock awards from 2018 to 2019. A similar process is used to calculate the projected full-year 2019 value of exercised stock options.
7. We chose which years to present in the table in part based on data availability. Where possible, we chose cyclical peaks (years of low unemployment).
8. There are a limited number of firms, which existed only for certain years between 1992 and 1996, for which a North American Industry Classification System (NAICS) value is unassigned. This makes it impossible to identify the pay of the workers in the firm's key industry. These firms are therefore not included in the calculation of the CEO-to-worker compensation ratio.
9. As noted earlier, it may seem counterintuitive that the two ratios for 2000 are different from each other when the average CEO compensation is the same. It is important to understand that (as we describe later in this report) we do not create the ratio from the averages; rather we construct a

ratio for each firm and then average the ratios across firms.

10. The managerial power view asserts that CEOs have excessive, noncompetitive influence over the compensation packages they receive. Rent-seeking behavior is the practice of manipulating systems to obtain more than one's fair share of wealth—that is, finding ways to increase one's own gains without actually increasing the productive value one contributes to an organization or to the economy.
11. We thank Steve Kaplan for sharing his CEO compensation series with us (Kaplan 2012b). The series on the income of the top 0.1% of households that Kaplan used is no longer available. Moreover, as we discuss, the appropriate comparison is to other earners, not to households, which could have multiple earners and shifts in the number of earners over time.
12. Temple University professor Steve Balsam provided tabulations from the Capital IQ database of annual wages of executives exceeding the wage thresholds (provided to him) that place them in the top 0.1% of wage earners. There were 38,824 executives in publicly held firms and 9,692 executives in the top 0.1% of wage earners in 2007. The 9,692 executives in publicly held firms who were in the top 0.1% of wage earners had average annual earnings of \$4.4 million. Using Mishel et al.'s (2012) estimates of top 0.1% wages, we find that executive wages make up 13.3% of total top 0.1% wages. One can gauge the bias of including executive wages in the denominator by noting that the ratio of executive wages to all top 0.1% wages in 2007 was 2.14 but the ratio of executive wages to nonexecutive wages was 2.32. We do not have data that would permit an assessment of the bias in 1979 or 1989. We also lack information on the number and wages of executives in privately held firms; to the extent that their CEO compensation exceeds that of publicly traded firms, their inclusion would indicate an even larger bias. The Internal Revenue Service Statistics of Income (SOI) Bulletin reports that there were nearly 15,000 corporate tax returns in 2007 of firms with assets exceeding \$250 million, indicating that there are many more executives of large firms than just those in publicly held firms (IRS 2019).
13. A one-point rise in the ratio is the equivalent of the average CEO earning an additional amount equal to that of the average earnings of someone in the top 0.1%.
14. Kaplan (2012b, 14) notes that the Frydman and Saks series grew 289% whereas the Hall and Liebman series grew 209%. He also notes that the Frydman and Saks series grows faster than the series reported by Murphy (2012).
15. The tax data analyzed categorizes a household's income according to the occupation and industry of the head of household. It is possible that a "secondary earner," or spouse, has income as an executive or in finance. If the household is in the top 1.0% or top 0.1%, but the head of household is not an executive or in finance, then the spouse's contribution to income growth will not be identified as being connected to executive pay or finance sector pay. The discussion in this paragraph draws on Bivens and Mishel 2013.
16. This follows from the fact that over 1979–2017 annual earnings rose by 22.2% for the bottom 90%, while the average growth across all earners was 40.1% (Mishel and Wolfe 2018). That means that the bottom 90% would have seen their earnings grow 17.9 percentage points more over the 1979–2017 period if they had enjoyed average growth (i.e., no increase in equality, 40.1 less 22.2).
17. Exercised stock options are considered W-2 wages so taxed as "income." Stock awards are also taxed as income when vested.
18. We also remove a small amount of restricted grant awards (\$494,000 in \$2019) for 2006 that was included in our measure.

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