

18-3 The New Tax Law's Impact on Inequality: Minor but Worse if Accompanied by Regressive Spending Cuts

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The centerpiece of the Tax Cuts and Jobs Act (TCJA) of 2017 (H.R. 1) is the reduction in the corporate tax rate from 35 percent to 21 percent. The legislation also includes major changes in taxation of individuals, but these changes expire after 2025.¹ The most important changes to taxes for individuals include a new 20 percent deduction for income from businesses that pass-through earnings to shareholders (subchapter S corporations) or partners to be taxed at their

1. An important exception is the shift to a less generous price index for adjusting tax bracket levels, a change that is permanent.

personal rates rather than at a standard corporate rate; a \$10,000 cap on deductions for state and local income or property taxes; a limit on the deduction for mortgage interest; and a high (doubled) standard deduction that will tend to curb the use of remaining deductions (including those for charity).

The underlying premise of the legislation is that lower corporate taxes will spur growth, with trickle-down wage benefits that spread the resulting economic gains. A major risk of this approach, however, is that the primary consequence will be to increase the degree of inequality in income distribution, potentially leaving those in the lower income groups worse off than before. Two factors increase this risk. First, the personal tax cuts expire after 2025 whereas the corporate tax cuts are permanent. Second, there will be a sizable loss of revenue, and compensating cuts in federal expenditures could wind up being concentrated on benefits otherwise received by lower-income groups.

This Brief uses the estimates of the congressional Joint Committee on Taxation (JCT) to examine the distributional impact of the new tax law. It first examines the change in the Gini coefficient, the foremost summary measure of inequality, that is implied by the JCT's estimates. It then considers the further changes that would occur if there were regressive expenditure cuts applied to make up for the revenue loss (as illustrated using the distributional profile of Medicaid spending). The broad result is that *the direct effect of the legislation on income inequality is relatively minor, but the overall effect could be much more unequal if induced spending cuts were concentrated on programs oriented toward low-income groups.*

EXPECTED DISTRIBUTIONAL IMPACT

The principal reason to expect the TCJA to be regressive is that its primary focus is the cut in corporate taxes, combined with the fact that ownership of corporate shares is highly concentrated. In 2013, the top 1 percent of households held 49.8 percent of the value of stocks and mutual funds, and the next 9 percent of households held 41.2 percent (Wolff 2014, table 7). One should thus expect 90 percent of the gains to shareholders from the corporate tax cut to accrue to the top 10 percent of households. Moreover, the JCT (2013) has estimated that 75 percent of corporate taxation is borne by owners of capital (rather than workers in the form

of lower wages), and this share is 95 percent for pass-through businesses. Overall the strong expectation should be that the TCJA shifts income shares in favor of the top decile through the effect of enhancing after-tax income of capital.

In principle a greater concentration of income because of the wealth effect would not mean that lower income groups would be worse off as a consequence of the new tax law. If there are sizable growth effects, the overhaul could make the lower income groups better off than they otherwise

The Joint Committee on Taxation has estimated the static revenue effects of the Tax Cuts and Jobs Act, and finds a 10-year net revenue loss of \$1.456 trillion. ... Extra revenue from additional growth would leave the net revenue loss at \$1 trillion.

would have been, just not as much better off as would be the outcome for the upper income (and wealth) groups. In practice, however, if the growth impact is modest and if there are substantial cuts in social expenditures induced by the need to compensate for revenue losses, the new law could cause an absolute decline in the incomes of lower-income groups.

Some important features of the TCJA could work in equalizing directions. The caps on deductions for state and local taxes and on the size of mortgages on which interest can be deducted have an adverse effect on high-income households, especially those in high-tax states. However, the cut in the top personal tax rate from 39.6 percent to 37 percent works in the opposite direction. Moreover, the benefit from such deductions were already limited in the past by the alternative minimum income tax.

DISTRIBUTIONAL ESTIMATES BY THE JOINT COMMITTEE ON TAXATION

The congressional JCT has estimated the static revenue effects of the Tax Cuts and Jobs Act, and finds a 10-year net revenue loss of \$1.456 trillion (JCT 2017a). In its macroeconomic analysis of the statute, the JCT finds that extra revenue from additional growth would amount to \$451 billion over this period, leaving the net revenue loss at \$1 trillion (JCT 2017c). The growth effect would place the average level of GDP over the next decade at 0.7 percent higher than in the absence of the legislation (p. 5).

Two leading tax policy centers also place the net revenue loss at about \$1 trillion over 2018–27 after taking account of induced growth and dynamic revenue effects. Researchers

at the Tax Policy Center estimate static revenue losses at \$1.45 trillion, dynamic revenue gains at \$186 billion, and net revenue losses at \$1.27 trillion (Page et al. 2017). The Tax Foundation (2017) estimates that static revenue losses would be \$1.47 trillion over the decade, dynamic revenue gains would be \$448 billion, and net revenue losses would be \$1.02 trillion.²

In contrast, the US Treasury Department has estimated that the dynamic effects of the TCJA together with the growth effects of the administration's planned regulatory, infrastructure, and welfare reform initiatives, would boost average growth to 2.9 percent annually and generate additional revenue amounting to \$1.8 trillion over the decade, more than covering the static revenue losses of \$1.5 trillion.³ However, a large majority of leading economists have been highly skeptical of these estimated large growth and dynamic effects of the overhaul.⁴ The calculations in this study examining the distributional effects of spending cuts needed to offset revenue losses adopt the JCT's more mainstream estimate of \$1 trillion for net revenue losses over the decade.

Table 1 reports the distributional estimates of the JCT for two of the five years it examines (JCT 2017b). These estimates include only the static effects. The results for 2021 are relatively representative for the early part of the horizon. The results in the final year, 2027, are of special significance because they reflect the expiration of the law's changes for personal taxes by that time, with only the corporate tax changes being permanent. Because the Republican legislators' expectation is that the law will be made permanent,

2. As discussed in Cline (2017, appendix C), estimates by these two research groups based on earlier versions of proposed legislation yielded a larger range for net revenue losses over the decade (\$1.3 trillion for the Tax Policy Center versus only \$516 billion for the Tax Foundation). The Tax Policy Center model tends to find that increases in interest rates induced by a larger fiscal deficit curb investment and leave little scope for induced growth effects. The Tax Foundation model assumes there would be no increase in interest rates because of large inflows of capital and therefore yields larger growth effects. The two groups' net revenue loss estimates for the final statute show more convergence than might have been anticipated given these differences in their models.

3. Alan Rappeport and Jim Tankersley, "Treasury Defends Tax Plan Cost with One-Page Analysis," *New York Times*, December 11, 2017. Note that baseline growth in 2018–27 is projected by the Congressional Budget Office at only 1.9 percent (CBO 2017, 21).

4. See the survey by the Booth School of Business available at: <http://www.igmchicago.org/surveys/tax-reform-2> (accessed on January 26, 2018). For a contrary view emphasizing the scope for the tax bill to induce new inflows of foreign investment, see Laurence Kotlikoff and Jack Mintz, "Where Critics of Tax Reform Go Wrong," *Wall Street Journal*, October 17, 2017.

Table 1 Joint Committee on Taxation estimates of distributional impact of the Tax Cuts and Jobs Act (average tax rates, percent)

	2021			2027		
	Previous tax law	New tax law	Change	Previous tax law	New tax law	Change
Less than \$10,000	8.2	8.1	-0.1	4.7	5.1	0.4
\$10,000 to \$20,000	-1.4	-0.8	0.6	-0.8	0.7	1.5
\$20,000 to \$30,000	3.7	4	0.3	4.1	5.1	1
\$30,000 to \$40,000	7.6	7.3	-0.3	7.6	8.3	0.7
\$40,000 to \$50,000	10.9	10.4	-0.5	11	11.5	0.5
\$50,000 to \$75,000	14.7	13.7	-1	14.5	14.6	0.1
\$75,000 to \$100,000	16.8	15.6	-1.2	16.3	16.3	0
\$100,000 to \$200,000	20.9	19.6	-1.3	20.7	20.6	-0.1
\$200,000 to \$500,000	26.5	24.4	-2.1	26.6	26.4	-0.2
\$500,000 to \$1,000,000	31	28.4	-2.6	30.8	30.5	-0.3
\$1,000,000 and over	32.4	30.7	-1.7	32.1	31.7	-0.4
Total, all taxpayers	20.7	19.3	-1.4	20.5	20.5	0

Note: Income ranges at 2017 prices.

Source: JCT (2017b).

the distributional consequences before 2027 remain of some relevance for assessing the longer term.⁵

In 2021, the largest tax reductions would amount to 2.6 percent cuts for household tax units reporting income of \$500,000 to \$1 million.⁶ Tax cuts would be much smaller in lower income groups, and there would be tax increases for households in the \$10,000 to \$30,000 range.⁷ By 2027, there would be tax increases for all households under \$75,000, as previous changes such as a higher and refundable child tax credit expire but the change to price indexation of tax brackets remains in place. More modest tax reductions would persist for the upper brackets.

5. The Senate's Byrd Rule requires that if the "reconciliation" process is used to pass budget legislation (in order to permit a simple majority for passage rather than the three-fifths needed to overcome filibuster), the legislation cannot significantly increase the fiscal deficit beyond a 10-year horizon. The end-2025 expiration of the cuts for individuals but not corporations in the new tax law reflects the political calculus that it will be difficult for even a Democratic president to overcome pressure to extend the individual tax cuts in 2026. See for example Tony Nitti, "Winners and Losers of the Senate Tax Bill," *Forbes*, December 2, 2017.

6. The incomes in table 1 refer to taxpayer units. As discussed later, there are more taxpayer units than households.

7. In an earlier variant in which the JCT imputed an income loss to households that dropped out of enrollment under the Affordable Care Act because of the end to mandated insurance, effective income tax increases for lower income categories by 2027 were much larger. See Heather Long, "Senate tax bill would cut taxes of wealthy and increase taxes on families earning less than \$75,000 by 2027," *Washington Post*, November 16, 2017.

IMPACT ON THE LORENZ CURVE AND GINI COEFFICIENT

The estimates reported by the JCT (2017b) can be used to identify the impact of the legislation on two classic measures of inequality: the Lorenz curve and the Gini coefficient. The Lorenz curve shows the cumulative percent of households on the horizontal axis and the cumulative percent of income on the vertical axis. The diagonal of the Lorenz diagram represents complete equality in the distribution. The Gini coefficient is calculated by taking the ratio of the area between the diagonal and the Lorenz curve to the entire area under the diagonal.⁸

The relevant income measure is after-tax income. As a first step, it is useful to calculate the percent change in after-tax income for each income class, as a consequence of the TCJA. Although the data reported in JCT (2017b) do not directly show total income and average income in each class, these measures can be inferred from the data reported on change in total taxes, average tax rates, and number of reporting households in each class.⁹ Table 2 reports these

8. If all income were received by a single household, these two areas would be identical and the Gini coefficient would equal unity, representing complete inequality.

9. For example, for households reporting income of \$75,000 to \$100,000, the JCT (2017b) indicates baseline taxes of \$280 billion in 2019, and a baseline average tax rate of 17 percent, so total income in the class is $280/0.17 = \$1.65$ trillion. The total number of reporting households in the category is 17.84 million, so the average income in the class is \$92,000. After-tax income is then \$1.65 trillion - \$280

Table 2 Percent change in after-tax income from baseline

	2019	2021	2023	2025	2027
Less than \$10,000	0.57	0.08	-0.33	-0.33	-0.36
\$10,000 to \$20,000	0.52	-0.54	-0.78	-0.66	-1.51
\$20,000 to \$30,000	0.55	-0.33	-0.38	-0.43	-1.14
\$30,000 to \$40,000	0.99	0.34	0.03	-0.02	-0.67
\$40,000 to \$50,000	1.22	0.58	0.32	0.24	-0.54
\$50,000 to \$75,000	1.51	1.14	0.84	0.74	-0.20
\$75,000 to \$100,000	1.64	1.38	1.01	0.94	0.05
\$100,000 to \$200,000	1.98	1.68	1.18	1.06	0.12
\$200,000 to \$500,000	3.24	2.77	1.95	1.81	0.21
\$500,000 to \$1,000,000	4.20	3.48	2.10	1.89	0.40
\$1,000,000 and over	2.84	2.13	0.65	0.58	0.47
Total, all taxpayers	2.10	1.63	1.01	0.92	-0.02

Note: Income ranges at 2017 prices.

Sources: JCT (2017b) and author's calculations.

Table 3 Impact on the Lorenz curve for after-tax income

	2021			2027		
	Cumulative percent of households	Cumulative percent of income		Cumulative percent of households	Cumulative percent of income	
		Base	New		Base	New
Less than \$10,000	10.8	0.58	0.57	10.2	0.61	0.61
\$10,000 to \$20,000	22.4	3.23	3.16	21.2	3.10	3.06
\$20,000 to \$30,000	34.5	7.61	7.46	33.3	7.37	7.28
\$30,000 to \$40,000	43.4	11.94	11.74	42.1	11.57	11.45
\$40,000 to \$50,000	50.8	16.45	16.19	49.8	16.18	16.04
\$50,000 to \$75,000	66.2	28.74	28.43	65.2	28.25	28.09
\$75,000 to \$100,000	76.3	39.85	39.51	75.7	39.59	39.44
\$100,000 to \$200,000	93.7	68.64	68.31	93.7	68.59	68.48
\$200,000 to \$500,000	99.0	85.22	85.08	99.0	85.05	84.98
\$500,000 to \$1,000,000	99.7	89.87	89.81	99.7	89.57	89.51
\$1,000,000 and over	100	100	100	100	100	100

Note: Income ranges at 2017 prices.

Sources: JCT (2017b) and author's calculations.

calculated changes in after-tax income by income group for the five years reported by the JCT.

With estimates of after-tax income in each class for both the baseline and under the new law, and knowing the number of households in each class, it is then possible to calculate the points along the Lorenz curve before and after the new tax law, as shown in table 3 (“base” and “new,” respectively) for the years 2021 and 2027.

The estimated Lorenz curves can then be used to calculate the corresponding Gini coefficients.¹⁰ These estimates are shown in table 4, for each of the five years reported in the distributional estimates of the JCT (2017b).

10. With w_i as the cumulative percent households up through class i and z_i as the corresponding cumulative percent of total income, for income group i the area under the Lorenz curve is comprised of a rectangle with area $z_{i-1} \times (w_i - w_{i-1})$ plus a triangle with base = $(w_i - w_{i-1})$ and height = $(z_i - z_{i-1})$. The area between the Lorenz curve and the diagonal is then 5,000 (one-half of 100 vertical x 100 horizontal) minus the estimated total area under the Lorenz curve. This area between the Lorenz curve and the diagonal is then divided by the full area under the diagonal (5,000) to obtain the Gini coefficient.

billion = \$1.37 trillion. The change in taxes under the new law is -\$22.4 billion, raising after-tax income to \$1.392 trillion, an increase of 1.64 percent.

Table 4 Gini coefficient before and after the TCJA

	Baseline	New	Change
2019	0.5166	0.5202	0.0036
2021	0.5173	0.5213	0.0039
2023	0.5138	0.5164	0.0026
2025	0.5103	0.5127	0.0024
2027	0.5118	0.5137	0.0019

TCJA = Tax Cuts and Jobs Act

Sources: JCT (2017b) and author's calculations.

The baseline Gini coefficients for after-tax income distribution across tax units are high, at about 0.52. In contrast, the Census Bureau estimates that the Gini coefficient for before-tax money of households was 0.481 in 2016 (Census 2017, 31), even though one would expect the after-tax distribution would be more equal than the before-tax distribution. In part this paradox may reflect the tendency of high income households to underreport income in household surveys, the basis for the Census estimates (Census 2017, 21).¹¹ However, the divergence also reflects the fact that there are considerably more “taxpayer units” in the JCT estimates (177 million in 2019) than there are households in the Census data (126 million in 2016).¹² By implication, the tax data include numerous cases of more than one return per household and thus numerous low-income returns (for example, for part-time workers).

Subject to the caveat that table 4 may somewhat overstate both the baseline and new Gini coefficients after the tax overhaul, the overall result in these estimates is that *the TCJA by itself has only a small impact on inequality*. Changes in the Gini coefficient are in the expected direction—they are all increases against the baseline. However, the changes are small, ranging from about 0.002 to 0.004.

To place the changes in perspective, consider the magnitudes of the differences between the Gini coefficients for countries typically considered to have among the most equal or the most unequal income distributions among major economies. The Organization for Economic Cooperation and Development (OECD 2018) and World Bank (2017) provide estimates of Gini coefficients by country for disposable cash income (after taxes and transfers, 2015 data). Representing a benchmark for equal distribution, the three largest Nordic economies (Denmark, Norway, and Sweden)

show an average Gini coefficient of 0.27 for this income concept. As a comparable gauge for unequal distributions, the average corresponding Gini coefficient for Brazil and Mexico is 0.48. (For its part, the United States shows a Gini coefficient of 0.40 for disposable cash income in the OECD and World Bank data sets.) On this basis, the difference in the Gini coefficient between high equality and high inequality for major economies amounts to 0.21 for disposable cash income, which would correspond to about 0.25 for before-tax income.¹³ An increment of 0.004 in the after-tax Gini (the top of the range estimated for the tax bill in table 4) would amount to traversing only 2 percent of this full span.

In terms of recent US experience, a rise in the Gini coefficient by 0.004 would not be large but would also not be negligible. From 2007, before the financial crisis and the Great Recession, to 2016, the Gini coefficient for US households as measured by the Census Bureau rose from 0.463 to 0.481 (Census 2017, 31). A further increase of 0.004 would therefore comprise an additional rise about one-fifth the size of the rise already experienced since 2007.

RESULTS BY DECILE AND QUINTILE

The Lorenz curves estimated here (and shown for 2021 and 2027 in table 3) can be used to obtain the corresponding cumulative income shares at intervals of deciles, quintiles, or other standard quantile increments. Appendix A shows the method of linear interpolation used for this purpose. Table 5 shows the resulting Lorenz curve data for deciles (and separately the top 1 percent), for both the baselines and the new distribution after the TCJA. Once again, the overall result shows the distributional outcome is relatively insensitive to the direct effect of the tax changes. For example, in 2021, the bottom 70 percent of reporting tax units account for 32.81 percent of total after-tax income in the baseline, compared with 32.49 percent after the new tax law—a reduction but only a small one.

The corresponding percent changes in after-tax incomes for each decile and quintile are shown in table 6 and for each quintile in figure 1.

The percent changes in after-tax incomes by quintile provide intuitive confirmation of the results for the Gini coefficient: The tax bill by itself is only slightly regressive. By 2027, after-tax income falls from the baseline by 1.26 percent for the bottom quintile but increases by 0.24 percent for the top quintile, an unequalizing change but not an extreme one.

11. When Hellebrandt and Mauro (2016; 45, 73) adjust household survey data for the discrepancy from mean incomes implied by consumption data in the national accounts, they find that the result is to boost the Gini coefficient for the United States in 2013 from 0.403 to 0.537.

12. JCT (2017b, 7); Census (2017, 23).

13. Based on the before-tax Gini estimated by Census (2017) for the United States (0.48) versus the disposable-income Gini (0.40 in the OECD-World Bank data); that is, $0.21 \times (0.48/0.40) = 0.25$.

Table 5 Cumulative percent share of after-tax income by decile: Before and after the TCJA

	2019	2021	2023	2025	2027
Percentile	Baseline				
10	0.52	0.54	0.55	0.58	0.60
20	2.75	2.68	2.79	2.93	2.83
30	6.06	5.97	6.17	6.32	6.20
40	10.36	10.26	10.51	10.67	10.57
50	16.02	15.93	16.22	16.33	16.33
60	23.81	23.74	24.05	24.19	24.14
70	32.82	32.81	33.19	33.35	33.40
80	45.71	45.76	46.17	46.36	46.50
90	62.30	62.27	62.51	62.62	62.62
99	84.88	84.91	85.00	85.05	85.00
100	100	100	100	100	100
	New				
10	0.51	0.53	0.55	0.58	0.60
20	2.71	2.63	2.74	2.88	2.79
30	5.97	5.85	6.07	6.23	6.13
40	10.21	10.08	10.37	10.53	10.46
50	15.82	15.68	16.03	16.15	16.20
60	23.57	23.45	23.85	24.00	23.99
70	32.53	32.49	32.98	33.15	33.24
80	45.38	45.43	45.97	46.18	46.36
90	61.95	61.94	62.34	62.46	62.50
99	84.71	84.77	84.99	85.04	84.92
100	100	100	100	100	100

TCJA = Tax Cuts and Jobs Act

Sources: JCT (2017b) and author's calculations.

POTENTIALLY REGRESSIVE EXPENDITURE CUTS

The scope for a regressive impact of the new tax law becomes much larger once one considers possible scenarios for recovering lost revenue. It is useful to consider the consequences of spending cuts distributed proportionally the same as one major social safety-net program: Medicaid. This illustration is neither extreme nor arbitrary, considering that the House Republican leadership has already specifically mentioned healthcare and anti-poverty programs as areas of public spending that will need to be cut.¹⁴

In comparison to the \$1 trillion revenue shortfall over the coming decade estimated by the Joint Committee on Taxation, total spending on Medicaid over the decade is projected at \$5.2 trillion (CBO 2017, 14). Suppose, then,

14. Jeff Stein, "Ryan says Republicans to target welfare, Medicare, Medicaid spending in 2018," *Washington Post*, December 6, 2017.

Table 6 Percent change in after-tax income by decile, quintile, and top 1 percent

	2019	2021	2023	2025	2027
Decile					
0-10	0.57	0.08	-0.33	-0.33	-0.36
10-20	0.52	-0.53	-0.78	-0.66	-1.51
20-30	0.55	-0.36	-0.43	-0.46	-1.17
30-40	0.82	0.09	-0.11	-0.14	-0.80
40-50	1.15	0.52	0.25	0.19	-0.56
50-60	1.49	1.11	0.82	0.74	-0.20
60-70	1.57	1.26	0.92	0.85	-0.06
70-80	1.80	1.53	1.09	1.00	0.09
80-90	1.98	1.68	1.18	1.06	0.12
90-99	2.89	2.48	1.73	1.61	0.18
99-100	3.27	2.55	1.10	0.98	0.45
Total	2.10	1.63	1.01	0.92	-0.02
Quintile					
0-20	0.53	-0.41	-0.69	-0.59	-1.26
20-40	0.70	-0.11	-0.25	-0.28	-0.96
40-60	1.35	0.86	0.58	0.51	-0.35
60-80	1.70	1.42	1.02	0.94	0.03
80-100	2.72	2.26	1.39	1.27	0.24
Top 1 percent	3.27	2.55	1.10	0.98	0.45

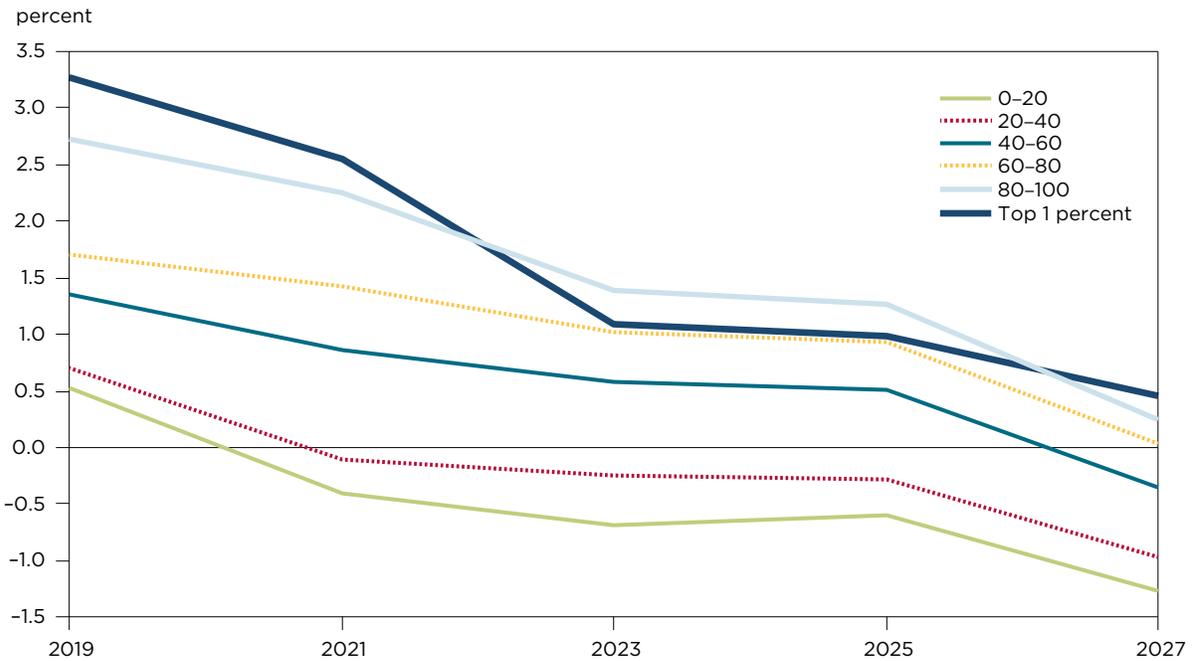
Sources: JCT (2017b) and author's calculations.

that Congress decides to make the \$1 trillion spending cut in Medicaid, shrinking it by about one-fifth from baseline, or in other social spending with a distributional profile similar to that of Medicaid. Table 7 and figure 2 show the distributional consequences of such a fiscal strategy, based on the TCJA's impact for 2027 (as estimated in table 6).

The calculations in table 7 assume that the spending cut amounts to \$100 billion annually, to accumulate to \$1 trillion over a decade. Based on estimates by Kaestner and Lubotsky (2016), about 60 percent of Medicaid spending goes to households in the bottom quintile, and another 24 percent goes to households in the second quintile. Their estimates by quintile are shown in the third column of the table. The fourth column repeats the percent change in after-tax income from the tax overhaul alone, from table 6. The fifth column shows the additional percent change in after-tax income when the \$100 billion annual spending cut is allocated to each quintile in accordance with the Medicaid distribution in the third column.¹⁵ The final column shows the combined impact of the new tax law and the spending

15. For this calculation, the 2027 income levels in each class as derived from JCT (2017b) are deflated back to mid-decade (2022) levels by dividing by 1.1, assuming annual inflation of 2 percent.

Figure 1 Percent change in after-tax income by quintile and the top 1 percent



Sources: JCT (2017b) and author’s calculations.

Table 7 Distributional impact of the TCJA with offsetting spending cuts in Medicaid

Quintile	Medicaid spending per household ^a	Percent of total	Percent change in after-tax income		
			TCJA	Spending cut	Combined
0-20	3,305	59.8	-1.26	-13.66	-14.74
20-40	1,332	24.1	-0.96	-2.00	-2.94
40-60	554	10.0	-0.35	-0.47	-0.82
60-80	232	4.2	0.03	-0.12	-0.09
80-100	107	1.9	0.24	-0.02	0.22
Top 1 percent	0	0	0.45	0.00	0.45

TCJA = Tax Cuts and Jobs Act

a. In 2012 dollars.

Sources: Kaestner and Lubotsky (2016, 68) and author’s calculations.

cuts as a percent change from baseline after-tax income. For the bottom quintile, there is a reduction in after-tax income by nearly 15 percent, and the cut for the second quintile is also substantial at almost 3 percent. In contrast, the top quintile continues to have net gain (0.22 percent), and the gain for the top 1 remains intact (at 0.45 percent).

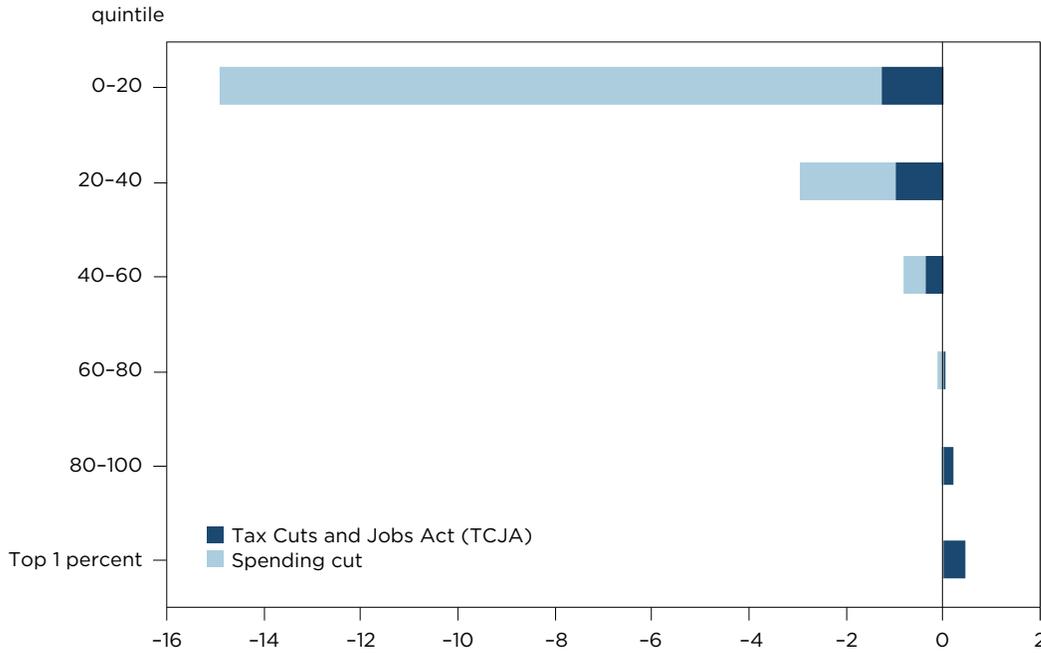
The corresponding impact on the Gini coefficient is shown in table 8.¹⁶ The table also reports estimated results

for the 90/10 ratio of income at the 90th percentile to that at the 10th percentile. Inclusion of the regressive spending cuts causes the change in the Gini coefficient from the baseline to be more substantial. Whereas the TCJA by itself raises the Gini coefficient by 0.0019 from the baseline for after-tax income, inclusion of the regressive spending cuts boosts this

top percentile) rather than specific income ranges for the observations on the Lorenz curve, reflecting the presence of detail on the top 0.3 percent of households in the table 4 estimates.

16. The baseline Gini for 2027 is slightly smaller in table 8 than in table 4 because of the use of deciles (and the

Figure 2 Percent change in after-tax income from the TCJA and offsetting spending cuts following Medicaid distribution profile, by quintile



Sources: Kaestner and Lubotsky (2016, 68) and author’s calculations.

Table 8 After-tax Gini coefficients and 90/10 ratios: Baseline, TCJA, and TCJA with spending cuts using Medicaid distributional profile

	Gini coefficient	90/10 ratio
Baseline (2027)	0.5017	12.53 ^a
With TCJA (A)	0.5036	12.72
With TCJA plus spending cuts (B)	0.5100	14.73
Change from baseline: A	0.0019	0.19
Change from baseline: B	0.0084	2.20

TCJA = Tax Cuts and Jobs Act

a. For households per Census (2017).

Sources: Author’s calculations and Census (2017).

impact to 0.0084. An increase of the Gini coefficient by this amount would represent *a further increase in US inequality by about one-half of the increase already experienced from 2007 to 2016* (figure 3).¹⁷

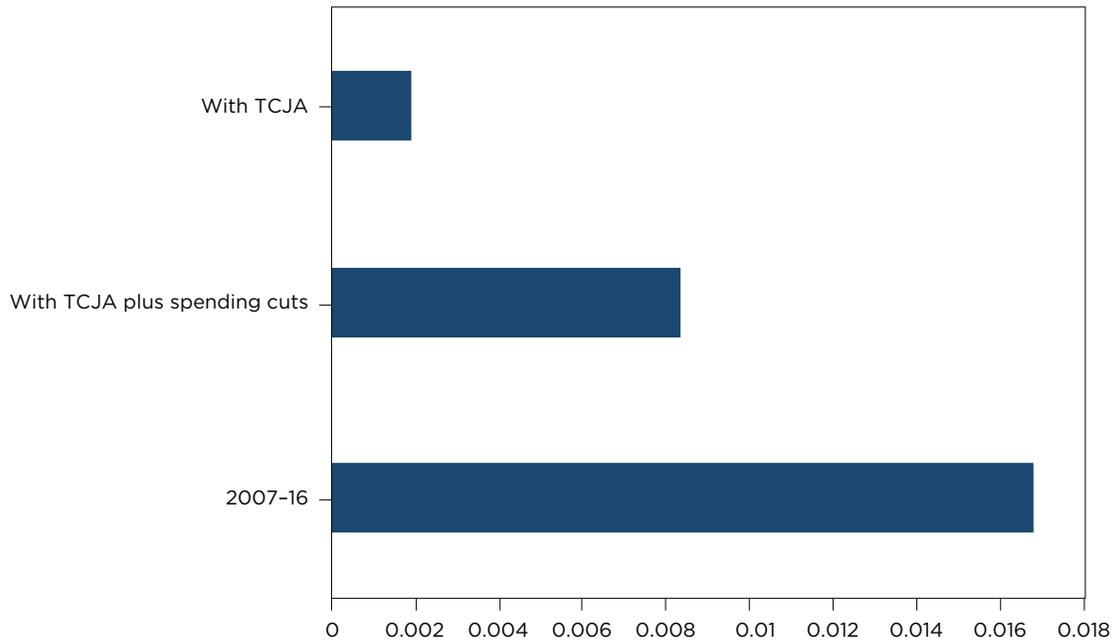
For the 90/10 ratio, table 8 shows the actual Census Bureau estimate for households in 2016 as the baseline. The corresponding ratios for the TCJA and the combined TCJA

and spending-cut scenarios are then calculated as follows. From table 7, the percent changes in after-tax income are known for the first and fifth (top) quintiles. Considering that the midpoints of these quintiles are respectively the 10th and 90th percentiles, the percentage changes for the two quintiles provide an approximation of the percent changes at the 10th and 90th percentiles. These percent changes then provide the basis for estimating the percent change in the 90/10 ratio. This percent change is modest in the TCJA only scenario, amounting to an increase of 1.52 percent. However, it is much more substantial in the scenario also incorporating the regressive spending cut, in which *the 90/10 ratio rises by 17.55 percent*. These percent changes are then applied to the baseline (also 2016 data from Census) ratio to obtain the 90/10 income ratios for the two scenarios for 2027.¹⁸ The greater sensitivity to the spending cuts shown by the 90/10

17. That is: $0.0084 / (0.481 - 0.463) = 0.47$. This comparison does not adjust for the initial discrepancy between the tax-unit Gini and the household income Gini (about 0.52 versus 0.48, respectively). Such an adjustment would reduce the increment to be compared from 0.84 to 0.78 ($= 0.84 \times [0.48 / 0.52]$), leaving the conclusion unchanged in qualitative terms.

18. For example, for case “B,” the new 90/10 ratio is calculated as: $12.53 \times (1.0022 / 0.8526)$ based on table 7. The more direct approach of using the 90th and 10th percentile incomes implied in the JCT (2017b) data is less reliable because the absolute level of the 90/10 ratio is considerably higher in these data than in the Census data, standing at 18.9 in 2019 instead of the base 12.53 used in table 8. The idiosyncrasy of greater concentration in the tax unit data than in the population household data, discussed above, thus appears to have a considerably larger effect on the 90/10 ratio than on the Gini coefficient.

Figure 3 Change in after-tax Gini coefficient from the TCJA combined with spending cuts following Medicaid distributional profile



TCJA = Tax Cuts and Jobs Act
Sources: Author's calculations and Census (2017).

ratio than by the Gini coefficient reflects the concentration of the income loss in the lower tail of the distribution.

In the case including regressive spending cuts, the 90/10 ratio would rise from 12.53 to 14.73. In comparison, the 90/10 ratio rose from 11.18 to 12.53 from 2007 to 2016 (Census 2017, 31). The increment of 2.2 would amount to 18 percent, much larger than the 12 percent increase in the 90/10 ratio from 2007 to 2016, even assuming no further upward drift in this measure of inequality from other sources.

COMPARISON TO THE URBAN-BROOKINGS ESTIMATES

Researchers at the Urban-Brookings Tax Policy Center have similarly examined the distributional consequences of the new tax law after incorporating the effect of spending cuts needed to recover lost revenue (Gale et al. 2017). Their estimates refer to the earlier version passed by the House. They find that if needed spending cuts were allocated equally (in absolute terms) across all households, for 2018 the resulting net changes in after-tax income would be –8.1 percent for the bottom quintile, –2.6 percent for the second quintile, –0.6 percent for the third quintile, but +0.4 percent for the fourth quintile and +1.4 percent for the fifth quintile. For 2027, the corresponding estimates would be –4.3 percent, –1.8 percent, –0.7 percent, 0 percent, and +1.1 percent

(pp. 20–21). Qualitatively these results are similar to those obtained here. The larger net loss for the bottom two quintiles in 2027 indicated in table 7 reflect the even more regressive structure of the Medicaid spending profile used here.

IMPLICATIONS FOR ALTERNATIVE FISCAL ADJUSTMENTS

There are two broad alternatives to cutting spending on programs oriented toward the poor: cutting spending areas that are more neutrally (or, especially, regressively) distributed and increasing upper income tax rates above their levels prior to the new tax law. If important parts of the cuts for individuals were to be made permanent after 2025 (as intended by the GOP legislators), the needed non-regressive spending cuts and additional taxes would be even greater.

Identifying candidates for regressive tax cuts that should not be reinstated after their expiration date is easier than identifying areas of regressive public spending that could be cut. A prime example is the tax cut for *pass-through* entities. The call for continuing such a cut in order to maintain competitiveness with regular (subchapter C) corporations, whose cuts are permanent, is misguided because it ignores the fact that shareholders of C corporations are taxed once again at the personal level when they receive dividends. The simplest recourse for pass-through entities that consider themselves unduly disadvantaged if they do not receive a cut is to reorga-

nize as subchapter C corporations.¹⁹ The revenue loss to the new 20 percent deduction on pass-through income in new legislation amounts to \$249 billion over 8 years, accounting for nearly one-third of the annual net revenue loss of \$100 billion that would need to be offset.²⁰

The tax overhaul's doubling of the amount exempted from the estate tax is a second case of a regressive provision that would appropriately be allowed to expire. This measure will cost about \$11 billion annually by 2024–25. Other prime candidates for allowing full expiration would be the cut in the top personal rate from 39.6 percent to 37 percent and the increase in the ceiling for deductions before the alternative minimum tax applies.

More equitable areas for spending cuts than Medicaid would include Medicare. The share of Medicare spending is 13.3 percent for the top quintile versus 19.5 percent for the bottom quintile, so spending cuts in Medicare would be considerably less regressive than cuts in Medicaid (where the corresponding spending shares are 1.9 percent versus 59.8 percent; Kaestner and Lubotsky 2016, 68). Both Medicaid and Medicare are in the category of mandatory spending. In the area of discretionary spending, expenditures over 2018–27 are projected at \$6.8 trillion for defense and \$6.7 trillion for nondefense (CBO 2017, 17). The distribution of such discretionary spending as defense and infrastructure can broadly be seen as proportional to income: neither progressive nor regressive. Obtaining half of the \$100 billion or so in annual savings needed to offset the TCJA's losses would imply cuts of 3.6 percent in discretionary spending (both defense and nondefense).²¹

In contrast, an even more regressive area for spending cuts than Medicaid would be food stamps. The Supplemental Nutrition Assistance Program (SNAP) provides about \$80 billion annually in support of food purchases by families with incomes below 130 percent of the poverty line. The CBO (2015, 1) reports that 85 percent of spending on SNAP goes to families with incomes below the poverty line (which stood at about \$20,000 in 2015), and that these benefits raise the income of participating households by an average of 36 percent. With the lowest quintile's share of SNAP benefits close to 100 percent compared to about 60 percent for its share of Medicaid benefits (table 7), focusing spending cuts

on food stamps would be even more regressive than focusing cuts on Medicaid.²²

Regarding new taxes, the most socially efficient would be a tax on carbon dioxide emissions, a “Pigouvian” tax on the external diseconomy of induced climate change. At the beginning of 2017, the Environmental Protection Agency estimated the social cost of carbon dioxide emissions at \$43 per ton (EPA 2017).²³ Annual US emissions from fossil fuels amounted to 5.2 billion tons of carbon dioxide in 2014 (CDIAC 2017). The potential revenue would thus amount to about \$225 billion. If the net revenue were only one-fourth this large (for example, because of difficulty of collection in some sectors of the economy, and/or compensating credits for low-income households or economic development programs in coal-producing regions), there would still be \$56 billion or so in net revenue, covering a bit more than half of the annual net revenue loss from the new tax law. However, the Trump administration has cut the EPA's estimate of the social cost of carbon to a small fraction of the agency's early-2017 estimate (reducing the maximum estimate to \$6 per ton), apparently by including only domestic damages, even though US emissions contribute to global effects (and the United States would not want other countries to exclude nondomestic damages in their corresponding calculations).²⁴ A sea change in the administration's policy diagnosis of climate change would be necessary before it would propose this source of revenue.

CONCLUSION

The new tax law is already somewhat regressive, but only mildly so. By 2027, households with incomes less than \$75,000 would have reductions in after-tax income by 0.2 to 1.5 percent, whereas households with income above \$500,000 would have increases in after-tax income by 0.4 to 0.5 percent. Even so, overall inequality as measured by the Gini coefficient would rise only slightly.

However, if the \$1 trillion in net revenue loss from the bill estimated by the Joint Committee on Taxation were to be offset by spending cuts with a regressive distributional profile, the overall effect on inequality would be much worse. Using the distributional profile of Medicaid spending, the calcula-

19. For a discussion of the dubious case for the new 20 percent deduction given to pass-through entities by the TCJA, see Marr et al. 2018.

20. This amount represents gross losses of \$388 billion over this period from the 20 percent deduction, as partially offset by new revenue from disallowance of active pass-through losses in excess of \$500,000 (joint filers). JCT (2017a).

21. \$50 billion/(\$13.7 trillion/10).

22. Census (2017, 31) places household income at the 20th percentile at \$24,000 for 2016. With 85 percent of SNAP spending going to families below \$20,000, and with the cutoff for food stamps at \$26,000 (130 percent of \$20,000), practically the entirety of SNAP spending goes to the bottom quintile.

23. The EPA estimate was \$36 per ton at 2007 prices, and cumulative consumer price inflation from 2007 to 2017 was 18.7 percent (BLS 2018).

24. “The EPA is rewriting the most important number in climate economics,” *Economist*, November 16, 2017.

tions here find that the overall effect by 2027 would be to reduce after-tax net income by about 15 percent for the lowest quintile, 3 percent for the second quintile, and 1 percent for the middle quintile, while leaving a net gain of about 0.2 percent for the top quintile. By 2027 the rise in the Gini coefficient would be about four times as large as that from the TCJA alone, and would amount to about one-half of the rise already experienced from 2007 to 2016. A more sensitive

measure of inequality, the 90/10 ratio of income at the 90th percentile to that at the 10th percentile, would increase by almost 18 percent, larger by half than the 12 percent increase that occurred from 2007 to 2016. Policymakers concerned about the TCJA's distributional consequences should ensure that spending cuts (or new tax increases) undertaken in the future to offset the new tax law's net revenue losses not be regressive in their distributional impact.

REFERENCES

- BLS (Bureau of Labor Statistics). 2018. *CPI-All Urban Consumers (Current Series)*. Washington (January).
- CBO (Congressional Budget Office). 2015. *The Effects of Potential Cuts in SNAP Spending on Households with Different Amounts of Income*. Washington (March).
- CBO (Congressional Budget Office). 2017. *An Update to the Budget and Economic Outlook: 2017 to 2027*. Washington (June).
- CDIAC (Carbon Dioxide Information Analysis Center). 2017. *Total CO₂ Emissions by Country*. Available at <http://cdiac.ess-dive.lbl.gov/trends/emis/top2014.tot> (accessed on January 10, 2018).
- Census (US Bureau of the Census). 2017. *Income and Poverty in the United States: 2016*. Current Population Reports. Washington (September).
- Cline, William R. 2017. *Estimates of Fundamental Equilibrium Exchange Rates, November 2017*. PIIIE Policy Brief 17-31. Washington: Peterson Institute for International Economics.
- EPA (Environmental Protection Agency). 2017. *The Social Cost of Carbon*. Washington (January).
- Gale, William, Surachai Khitatrakun, and Aaron Krupkin. 2017. *Winners and Losers After Paying for the Tax Cuts and Jobs Act*. Washington: Urban Institute and Brookings Institution Tax Policy Center (December).
- Hellebrandt, Tomáš, and Paulo Mauro. 2016. *World on the Move: Consumption Patterns in a More Equal Global Economy*. Policy Analyses in International Economics 105. Washington: Peterson Institute for International Economics.
- Joint Committee on Taxation. 2013. *Modeling the Distribution of Taxes on Business Income*. Report No. JCX-14-13 (October). Washington.
- JCT (Joint Committee on Taxation). 2017a. *Estimated Budget Effects of the Conference Agreement for H.R.1, the "Tax Cuts and Jobs Act"*. JCX-67-17. Washington (December 18).
- JCT (Joint Committee on Taxation). 2017b. *Distributional Effects of the Conference Agreement for H.R.1, the "Tax Cuts and Jobs Act."* JCX-68-17. Washington (December 18).
- JCT (Joint Committee on Taxation). 2017c. *Macroeconomic Analysis of the Conference Agreement for H.R.1, the "Tax Cuts and Jobs Act."* JCX-69-17. Washington (December 22).
- Kaestner, Robert, and Darren Lubotsky. 2016. Health Insurance and Income Inequality. *Journal of Economic Perspectives* 30, no. 2 (Spring): 53-78.
- Marr, Chuck, Chye-Ching Huang, Brandon Debot, and Guillermo Herrera. 2018. *Republican Leadership Tax Plan's Pass-Through Tax Break Would Provide Massive Windfall to the Wealthy*. Washington: Center on Budget and Policy Priorities (November).
- OECD (Organization for Economic Cooperation and Development). 2018. Income Inequality. Available at <https://data.oecd.org/inequality/income-inequality.htm> (accessed on January 8, 2018).
- Page, Benjamin R., Joseph Rosenberg, James R. Nunns, Jeffrey Rohaly, and Daniel Berger. 2017. *Macroeconomic Analysis of the Tax Cuts and Jobs Act*. Washington: Tax Policy Center (December).
- Tax Foundation. 2017. *Preliminary Details and Analysis of the Tax Cuts and Jobs Act*. Washington: Tax Foundation (December).
- Wolff, Edward N. 2014. *Household Wealth Trends in the United States, 1962-2013: What Happened Over the Great Recession?* NBER Working Paper 20733. Cambridge, MA: National Bureau of Economic Research (December).
- World Bank. 2017. World Development Indicators: Gini Index. Available at <https://data.worldbank.org/indicator/SI.POV.GINI> (accessed on January 8, 2018).

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APPENDIX A

ESTIMATING STANDARDIZED INCOME DISTRIBUTION QUANTILES FROM A LORENZ CURVE BASED ON SPECIFIED INCOME RANGES

Survey data on household income typically report the number of households with incomes lying within each of several specified ranges. These ranges tend to be round-number dollar amounts, such as \$10,000–\$20,000 or \$50,000–\$75,000. There is typically an open-ended top range. Such data can be used to construct a piece-wise Lorenz curve depicting cumulative percent of households (x-axis) and cumulative percent of income (y-axis), with the slope of the curve linear for each piece corresponding to the income range in question. Each of these slopes will be successively steeper than in the range before.

For comparative analytical purposes, it is typically desirable to know the corresponding Lorenz curve points at standardized quantiles (such as 20 percent of households, 40 percent of households, etc., for distribution by quintiles). For each standardized quantile, the cumulative percent of households is known by definition. The task is to estimate the corresponding percent of income that would be shown on the Lorenz curve obtained from the underlying data by a specified income range.

Let w_i be the cumulative percent of households at the top of income range i , and z_i the corresponding cumulative percent of income. Let λ_i be the ratio of the percent of total income in range i to the percent of households in the range. (Note that this ratio also tells the ratio of average income in the bracket in question to average income for the whole population.) Then:

$$\lambda_i = \frac{z_i - z_{i-1}}{w_i - w_{i-1}} \quad (1)$$

Now suppose the desire is to estimate the points on the Lorenz curve at standardized quantile points. Define these as “ j ” (for example, $j = 1, 5$ for quintiles, or 1, 10 for deciles). Define the following notation linking the observation ranges to the quantile ranges: $i(j)$ is the dataset range i at which the cumulative households at the ceiling are less than but the closest possible to the cumulative households at the floor of quantile j . Let y and x be the counterparts for w and z when referring to cumulative households or income for the quantiles as opposed to the dataset ranges. Then linear approximation gives the following result for the estimated cumulative percent of income for quantile j :

$$y_j = z_{i(j)} + \lambda_{(i+1)(j)}(x_j - w_{i(j)}) \quad (2)$$

If the first data class has a larger percent of households than the first desired quantile, a special interpolation is needed.²⁵ Similarly, if in some ranges the previous cumulative household w is much more distant from the target quantile x , special interpolation downward from the next Lorenz curve data observation to the desired quantile may be more appropriate than the upward interpolation in equation 2.

25. Thus, if $x_j > w_i$, then $y_j = z_i [x_j/w_i]$.