

# **CEO pay remains high relative to the pay of typical workers and high-wage earners**

**Report** • By Lawrence Mishel and Jessica Schieder • July 20, 2017

# Summary

**What this report finds:** This report looks at trends in CEO compensation using two measures of compensation. The first measure includes stock options realized (in addition to salary, bonuses, restricted stock grants, and long-term incentive payouts). By this measure, in 2016 CEOs in America's largest firms made an average of \$15.6 million in compensation, or 271 times the annual average pay of the typical worker. While the 2016 CEO-to-worker compensation ratio of 271-to-1 is down from 299-to-1 in 2014 and 286-to-1 in 2015, it is still light years beyond the 20-to-1 ratio in 1965 and the 59-to-1 ratio in 1989. The average CEO in a large firm now earns 5.33 times the annual earnings of the average very-high-wage earner (earner in the top 0.1 percent).

Because the decision to realize, or cash in, stock options tends to fluctuate with current and potential stock market trends (since people tend to cash in their stock options when it's most advantageous for them to do so), we also look at another measure of CEO compensation to get a more complete picture of trends in CEO compensation. This measure tracks the value of stock options granted, reflecting the value of the options at the time they are granted. By this measure, CEO compensation rose to \$13.0 million in 2016, up from \$12.5 million in 2015.

By either measure CEO compensation is very high relative to the compensation of a typical worker or even that of an earner in the top 0.1 percent, and it has grown far faster than stock prices or corporate profits. The explanation for the falloff in CEO compensation associated with realized stock options is unclear: neither stock prices nor an accumulation of unexercised options provide an explanation. It will be interesting to see if this trend continues.

**Why it matters:** Regardless of how it's measured, CEO pay continues to be very, very high and has grown far faster in recent decades than typical worker pay. Exorbitant CEO pay means that the fruits of economic growth are not going to ordinary workers, since the higher CEO pay does not reflect correspondingly higher output. CEO compensation has risen by 807 or 937 percent (depending on how it is

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measured—using stock options granted or stock options realized, respectively) from 1978 to 2016. At 937 percent, that rise is more than 70 percent faster than the rise in the stock market; both measures are substantially greater than the painfully slow 11.2 percent growth in a typical worker’s annual compensation over the same period.

**How we can solve the problem:** Over the last several decades CEO pay has grown a lot faster than profits, than the pay of the top 0.1 percent of wage earners, and than the wages of college graduates. This means that CEOs are getting more because of their power to set pay, not because they are more productive or have special talent or have more education. If CEOs earned less or were taxed more, there would be no adverse impact on output or employment. Policy solutions that would limit and reduce incentives for CEOs to extract economic concessions without hurting the economy include:

- Reinstating higher marginal income tax rates at the very top.
- Removing the tax break for executive performance pay.
- Setting corporate tax rates higher for firms that have higher ratios of CEO-to-worker compensation.
- 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 of America’s largest firms earn far more today than they did in the mid-1990s and especially since the 1960s or late 1970s. They also earn far more than the typical worker and their pay has grown much faster. When we look at CEO compensation using a measure that includes stock options realized (as described below), CEO pay peaked in 2000, at \$20.7 million (in 2016 dollars)—376 times the pay of the typical worker. The CEO-to-worker pay ratio dropped to 197-to-1 by 2009 in the wake of the financial crisis, rose to 299-to-1 by 2014, and has declined since 2014. The projected 2016 ratio is 271-to-1.

It is unclear whether this recent decline is the beginning of a downward trend in how CEO compensation is awarded or whether it is a byproduct of how compensation is measured in conjunction with variations in the stock market (more on this below). What *is* clear, though, is that CEO pay continues to be dramatically higher now than it was in the decades before the turn of the millennium: in 1995, the CEO-to-worker pay ratio was 123-to-1; in 1989, it was 59-to-1; in 1978, it was 30-to-1; and in 1965, it was 20-to-1.

This report is part of an ongoing series of annual reports monitoring trends in CEO compensation. To analyze current trends in CEO compensation, we use two different measures of compensation. The first measure includes stock options realized (in addition to salary, bonuses, restricted stock grants, and long-term incentive payouts). Because stock-options-realized compensation tends to fluctuate with the stock market (since people tend to cash in their stock options when it’s most advantageous for them to do so), we also look at another measure of CEO compensation to get a more complete picture of

trends in CEO compensation. This measure tracks the value of stock options granted, thus focusing on their value at the time they are granted rather than when they are cashed in.

As noted above, by one measure (the measure that uses stock options realized), average CEO compensation fell in 2016 (by 4.3 percent). However, compensation measured this way in fact declined only for those CEOs in the top-earning fifth of CEOs; pay for CEOs in the bottom 80 percent actually rose, with the declines for the top fifth of CEOs driving the decline in the average. By another measure (the measure that uses stock options granted), CEO compensation rose 3.8 percent in 2016, including for those CEOs with the highest compensation in our sample.

CEO pay has historically been closely associated with the health of the stock market. Amid a healthy recovery on Wall Street following the Great Recession, CEOs enjoyed outsized income gains even relative to other very-high-wage earners. Outsized CEO pay growth has had spillover effects, pulling up the pay of other executives and managers, who constitute a larger group of workers than is commonly recognized.<sup>1</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 percent and top 0.1 percent of U.S. households from 1979 to 2007 (Bivens and Mishel 2013; Bakija, Cole, and Heim 2012). Since then, income growth has remained unbalanced: as profits have reached record highs along with stock market highs, the wages of most workers have continued to stagnate in the 2000s though there have been inflation-adjusted gains in the last two years (Bivens et al. 2014; Gould 2017).

In this report, we examine trends in CEO compensation, using the two measures described above, to determine how CEOs are faring compared with typical workers (through 2016) and compared with their top 0.1 percent peers (through 2015). We also look at the relationship between growth in CEO pay and stock market and profit growth. We find that:

- Using the stock-options-realized measure, the average CEO compensation for CEOs in the 350 largest U.S. firms was \$15.6 million in 2016. Compensation in 2016 (data available through May) is down 4.3 percent (from \$16.3 million) since 2015 but up 45.6 percent (from \$10.7 million) since the recovery began in 2009. The fall in average compensation reflected a loss for the highest-paid CEOs while those in the bottom 80 percent earned more in 2016 than in 2015.
- Using the stock-options-granted measure, the average CEO compensation for CEOs in the 350 largest U.S. firms was \$13.0 million in 2016, up 3.8 percent from \$12.5 million in 2015.
- From 1978 to 2016, inflation-adjusted compensation, based on realized stock options, of the top CEOs increased 937 percent, a rise more than 70 percent greater than stock market growth and substantially greater than the painfully slow 11.2 percent growth in a typical worker's annual compensation over the same period. CEO compensation, when measured using the value of stock options granted, grew more slowly from 1978 to 2016, rising 807 percent—a still-substantial increase relative to every benchmark available.

- Using the stock-options-realized measure, the CEO-to-worker compensation ratio was 20-to-1 in 1965, peaked at 376-to-1 in 2000, and was 271-to-1 in 2016—down from 286-to-1 in 2015 but still far higher than at any point in the 1960s, 1970s, 1980s, or 1990s. Using the stock-options-granted measure, the CEO-to-worker compensation ratio rose to 224-to-1 in 2016 (from 220-to-1 in 2015), significantly down from its peak of 411-to-1 in 2000 but still much higher than the 54-to-1 ratio of 1989 or the 18-to-1 ratio of 1965.

In examining the compensation of the top CEOs relative to that of other very-high-wage earners (in the top 0.1 percent), we find that:

- Over the last three decades, compensation, using realized stock options, for CEOs grew far faster than that of other highly paid workers, i.e., those earning more than 99.9 percent of wage earners. CEO compensation in 2015 (the latest year for data on top wage earners) was 5.33 times greater than wages of the top 0.1 percent of wage earners, a ratio 2.15 points higher than the 3.18 ratio that prevailed over the 1947–1979 period. This wage gain alone is equivalent to the wages of more than two very-high-wage earners.
- The fact that CEO pay has grown far faster than the pay of the top 0.1 percent of wage earners indicates that CEO compensation growth does not simply reflect the increased value of highly paid professionals in a competitive race for skills (the “market for talent”), but rather reflects the presence of substantial “economic rents” embedded in executive pay (meaning that CEO pay does not reflect greater productivity of executives but rather the power of CEOs to extract concessions). Consequently, if CEOs earned less or were taxed more, there would be no adverse impact on output or employment.
- Also over the last three decades, CEO compensation increased more relative to the pay of other very-high-wage earners than the wages of college graduates rose relative to the wages of high school graduates. This indicates that the escalation of CEO pay does not simply reflect a more general rise in the returns to education.
- Critics of these analyses suggest looking at the pay of the average CEO, not just CEOs of the largest firms. However, the average firm is very small, employing just 20 workers, and does not represent a useful comparison to the pay of a typical worker, defined here as an employee of a firm with roughly 1,000 workers. Workers in small firms are atypical: half (51.6 percent) of employment and 58.1 percent of total payroll (wages multiplied by employment) are in firms with 500 or more employees, and firms with at least 10,000 workers account for 27.9 percent of all employment and 31.4 percent of all payroll.

## CEO compensation trends

**Table 1** presents trends in CEO compensation for selected years from 1965 to 2016.<sup>2</sup> The Table 1 data show the average compensation of CEOs in the 350 largest U.S. firms using two different measures that are based on two different ways to incorporate stock options

into compensation: one measure, shown in the first column, tracks how much the average CEO *realized* in a particular year by exercising stock options available (buying stocks at a previously set price and reselling them at market price). This options-realized measure reflects the value of options exercised that CEOs report on their Form W-2 wages and is what they actually earned in a given year. The second measure instead includes the value of the stock options granted in the relevant year and is not influenced by CEOs' decisions to cash or not cash in their options during that year. In addition to stock options, each of these compensation measures includes salary, bonuses, restricted stock grants, and long-term incentive payouts. Full methodological details for the construction of these CEO compensation measures and benchmarking to other studies can be found in Mishel and Sabadish 2013.

Table 1

## CEO compensation, CEO-to-worker compensation ratio, and stock prices (2016 dollars), 1965–2016

	CEO annual compensation (in thousands)*		Worker annual compensation (in thousands)		Stock market (adjusted to 2016)		CEO-to-worker compensation ratio***	
	Based on options realized	Based on options granted	Private-sector production/nonsupervisory workers	Firms' industry**	S&P 500	Dow Jones	Based on options realized	Based on options granted
<b>1965</b>	\$843	\$800	\$40.0	n/a	587	6,066	20.2	18.4
<b>1973</b>	\$1,102	\$1,046	\$46.9	n/a	519	4,464	22.5	20.5
<b>1978</b>	\$1,508	\$1,431	\$48.0	n/a	325	2,774	30.1	27.4
<b>1989</b>	\$2,808	\$2,664	\$45.6	n/a	604	4,694	58.9	53.7
<b>1995</b>	\$5,947	\$6,595	\$45.7	\$53.1	848	7,042	122.6	136.8
<b>2000</b>	\$20,664	\$21,313	\$48.3	\$56.0	1,989	14,947	376.1	411.3
<b>2007</b>	\$19,112	\$13,282	\$50.2	\$56.0	1,710	15,255	347.5	240.8
<b>2009</b>	\$10,746	\$10,341	\$52.2	\$58.2	1,061	9,941	196.6	183.9
<b>2010</b>	\$12,827	\$11,677	\$52.4	\$59.0	1,255	11,744	230.3	206.3
<b>2011</b>	\$12,958	\$11,997	\$51.8	\$58.7	1,353	12,760	232.7	213.2
<b>2012</b>	\$15,261	\$11,587	\$51.4	\$58.3	1,442	13,554	281.5	209.8
<b>2013</b>	\$15,603	\$11,986	\$51.7	\$58.5	1,694	15,465	291.8	214.5
<b>2014</b>	\$16,569	\$12,469	\$51.9	\$58.8	1,958	17,011	298.7	224.5
<b>2015</b>	\$16,341	\$12,496	\$52.7	\$59.7	2,087	17,810	286.1	219.7
<b>2015 (June 2016)</b>	\$15,699	\$12,173	\$52.9	\$59.2	2,087	17,810	275.4	215.4
<b>2016 (June 2017)</b>	\$15,021	\$12,636	\$53.3	\$60.8	2,095	17,927	259.8	218.0
<b>2016 (projection)</b>	\$15,636	\$12,970	\$53.3	\$60.8	2,095	17,927	270.5	223.8
<b>Percent change</b>							<b>Change in ratio</b>	
<b>1965–1978</b>	78.9%	78.9%	19.9%	n/a	-44.7%	-54.3%	9.9	9.0
<b>1978–2000</b>	1,270.1%	1,389.5%	0.6%	n/a	512.7%	438.8%	346.0	383.9
<b>2000–2016</b>	-24.3%	-39.1%	10.5%	8.5%	5.3%	19.9%	-105.6	-187.5
<b>2009–2016</b>	45.5%	25.4%	2.2%	4.5%	97.5%	80.3%	73.9	39.9
<b>1978–2016</b>	936.7%	806.5%	11.2%	n/a	545.2%	546.3%	240.4	196.4

\*CEO annual compensation is computed using the “options realized” and “options granted” compensation series for CEOs at the top 350 U.S. firms ranked by sales. The “options realized” series includes salary, bonus, restricted stock grants, options realized, and long-term incentive payouts for CEOs at the top

Table 1 (cont.)

350 U.S. firms ranked by sales. The “options granted” series includes salary, bonus, restricted stock grants, value of options granted, and long-term incentive payouts.

\*\*Annual compensation of the workers in the key industries of the firms in the sample.

\*\*\*Based on averaging specific firm ratios and not the ratio of averages of CEO and worker compensation.

**Notes:** Projected value for 2016 is based on the change in CEO pay as measured from June 2015 to June 2016 applied to the full-year 2015 value. Projections for compensation based on options granted and options realized are calculated separately.

**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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CEO compensation reported in Table 1, as well as throughout the report, is the average compensation of the CEOs in the top 350 publicly owned U.S. firms (i.e., firms that sell stock on the open market) with the largest revenue each year. Our sample each year will be fewer than 350 firms to the extent that these large firms did not have the same CEO for most of or all of the year or the compensation data are not yet available. For comparison, Table 1 also presents the average annual compensation (wages and benefits of a full-time, full-year worker) of a private-sector production/nonsupervisory worker (a group covering more than 80 percent of payroll employment), allowing us to compare CEO compensation with that of a “typical” worker. From 1995 onward, the table identifies the average annual compensation of the production/nonsupervisory workers in the *key 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.

The modern history of CEO compensation (starting in the 1960s) is as follows. Even though the stock market—as measured by the Dow Jones Industrial Average and S&P 500 index and shown in Table 1—fell by roughly half between 1965 and 1978, CEO pay increased by 78.9 percent. Average worker pay saw relatively strong growth over that period (relative to subsequent periods, not relative to CEO pay or pay for others at the top of the wage distribution). Annual worker compensation grew by 19.9 percent from 1965 to 1978, only about a fourth as fast as CEO compensation growth over that period.

CEO compensation grew strongly throughout the 1980s but exploded in the 1990s and peaked in 2000 at around \$20 million, an increase of roughly 250 percent just from 1995 and 1,270 percent from 1978. This latter increase even exceeded the growth of the booming stock market—513 percent for the S&P 500 and 439 percent for the Dow from 1978 to 2000. In stark contrast to both the stock market and CEO compensation, private-sector worker compensation increased just 0.6 percent over the same period.

The fall in the stock market in the early 2000s led to a substantial paring back of CEO compensation, but by 2007 (when the stock market had mostly recovered) CEO compensation had returned close to its 2000 level.

The stock market decline during the 2008 financial crash also set CEO compensation tumbling, as it had in the early 2000s. After 2009 CEO compensation (measured using options realized) resumed an upward trajectory, peaking in 2014. (When measured using stock options granted, CEO compensation flattened starting in 2014.)

Note that Table 1 provides data for the current measure of CEO pay in 2016 (data available through May 2017) alongside the comparable estimate of CEO pay for 2015 that derives from the data available through May 2016. A comparison of compensation for each year derived from the data available through May is the best metric for gauging the most recent year-to-year change because CEO compensation for a full year’s data is higher than the compensation estimated from data available through May of each year; using the data available through May for one year while using full-year data for the previous year therefore artificially lowers the estimated change in this year’s CEO compensation relative to last year (when last year is represented by full-year data).<sup>3</sup> Using the data through May for both years, average CEO compensation (using stock options realized) was \$15.0 million

in 2016, down 4.3 percent from the \$15.7 million measured in a similar sample for 2015. On the other hand, CEO compensation using this metric and measured using the value of options granted showed a 3.8 percent growth in 2016, rising to \$12.6 million from \$12.2 million in 2015. Again, CEO compensation can be seen as either increasing or decreasing from 2015 to 2016 depending on how stock options are incorporated into the calculations.

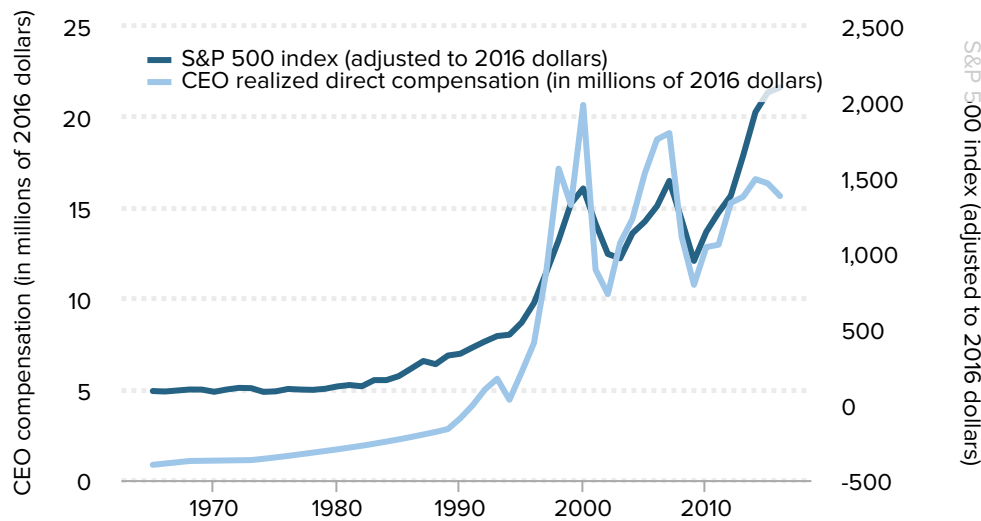
Our findings accord with other series that track CEO compensation trends. These other series track CEO or top-paid executive compensation using stock options granted and find, as we do, that CEO/executive compensation with this metric grew from 2015 to 2016. (We are not aware of regular CEO/executive pay series that rely on the value of realized stock options, as our other metric does, and so are unable to benchmark that metric to another series.) Equilar, for example, works with the Associated Press (AP) to examine median executive pay among S&P 500 companies with the highest revenues for executives who have served for two or more years in such roles (AP 2017; Equilar 2017). The Equilar/AP study opts to include only firms that release executive pay data through May of each year, to create a historically consistent sample, and their sample can include multiple executives from the same firm. Equilar finds executive pay increased 8.5 percent in fiscal year 2016 using a total compensation number based on options granted. *The Wall Street Journal (WSJ)* regularly reports on executive pay as presented by the U.S. Securities and Exchange Commission (SEC) (utilizing an SEC total compensation estimate); a 2017 *WSJ* analysis suggests median compensation of executives at 104 of the largest American companies rose 6.8 percent in 2016, “on track to set a postrecession record” (Francis and Lublin 2017). The AFL-CIO regularly compares the pay of the highest-paid executives based on the latest available data (meaning that 2015 data are sometimes compared to 2016 data, for example). The metric used by the AFL-CIO incorporates the value of stock option awards granted. The latest sample includes data for 419 companies out of all S&P 500 companies and finds CEO compensation increased 5.9 percent in 2016 (AFL-CIO 2017).

To provide projections of 2016 CEO compensation that are consistent with the historical data, we construct our estimates by looking at the growth of compensation from 2015 to 2016 using the first-half-year samples of data available through May of each year, and then applying that growth to the compensation for 2015 based on the samples for the full year. This method of constructing our estimates corrects for the fact that full-year samples show higher compensation than samples for the first half of a year.

We use the estimate for 2016 CEO compensation as the basis for examining changes in CEO compensation over time. Over the entire period from 1978 to 2016, CEO compensation using options realized increased about 937 percent, a rise more than 70 percent faster than stock market growth (either the Dow Jones or S&P 500) and substantially greater than the painfully slow 11.2 percent growth in a typical worker’s compensation over the same period. CEO compensation based on the value of stock options granted grew more slowly but still increased 807 percent from 1978 to 2016. CEO compensation in 2016 remains below its peak in 2000, which occurred at the end of a strong economic boom with huge growth in the stock market that many believed reflected a technology stock bubble. The run-up in stock prices had a corresponding effect on CEO compensation, and when the bubble burst, so did CEO compensation.

Figure A

### CEO realized direct compensation and the S&P 500 index (2016 dollars), 1965–2016



**Notes:** CEO annual compensation is computed using the “options realized” compensation series, which includes salary, bonus, restricted stock grants, options realized, and long-term incentive payouts for CEOs at the top 350 U.S. firms ranked by sales. Projected value for 2016 is based on the change in CEO pay as measured from June 2015 to June 2016 applied to the full-year 2015 value.

**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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Figure A shows how CEO pay measured using stock options realized has historically fluctuated 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. The financial crisis of 2008 and the accompanying stock market tumble knocked CEO compensation based on realized stock options down 44 percent from 2007 to 2009. By 2014, the stock market had recouped all of the ground lost in the downturn and, not surprisingly, CEO compensation based on realized stock options had also made a strong recovery. In 2015, however, CEO pay based on realized stock options receded from its 2014 peak, and that trend continued in 2016. While the 2015 decline could be attributed to a falloff in the stock market during that year, the source of the 2016 decline is less clear given the 2016 upturn in the stock market.

Despite this recent (anomalous) divergence, 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 (either because they head larger firms, have adopted new technology, or for other reasons). CEO compensation often grows strongly simply when the overall stock market rises and individual firms’ stock values rise along with it. This is a market-wide phenomenon and not one of improved performance of individual firms: most CEO pay packages allow pay to rise whenever the firm’s stock value rises and permit CEOs to cash out stock options regardless of whether the rise in the firm’s stock value was exceptional

relative to comparable firms.

## Understanding the dip in CEO compensation

The 2016 decline in CEO compensation measured using stock options realized represents a continuing departure from the historical trend of rising CEO pay, following on a similar decline in 2015. As discussed in last year's report (Mishel and Schieder 2016), the 2015 decline may be attributable to a downturn in the stock market that discouraged CEOs from exercising stock options; the 2016 decline, however, can't be tied to the stock market, which was on an upward swing in 2016. In this section, we explore other possible factors that may be underlying this downward shift.

**Table 2** presents the relevant data for each subcomponent (defined in **Box A**) of compensation and for each fifth of CEOs ranked by compensation, based on samples through May in 2015 and 2016. This allows us to examine which parts of the compensation changed and for which group (fifth) of CEOs.

The data in Table 2 show that overall CEO compensation, using stock options realized, fell because of the shrinkage of realized stock options, which contributed \$878,000 of the overall compensation decline of \$677,000, i.e., more than all of the decline. The sharp decline of \$5.8 million in the value of stock options realized for the highest-earning CEOs, in the top fifth, also explains the total fall in compensation (\$5.2 million) for that group. In contrast, realized stock options grew for other CEOs except those in the bottom fifth, helping to explain why compensation for the bottom 80 percent actually grew from 2015 to 2016. It is unclear why the highest-paid CEOs realized fewer stock options than other, lower-paid, CEOs. If the stocks of the firms employing the highest-paid CEOs had fared worse in 2016 than the stocks of other firms, that might explain the divergence—but those firms' stocks did not in fact fare worse.

Another possible explanation is that the drop in compensation that includes stock options realized is due to a stockpiling of options by these highest earners. To examine that possibility, in **Table 3** we look at trends in unexercised exercisable options. The data show that the total estimated value of unexercised exercisable options held among the CEOs in our sample increased 16.1 percent, from \$21.5 million in 2015 to \$24.9 million in 2016. This increase occurred despite a fall (of 8.1 percent) in the number of unexercised exercisable options available among this pool of CEOs. However, the 2016 increase in the value of the "stockpiled" options amounts to just \$3.4 million, which, when averaged over the CEOs in the sample, is not significant enough to alter the trend in overall CEO compensation to any great extent. In our samples of CEOs an examination of the trends in stock options granted and both exercised and unexercised confirms that substantially more stock options were granted and exercised in the 2002–2007 period than over the last few years, helping to explain the higher CEO compensation levels in that earlier period. Overall, it seems that there has not been a stockpiling of stock options significant enough to explain the recent downward trend in CEO compensation measured using realized

Table 2

### Changes in CEO realized direct compensation by fifth\* and subcomponent, in thousands (2016 dollars), 2015–2016

	Realized direct compensation**	Compensation subcomponents				
		Salary	Bonus	Restricted stock grants	Options realized	Long-term incentive payouts
<b>All</b>						
2015	\$15,699	\$1,265	\$376	\$5,893	\$5,301	\$2,863
2016	\$15,021	\$1,255	\$376	\$6,366	\$4,423	\$2,601
Percentage change	-4.3%	-0.8%	0.0%	8.0%	-16.6%	-9.2%
Change	-\$677	-\$10	\$0	\$473	-\$878	-\$262
<b>Top fifth</b>						
2015	\$39,208	\$1,546	\$1,274	\$8,273	\$22,958	\$5,156
2016	\$34,002	\$1,483	\$1,108	\$10,282	\$17,148	\$3,980
Percentage change	-13.3%	-4.1%	-13.0%	24.3%	-25.3%	-22.8%
Change	-\$5,206	-\$63	-\$166	\$2,009	-\$5,810	-\$1,176
<b>Fourth fifth</b>						
2015	\$16,003	\$1,350	\$394	\$8,836	\$2,261	\$3,162
2016	\$16,816	\$1,324	\$525	\$8,365	\$3,499	\$3,104
Percentage change	5.1%	-1.9%	33.1%	-5.3%	54.8%	-1.9%
Change	\$813	-\$25	\$130	-\$471	\$1,238	-\$59
<b>Third fifth</b>						
2015	\$11,118	\$1,273	\$67	\$6,498	\$627	\$2,652
2016	\$11,689	\$1,317	\$159	\$6,492	\$1,098	\$2,624
Percentage change	5.1%	3.4%	135.3%	-0.1%	75.0%	-1.1%
Change	\$571	\$44	\$91	-\$6	\$471	-\$29
<b>Second fifth</b>						
2015	\$8,174	\$1,155	\$87	\$4,173	\$581	\$2,178
2016	\$8,663	\$1,203	\$57	\$4,809	\$402	\$2,191
Percentage change	6.0%	4.1%	-34.0%	15.3%	-30.7%	0.6%
Change	\$489	\$48	-\$29	\$637	-\$179	\$13

Table 2  
(cont.)

	Realized direct compensation**	Compensation subcomponents				
		Salary	Bonus	Restricted stock grants	Options realized	Long-term incentive payouts
<b>Bottom fifth</b>						
<b>2015</b>	\$3,990	\$1,002	\$59	\$1,684	\$79	\$1,165
<b>2016</b>	\$4,099	\$955	\$38	\$1,946	\$33	\$1,127
<b>Percentage change</b>	2.7%	-4.7%	-35.9%	15.5%	-58.7%	-3.3%
<b>Change</b>	\$109	-\$47	-\$21	\$261	-\$47	-\$38

\*Firms were categorized into fifths according to realized CEO compensation.

\*\*CEO annual compensation is computed using the “options realized” compensation series for CEOs at the top 350 U.S. firms ranked by sales. The “options realized” series includes salary, bonus, restricted stock grants, options realized, and long-term incentive payouts.

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

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Box A

## Subcomponents of CEO realized direct compensation

Subcomponent	Description
<b>Salary</b>	Value of the base salary earned by the CEO during the fiscal year
<b>Bonus</b>	Value of the bonus given to the CEO during the year
<b>Restricted stock grants</b>	Value of the fair value of all stock awards during the year with valuation based on the grant-date fair value
<b>Options realized</b>	Value realized from options exercised during the year
<b>Long-term incentive payouts</b>	Value of the amounts earned during the year pursuant to non-equity incentive plans

**Note:** Due to a change in reporting format, prior to 2007 the value of stock awards relied on restricted stock granted to the CEO, and the value of long-term incentives relied on a company’s long-term incentive plan.

**Source:** Authors’ analysis of Compustat’s ExecuComp database

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stock options for the highest-earning fifth of CEOs.

# Trends in the CEO-to-worker compensation ratio

Table 1, which informed our discussion of general CEO compensation trends earlier, also presents historical and current trends in the ratio of CEO-to-worker compensation using each measure of CEO compensation. This overall ratio, which illustrates the increased

Table 3

### Unexercised exercisable options held among CEOs in the 350 largest U.S. firms, 2014–2016

Year	Number of unexercised exercisable options	Estimated value of unexercised exercisable options, in millions (2016 dollars)
2014	906.3	\$27.1
2015	905.6	\$21.5
2016	832.3	\$24.9
<b>Percentage change</b>		
2014– 2016	-0.1%	-20.6%
2015– 2016	-8.1%	16.1%

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

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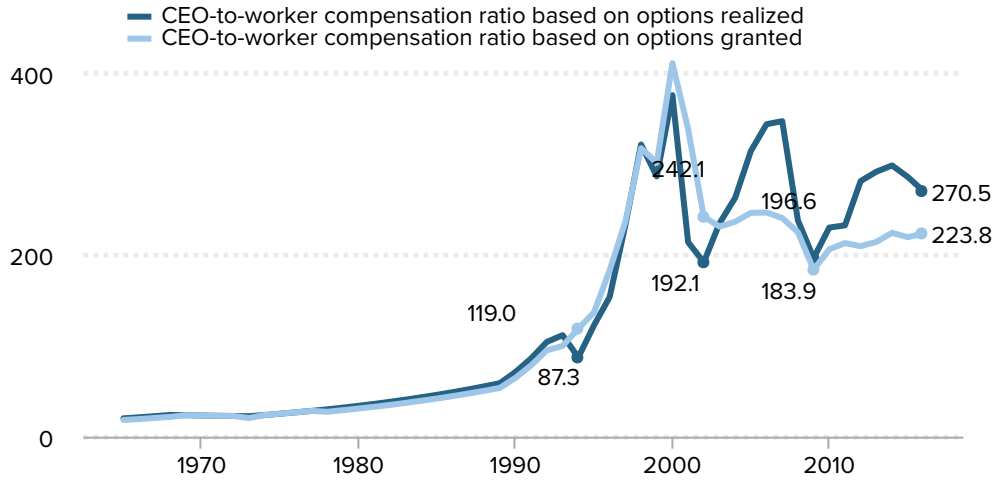
divergence between CEO and worker pay over time, is computed in two steps. The first step is to construct, for each of the 350 largest U.S. firms, the ratio of the CEO's compensation to the annual average compensation of production and nonsupervisory workers in the key industry of the firm (data on the pay of workers in any particular firm are not available). The second step is to average that ratio across all the firms. The last two columns in Table 1 show the resulting ratio in select years for our two different measures of CEO pay: one based on realized stock options and the other based on stock options granted. We adjust the ratio for the final year, 2016, to reflect the difference between the sample of data available through May and the full-year samples in order to make the 2016 ratio consistent with the historical data. The trends prior to 1995 are based on the changes in average top-company CEO and economy-wide private-sector production/nonsupervisory worker compensation. The year-by-year trends are presented in **Figure B**.

In terms of CEO compensation based on realized stock options, CEOs of major U.S. companies earned 20 times more than a typical worker in 1965; this ratio grew to 30-to-1 in 1978 and 59-to-1 by 1989, and then it surged in the 1990s, hitting 376-to-1 by the end of the 1990s recovery, in 2000. The fall in the stock market after 2000 reduced CEO stock-related pay (e.g., realized stock options) and caused CEO compensation to tumble in 2002, to 192 times typical worker pay, before beginning to rise again in 2003. CEO compensation recovered to a level of 347 times worker pay by 2007, almost back to 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 299-to-1. The fall in CEO compensation since 2014 has caused the CEO-to-worker pay ratio to fall to 271-to-1 in 2016. Though the CEO-to-worker compensation ratio remains below the peak values achieved earlier in the 2000s, it is far higher than what prevailed through the 1960s, 1970s, 1980s, and 1990s.

Figure B

## CEOs make 271 times more than typical workers

CEO-to-worker compensation ratio, 1965–2016



**Notes:** CEO annual compensation is computed using the “options realized” and “options granted” compensation series for CEOs at the top 350 U.S. firms ranked by sales. The “options realized” series includes salary, bonus, restricted stock grants, options realized, and long-term incentive payouts. The “options granted” series includes salary, bonus, restricted stock grants, options granted, and long-term incentive payouts. Projected value for 2016 is based on the change in CEO pay as measured from June 2015 to June 2016 applied to the full-year 2015 value. Projections for compensation based on options granted and options realized are calculated separately. “Typical worker” compensation is the average annual compensation of the workers in the key industries of the firms in the sample.

**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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There is a similar pattern using the CEO compensation measure that values stock options as they are granted. The CEO-to-worker pay ratio peaked in 2000 at 411-to-1, even higher than the ratio with the stock options realized measurement. The fall from 2000 to 2007 was steeper than for the other measure, hitting just 241-to-1 in 2007. The stock market decline during the financial crisis drove the ratio down to 184-to-1 in 2009. It recovered to 225-to-1 by 2014 and has basically remained flat thereafter, ending up just slightly lower in 2016 than in 2014, at 224-to-1. This is far lower than its peak in 2000 but still far greater than the 1989 ratio of 54-to-1 or the 1978 ratio of 28-to-1.

## Does dramatically high CEO pay simply reflect the market for skills?

This section reviews competing explanations for the extraordinary rise in CEO compensation over past decades to its current high levels. 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 was 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,” and the long-term increase in CEO compensation is not due to managerial power and rent-seeking behavior (contrary to the explanation offered by Bebchuk and Fried [2004], who say the long-term increase in CEO pay is a result of managerial power). One prominent example of the “it’s other professions, too” argument comes from Kaplan (2012a, 2012b). For instance, in the prestigious 2012 Martin Feldstein Lecture, Kaplan claimed:

Over the last 20 years, then, public company CEO pay relative to the top 0.1 percent 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)

And in a follow-up paper for the CATO Institute, published as a National Bureau of Economic Research working paper, Kaplan expanded this point further:

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)

But the argument that CEO compensation is being set by the market for “skills” does not square with the data. 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 there are substantial rents embedded in executive pay, meaning that CEO pay gains are not simply the result of a competitive market for talent but rather reflect the power of CEOs to extract concessions. We draw on and update that analysis to show that CEO compensation grew far faster than compensation of the category of 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 employ Kaplan’s own series on CEO compensation and compare it with the wages of top wage earners, rather than with the household income of the top 0.1 percent as Kaplan did.<sup>4</sup> The wage benchmark seems the most appropriate one since it avoids issues of household demographics—changes in two-earner couples, for instance—and limits the income to labor income (i.e., excluding capital income). We update Kaplan’s series beyond 2010 using the growth of CEO compensation in our own series. This analysis finds, contrary to Kaplan, that the compensation of CEOs has far outpaced that of very highly paid workers, the top 0.1 percent of earners.

**Table 4** shows the ratio of the average compensation of chief executive officers of large firms, the series developed by Kaplan (incorporating stock options realized), to the

average annual earnings of the top 0.1 percent of wage earners based on a series developed by Kopczuk, Saez, and Song (2010) and updated by Mishel and Kroeger (2016). The comparison is presented as a simple ratio and logged (to convert to a “premium,” defined as the relative pay differential between one group and another). Both the ratios and log ratios clearly understate the relative pay of CEOs since CEO pay is a nontrivial share of the denominator, a bias that has probably grown over time simply because CEO relative pay has grown (in other words, if we were able to remove these CEOs’ pay from the broader top 0.1 percent category, the average for the broader group would be lower).<sup>5</sup> For comparison purposes, Table 4 also shows the changes in the gross (not regression-adjusted) college-to-high-school wage premium. This premium, which is simply how much more pay is earned by workers with a college degree relative to workers without one, is also useful because some commentators, such as Mankiw (2013), have asserted that the top 1 percent wage and income growth reflects the general rise of the return to skills as reflected in higher college wage premiums. The comparisons end in 2015 because 2016 data for top 0.1 percent wages are not yet available.

In 2015 CEO pay was 5.33 times the pay of the top 0.1 percent of wage earners, down from 2014 but substantially higher than in 2007. CEO pay relative to the pay of the top 0.1 percent of wage earners in 2015 far exceeded the ratio of 2.63 in 1989, a rise (2.7) equal to the pay of almost three very-high-wage earners. The log ratio of CEO relative pay grew 71 log points using wage earners as the comparison.

Is this a large increase? Kaplan (2012a, 4) concluded that CEO relative pay “has remained relatively constant or declined.” Kaplan (2012b, 14) found that the ratio “remains above its historical average and the level in the mid-1980s.” Kaplan’s historical comparisons are inaccurate, however. **Figure C** puts this in historical context by presenting the ratios displayed in Table 4 back to 1947. The ratio of CEO pay relative to top wage earners in 2015 was 5.33, 2.15 points higher than the historical average of 3.18 (a relative gain of wages earned by the equivalent of 2.15 high-wage earners). As the data in Table 4 show, the increase in the logged CEO pay premium since 1979, and particularly since 1989, far exceeded the rise in the college-to-high-school wage premium that is widely and appropriately considered substantial growth. Mankiw’s claim that top 1 percent pay or top executive pay simply corresponds to the rise of the college-to-high-school wage premium is unfounded (Mishel 2013a, 2013b). Moreover, the data would show an even faster growth of CEO relative pay if Kaplan had built his historical series using the Frydman and Saks 2010 series for the 1980–1994 period rather than the Hall and Liebman 1997 data.<sup>6</sup>

If CEO pay growing far faster than that of other high earners is a test of the presence of rents, as Kaplan has suggested, then we would conclude that today’s top executives receive substantial rents, meaning that if they were paid less there would be no loss of productivity or output. 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. Is it likely that the skills of CEOs in very large firms are so outsized and disconnected from the skills of others that they propel CEOs past most of their cohorts in the top tenth of a percent? No. For everyone else the distribution of skills, as reflected in the overall wage distribution, tends to be much more continuous.

Table 4

## CEO-to-top-0.1-percent and college-to-high-school ratios, 1979–2015

	Ratio		Log ratio	
	CEO compensation to:	College wages to:	CEO compensation to:	College wages to:
	Top 0.1% wage earners	High school hourly wages	Top 0.1% wage earners	High school hourly wages
<b>1979</b>	3.26	1.40	1.183	0.336
<b>1989</b>	2.63	1.58	0.967	0.455
<b>1993</b>	3.05	1.63	1.115	0.488
<b>2000</b>	7.77	1.75	2.050	0.557
<b>2007</b>	4.36	1.76	1.474	0.568
<b>2010</b>	4.85	1.77	1.580	0.574
<b>2013</b>	5.73	1.82	1.745	0.598
<b>2014</b>	5.58	1.80	1.720	0.585
<b>2015</b>	5.33	1.83	1.673	0.602
<b>Change</b>				
<b>1979–2007</b>	1.10	0.36	0.29	0.23
<b>1979–2015</b>	2.06	0.43	0.49	0.27
<b>1989–2015</b>	2.95	0.25	0.71	0.15

**Source:** Authors' analysis of data on top 0.1 percent wages from Mishel and Kroeger 2016 and extrapolation of Kaplan's (2012b) CEO compensation series

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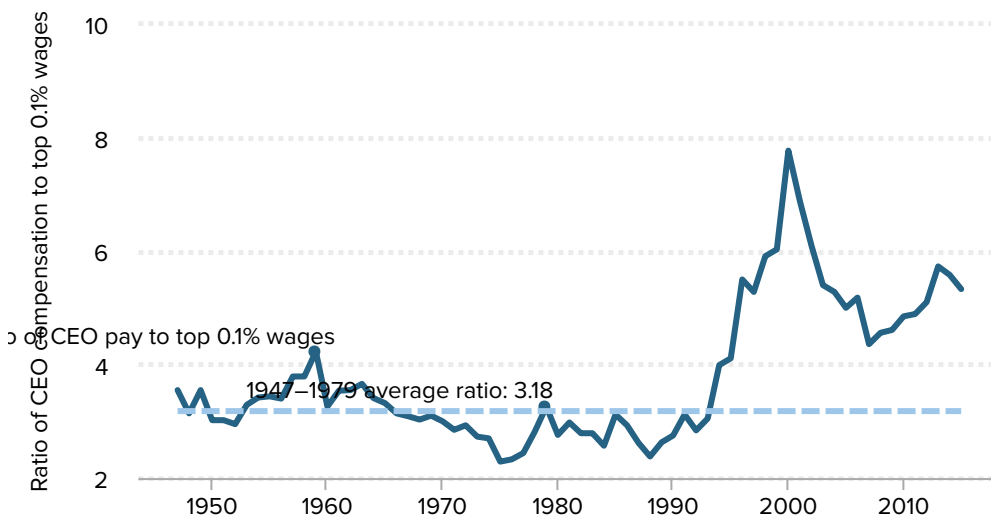
## What about the “average” CEO?

A relatively new critique of studies that examine the pay of CEOs in the largest firms, as we do, is that such efforts are misleading. For instance, American Enterprise Institute scholar Mark Perry (2015) says the samples of CEOs examined by the Associated Press, *The Wall Street Journal*, and EPI “aren’t very representative of the average U.S. company or the average U.S. CEO,” because “the samples of 300–350 firms for CEO pay represent only one of about every 21,500 private firms in the U.S., or about 1/200 of 1 percent of the total number of U.S. firms.” Perry notes, “According to both the BLS and the Census Bureau, there are more than 7 million private firms in the U.S.” Perry considers the pay of the average CEO, \$187,000, to be a much more important indicator.

This is a clever but misguided critique. Amazingly, roughly 16 percent of the CEOs in Perry’s preferred measure are in the *public* sector. And those in the private sector include

Figure C

### Comparison of CEO compensation with top 0.1 percent wages, 1947–2015



Source: Authors' analysis of Kaplan 2012b and Mishel et al. 2012, Table 4.8

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CEOs of religious organizations, advocacy groups, and unions. One wonders why Perry is not critical of the Bureau of Labor Statistics' measure of CEO pay, since BLS reports that there are only 207,660 private-sector CEOs, far short of the 5.7 million there would be if each private firm had one. The shortfall of CEOs in the BLS data is understandable, however, once one recognizes that the average firm has only 20.2 workers (Caruso 2015, Appendix Table 1). The 5.1 million firms with fewer than 19 employees, averaging four employees per firm, probably do not have a CEO. Of the remaining 596,000 firms, apparently 388,000 do not have CEOs either (given that BLS reports only 207,660 private-sector CEOs).

The reason to focus on the CEO pay of the largest firms is that they employ a large number of workers, are the leaders of the business community, and set the standards for pay in the executive pay market and probably in the nonprofit sector as well (e.g., hospitals and universities). No agency reports how many workers work for very large firms. We do know from census data (Caruso 2015, Appendix Table 1) that the 18,219 firms in 2012 with at least 500 employees employed 51.6 percent of all employees and their payrolls accounted for 58.1 percent of total payroll (wages multiplied by employment). County Business Patterns data (U.S. Census Bureau 2012) provide a breakout of the 964 firms (just 0.017 percent of all firms) with at least 10,000 employees; these large firms provide 27.9 percent of all employment and 31.4 percent of all payroll. In other words, the average or median employee works in a larger firm, and the CEO there looks far different than the CEO of the "average U.S. company" in which Perry purports to be interested. This is further confirmed by a new study that reports that the median firm, ranked by employment, has roughly 1,000 workers, while the average firm has about 20 (Song et al. 2015).

Executives and managers compose a large portion of those in the top 1 percent of income and the top 1 percent of wage earners. The analysis of tax returns in Bakija, Cole, and Heim 2012 shows the composition of executives in the households with the highest incomes; our tabulation of American Community Survey data for 2009–2011 shows that 41.2 percent (the largest group) of those heading a household in the top 1 percent of incomes were executives or managers. Thus, we know that highly paid managers are the largest group in the top 1 percent and the top 0.1 percent, measured in terms of either wages or household income, and so there are plenty of good reasons to be interested in the pay of executives of large firms. Moreover, the pay of CEOs in the largest firms has grown multiple times faster than the wages of other very high earners and hundreds of times faster than the wages these CEOs provide to their workers.

## Conclusion

Some 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 percent incomes. In a study of tax returns from 1979 to 2005, Bakija, Cole, and Heim (2010) established that the increases in income among the top 1 and 0.1 percent of households were disproportionately driven by households headed by someone who was either a nonfinancial-sector “executive” (including managers and supervisors and 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 percent’s income share and 36 percent of the top 1 percent’s income share accrued to households headed by a nonfinance executive; another 23 percent for each group accrued to financial-sector households. Together, finance workers and nonfinance executives accounted for 58 percent of the expansion of income for the top 1 percent of households and 67 percent of the income growth of the top 0.1 percent. Relative to others in the top 1 percent, 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 since they do not account for the increased spousal income from these sources.<sup>7</sup>

We have argued that 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. Clifford (2017) describes the Lake Wobegon world of setting CEO compensation that fuels its growth—each firm wants to believe its CEO is above average and therefore needs to be correspondingly remunerated. CEO pay could be reduced and the economy would not suffer any loss of output. Another implication of rising top executive pay is that it reflects income that otherwise would have accrued to others: what the executives earned was not available for broader-based wage growth for other workers. (Bivens and Mishel [2013] explore this issue in depth.)

Average CEO compensation (based on stock options realized) did fall in 2016, as it did in

2015. The decline appears to be driven by a reduction in compensation for the highest-earning CEOs, while the compensation of the bottom 80 percent has kept on growing. It is not yet clear what is driving the falloff in CEO compensation among the highest earners, and it will take a few more years to establish this either as a trend (a continued decline or a leveling off of compensation for the top fifth) or as an anomaly in an ongoing trend of escalating CEO pay.

CEO compensation, despite recent declines, remains historically high. There are policy options for reversing the trend of excessive executive pay and broadening 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. Legislation has also been proposed that would remove the tax break for executive performance pay that was established early in the Clinton administration; by allowing the deductibility of performance pay, this tax change helped fuel the growth of stock options and other similar forms of compensation. 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 anything over the cap, similar to the way baseball team payrolls are taxed when they exceed a cap. Other policies that can 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.

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## Endnotes

1. In 2007, according to the Capital IQ database, there were 38,824 executives in publicly held firms (tabulations provided by Temple University professor Steve Balsam). There were 9,692 in the top 0.1 percent of wage earners.
2. We chose which years to present in the table in part based on data availability, though where possible we chose cyclical peaks (years of low unemployment).
3. Most Fortune 500 companies release annual financial data in early spring, prior to the release of this report. However, we include in our retrospective analyses of past years all data that were released during each calendar year. This creates a bias in our June data, when compared with the consecutive year's release: for both 2013 and 2014 the full year's data show higher CEO compensation than the data available by June. This means that a comparison of data available in June shows a lesser increase when comparing with last year's full data than a comparison with the data that were available at the same time a year earlier. We have analyzed the impact of this bias and found that the vast majority of top firms remain unchanged over the course of the year. However, there is a churn among the firms closer to the cutoff for our sample, i.e., the smaller firms in the sample. Among these firms with lower net annual sales, average CEO compensation tends to increase over the course of the year. Additionally, firms reporting later in the year have tended in recent years to be firms with relatively lower worker compensation levels and therefore have higher CEO-to-worker compensation ratios.
4. We thank Steve Kaplan for sharing his CEO compensation series with us. The series on top 0.1 percent household income that Kaplan compares with is no longer available. Also, as we discuss, the appropriate comparison is to other earners, not to households which could have multiple earners and compositions shifts in the number of earners over time.
5. Temple University professor Steve Balsam provided tabulations of annual W-2 wages of executives in the top 0.1 percent from the Capital IQ database. The 9,692 executives in publicly held firms who were in the top 0.1 percent of wage earners had average W-2 earnings of \$4.4 million. Using Mishel et al.'s (2012) estimates of top 0.1 percent wages, we find that executive wages make up 13.3 percent of total top 0.1 percent 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 percent wages in 2007 was 2.14, but the ratio of executive wages to nonexecutive wages was 2.32. Unfortunately, we do not have data that permit an assessment of the bias in 1979 or 1989. We also do not have information on the number and wages of executives in privately held firms; their inclusion would clearly indicate an even larger bias to the extent their CEO compensation exceeds that of publicly traded firms. The IRS reports there were nearly 15,000 corporate tax returns in 2007 of firms with assets exceeding \$250 million, indicating there are many more executives of large firms than just those in publicly held firms.
6. Kaplan (2012b, 14) notes that the Frydman and Saks series grew 289 percent, while the Hall and Liebman series grew 209 percent. He also notes that the Frydman and Saks series grows faster than the series reported by Murphy (2012).
7. The discussion in this paragraph is taken from Bivens and Mishel 2013.

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