

TAX POLICY CENTER
URBAN INSTITUTE & BROOKINGS INSTITUTION

THE TCJA: WHAT MIGHT HAVE BEEN

Robert McClelland, Daniel Berger, Alyssa Harris, Chenxi Lu, and Kyle Ueyama

March 26, 2019

ABSTRACT

The Tax Cuts and Jobs Act was passed into law on a dramatically accelerated schedule. That speed and the enormous scope of the TJCA and its individual elements suggests that alternatives may have been overlooked. The consequences of a proposed change in tax law are usually estimated with a microsimulation model, but analyzing the large number of possible alternatives to each of the many interconnected elements of the TCJA requires numerous separate estimates. We accomplish this with the Tax Policy Center's cloud-based microsimulation model, examining over nine thousand alternative changes to certain deductions, credits, and tax rates changed under the TCJA. We illustrate both the trade-offs among the plans and those plans satisfying various criteria, such as minimum revenue loss conditional on a desired distribution of taxes and flattest distribution of taxes conditional on a given revenue loss.

ABOUT THE TAX POLICY CENTER

The Urban-Brookings Tax Policy Center aims to provide independent analyses of current and longer-term tax issues and to communicate its analyses to the public and to policymakers in a timely and accessible manner. The Center combines top national experts in tax, expenditure, budget policy, and microsimulation modeling to concentrate on overarching areas of tax policy that are critical to future debate.

Copyright © 2019. Tax Policy Center. Permission is granted for reproduction of this file, with attribution to the Urban-Brookings Tax Policy Center.

CONTENTS

ABSTRACT	II
CONTENTS	III
ACKNOWLEDGMENTS	IV
INTRODUCTION	1
THE TAX CUTS AND JOBS ACT	4
MICROSIMULATION MODELING	6
Standard Modeling	6
New Modeling	7
Output	7
ANALYSIS	9
Numeric Analysis of Trade-offs	12
Graphical Analysis of Trade-offs	17
Alternatives to the TCJA	24
Repealing the SALT Deduction	25
Minimize Revenue Loss while Raising the Average Income of Each Quintile at Least 1 Percent	27
Maximize the Minimum Average Increase of a Quintile without Losing Additional Revenue	27
CONCLUSION	28
NOTES	29
REFERENCES	30
ABOUT THE AUTHORS	31

ACKNOWLEDGMENTS

The Tax Policy Center thanks the Alfred P. Sloan Foundation (grant G-2017-9845) for its support of this work.

The views expressed are those of the authors and should not be attributed the Urban-Brookings Tax Policy Center, the Urban Institute, the Brookings Institution, their trustees, or their funders. Funders do not determine research findings or the insights and recommendations of our experts. Further information on Urban’s funding principles is available at <http://www.urban.org/aboutus/our-funding/funding-principles>; further information on Brookings’ donor guidelines is available at <http://www.brookings.edu/support-brookings/donor-guidelines>.

The authors would like to thank Len Burman, Brad Heim, Jess Kelly, Elaine Maag, Michael Marazzi, Jeff Rohaly, Joseph Rosenberg, Philip Stallworth, Eric Toder, and participants of the 2019 American Economic Association meetings for useful suggestions and comments.

INTRODUCTION

In late 2017, P.L. 115–97, commonly known as the Tax Cuts and Jobs Act (TCJA) was signed into law.¹ The largest change in tax law since the Tax Reform Act of 1986 (TRA86), the TCJA adjusted many corporate and individual tax provisions, including the corporate income tax rate, individual income tax rates, and the individual standard deduction. It also eliminated the personal exemption and capped the state and local tax (SALT) deduction at \$10,000 a year.

However, the TCJA differs in many ways from the TRA86. The TRA86 was designed to neither raise nor lose revenue, but the Joint Committee on Taxation (JCT) estimated the cost of the TCJA at nearly \$1.5 trillion over 10 years (Joint Committee on Taxation 2017). The TRA86 was also designed to be distributionally neutral; the TCJA, on the other hand, led to a much larger percentage increase in the incomes of the top 20 percent of the income distribution compared with the rest of the income distribution (Tax Policy Center 2017).

Finally, the TRA86 was subject to extensive discussion and debate. Birnbaum (1987) describes the timeline: An early version of reform, which included eliminating the SALT deduction, was released by the Treasury Department on November 27, 1984. The administration’s plan was released by President Reagan in May 1985. The House Ways and Means committee began hearings in June 1985, ultimately questioning 450 witnesses, and the Senate Finance committee held 66 days of hearings. The Ways and Means committee approved legislation in November 1985, but it was rejected by the House of Representatives in December. It was accepted by the House by a voice vote that same month after the president lobbied for the legislation. The Senate Finance committee met in March through May of 1986 to hammer out another version of the bill. In June, the Senate devised and approved a revenue-neutral bill. The bill was in conference July through September, and the House and Senate approved the bill in September 1986. President Reagan signed the bill on October 22, 1986.

The TCJA, in contrast, was released by the House of Representatives on November 2, 2017, and signed into law by President Trump on December 22, 2017.²

The speed with which the TCJA became law sharply limited Congress’s ability to publicly discuss alternatives and trade-offs. This leaves open the possibility that other, similar plans may have had desirable revenue or distributional consequences. Yet because of how dramatically the TCJA’s provisions changed tax law—JCT estimated that the change in individual income tax rates reduces federal revenues by \$1.2 trillion over 10 years and capping the SALT deduction at \$10,000 raises \$668 billion over that same period—it can be difficult to uniquely identify alternative plans.

In this report we address this problem using a novel approach. Rather than identifying single alternative plans that satisfy specific goals, we use the Tax Policy Center’s new ability to run its microsimulation model in the cloud to calculate the change in total taxes and distributional effects of more than 9,000 separate plans. Each of these plans changes parts of the tax code modified by the TCJA, including the standard deduction,

individual income tax rates, the child tax credit, the personal exemption, the alternative minimum tax (AMT), and the maximum SALT deduction. Some changes mirror those in the TCJA, some move back to pre-TCJA values, others represent intermediate values between those two positions, and some, such as full repeal of the SALT deduction, go further than the TCJA.

For each plan, we calculate the total change in adjusted revenue as well as the average percent change in after-tax income of each income quintile (with further breakdowns within the top income quintile) and by demographic groups, such as people with children.³ Sixty-one percent of the plans we analyze cost less than the TCJA; 5 percent actually increase adjusted revenue above pre-TCJA levels.

We then identify patterns in the data, such as plans that increase the after-tax income of the average taxpayer in each income quintile and the cost of different plans compared with the TCJA. Comparing and contrasting plans that benefit one quintile with those that benefit others allows us to locate overlapping interests and trade-offs among taxpayers in different quintiles. We also describe which plans tend to benefit a given quintile and how those plans would affect the other quintiles.

As expected, we find that relative to prior law, the after-tax income over all quintiles increases only when total adjusted revenue falls. But we also find plans that, relative to prior law, still benefit the average taxpayer in all quintiles but are less expensive than the TCJA. In fact, 48 percent of the plans we consider increase the average after-tax income in all quintiles relative to prior law yet reduce total adjusted revenue by less than the TCJA. Further, for any given quintile, we find plans that raise average after-tax income more than the TCJA but cost less overall.

Although there are plans that, on average, benefit a given quintile more than the TCJA while costing less a smaller share of plans accomplish both for each higher income quintile. For the lowest income quintile, over 30 percent of plans benefit the quintile more than the TCJA while costing less. For the second quintile, that figure falls to about 20 percent; for the top quintile, fewer than 1 percent of plans accomplish both goals. For the top 10 percent and 1 percent of households, the share of plans meeting these two goals shrinks even further.

For any given level of adjusted revenue, plans that benefit taxpayers in one quintile and those that benefit taxpayers in other quintiles are naturally in tension. The stark nature of this trade-off in the TCJA is evident when considering the plans we analyzed that reduce adjusted revenue less than the TCJA does. Most plans that raise the average after-tax income of taxpayers in the second through fourth quintiles also raise the average after-tax income of taxpayers in the bottom quintile. In contrast, none of the plans that raise the average after-tax income of taxpayers in the top quintile also raise the average after-tax income of those in the lower quintiles. In fact, many of those plans more than wipe out all the gains in average after-tax income the TCJA yielded for those in the bottom income quintile, leaving them worse off than under prior law.

Finally, we also search for desirable plans using three criteria. First, we eliminate the SALT deduction and calculate the least expensive plan that raises the average after-tax income of all five quintiles. This plan would

reduce adjusted revenue by only about one-eighth as much as TCJA and would raise average after-tax incomes in each quintile somewhere between 0.12 and 0.58 percent. This plan essentially eliminates an arguably inefficient and regressive provision of the tax code and distributes the resulting revenues among all the quintiles. Second, we minimize the total decrease in adjusted tax revenue conditional on each quintile receiving at least a 1 percent increase in average after-tax income. The plan satisfying this condition costs about \$70 billion less than the TCJA for 2018 and raises the average after-tax income in each quintile 1.0 to 2.0 percent. Third, we maximize the smallest increase in average after-tax income across quintiles, conditional on the plan not costing more than the TCJA. The plan meeting these criteria reduces adjusted revenue by nearly as much as the TCJA but raises average after-tax income for each quintile by least 1.1 percent, with an increase of more than 2.7 percent for taxpayers in the third quintile.

The remainder of the report is organized as follows: In the Tax Cuts and Jobs Act section, we describe prior law and the TCJA. In the Microsimulation Modeling section, we describe the Tax Policy Center's microsimulation model and recent improvements that allow us to estimate a vast array of proposals with alternative tax parameters. In Analysis, we describe our results, including plans that satisfy the optimality criteria described above. We conclude with a short summary and discussion of future work.

THE TAX CUTS AND JOBS ACT

This report focuses on the major changes the TCJA made to individual income taxes, most of which take effect beginning in 2018 and expire after 2025. The TCJA maintains seven income tax brackets but temporarily lowers most tax rates. The law decreases the top marginal rate from 39.6 to 37 percent and applies it beginning at taxable income of \$500,000 for single filers and \$600,000 for married couples filing jointly. The TCJA almost doubles the standard deduction, from \$6,500 to \$12,000 for singles, from \$9,500 to \$18,000 for heads of households, and from \$13,000 to \$24,000 for joint filers in 2018. The law also eliminates the personal exemption, which would have been worth \$4,150 for each taxpayer, spouse, and eligible dependent.

The individual AMT operates alongside the regular income tax. It requires many taxpayers to calculate their liability twice—once under the rules for the regular income tax and once under the AMT rules—and pay the higher amount. The TCJA reduces the number of taxpayers who will need to pay the AMT by increasing the AMT exemption amount to \$70,300 for singles and heads of households, to \$109,400 for joint filers, and to \$54,700 for married individuals filing separate returns. The TCJA also dramatically increases the AMT exemption phase-out thresholds to \$1 million for joint filers (\$500,000 for others). The Urban-Brookings Tax Policy Center (TPC) estimates that the share of taxpayers affected by the AMT would fall from 5.2 percent in 2017 to 0.2 percent in 2018 (Tax Policy Center 2017).⁴

The TCJA expands the child tax credit (CTC) available to taxpayers with children under age 17 in several ways. It doubles the credit from \$1,000 to \$2,000 per child and reduces the earnings threshold for the refundable portion of the credit from \$3,000 to \$2,500 (unindexed). The refundable amount equals 15 percent of earnings over the \$2,500 threshold but is limited to \$1,400 per child. This maximum refundable amount is adjusted for inflation after 2018. The phase-out income threshold is \$200,000 for single parents and \$400,000 for joint filers (up from the prior-law amounts of \$75,000 and \$110,000, respectively). The \$2,000 per child amount and the phase-out thresholds are not indexed for inflation, so the credit will lose value over time. The TCJA also enacts a \$500 nonrefundable credit for dependents other than qualifying children. TPC estimates that the share of taxpayers who benefit from the CTC would increase from 21 percent in 2017 to 29 percent in 2018.

The TCJA limits or suspends some major itemized deductions, including the SALT deduction and the mortgage interest deduction. The SALT deduction which had been unlimited, is now limited to \$10,000 annually (unindexed) for both single and joint filers. TPC estimates that the share of taxpayers who benefit from the SALT deduction would fall from 25 percent in 2017 to about 10 percent in 2018.⁵ For taxpayers taking new mortgages, the TCJA limits the deductibility to the interest on the first \$750,000 of debt (down from \$1 million under prior law) and disallows deductibility for interest on home equity loans not used to buy, build, or improve a home. The TCJA also repeals the phase-out of itemized deductions (known as the Pease limitation). These individual income tax provisions all expire after 2025.⁶

The TCJA also made changes to the taxation of pass-through entities, corporations, and estates. These changes are included in all our simulations, but possible reforms to these provisions are beyond the scope of this report.

STANDARD MODELING

TPC uses a microsimulation tax model to estimate the revenue and distributional effects of possible legislation on the US tax system. This model is similar to those used by the Congressional Budget Office, the JCT, and Treasury's Office of Tax Analysis. The purpose of these models is to estimate the revenue, distribution, and incentive effects of changes to the US tax code. TPC does this by using tax-unit data.⁷ Based on the tax unit's economic, tax, and demographic characteristics, the microsimulation model estimates the total taxes paid by the tax unit, both with and without a given tax proposal. Each execution of the model, or "run," consists of a baseline simulation—typically current law—and a proposal simulation that captures the changes to the tax law under consideration. For each tax unit in the TPC database, the model calculates tax liability under both the baseline and the proposal and then calculates the change in taxes caused by the proposal. After weighting and aggregating each tax unit's tax liability under both the baseline and proposal, the model estimates the total revenue change and overall distributional effect of a tax proposal.

The primary data source used by TPC's model is the Public Use File (PUF), created by the IRS Statistics of Income division. The PUF used by TPC is a stratified random sample of roughly 150,000 tax filers, which provides detailed information from federal tax returns. TPC adjusts the record weights in the PUF data using a linear-programming algorithm to match an extensive list of national targets and statistically matches the PUF to many other datasets to provide demographic, wealth, educational and other information. TPC also supplements the PUF with a sample of individuals who do not file tax returns (nonfilers). Because the PUF requires significant programming resources to generate valid statistical information, it is primarily used by government organizations, research institutions, and large accounting firms.⁸

The parameter file used in the model contains settings for hundreds of tax law parameters as well as other variables that control the model's input and output. Straightforward changes to the tax law, such as an increase in the standard deduction, changes in tax rates, or repealing the personal exemption, can be handled by simple changes to parameter values.

A standard model run takes one parameter file as an input and produces one set of revenue and distributional results. Model runs can also be executed in batches, and multiple parameter files can be used to produce multiple sets of results. But using the standard PC-based tax model to run hundreds of model options can be time consuming and cumbersome. The model simulations must be run sequentially, and the parameter files must be manually updated, which introduces a potential for error.

NEW MODELING

TPC has recently migrated a version of the microsimulation tax model to the cloud, which in principle allows us to execute a large number of model runs simultaneously. An updated model leverages this cloud infrastructure to solve the logistical problems of large-scale model runs. This infrastructure can queue and submit thousands of model runs and, along with the standard model output, produces condensed distributional and revenue results for all the model runs submitted. The cloud infrastructure increases run speeds, reducing run time to a fraction of what it takes to run models sequentially and making it feasible to execute thousands of model runs relatively quickly. For an in-depth and technical explanation of TPC's cloud model infrastructure, see Kelly, Ueyama, and Harris (forthcoming).

Such large numbers of model runs can produce over a terabyte of data, which would be effectively impossible to organize and analyze using traditional methods. The cloud model infrastructure handles this problem with a Python script that iterates over the results for each run and produces a unified analysis dataset. The dataset includes distributional and revenue results as well as all the input parameters changed in each run, which can be used to catalogue the run. This dataset is a fraction of the size of the output produced by a standard model runs and allows researchers to analyze a summarized version of the data.

OUTPUT

Our analysis examines the adjusted revenue change, rather than changes in revenue, produced by modifications to the TCJA.⁹ Although our adjusted revenue measure for 2018 includes microdynamic responses, it differs from a traditional revenue estimate from the JCT and might better be described as an estimate of the change in tax burden. For example, for certain timing provisions in the TCJA, such as changes to the rules for net operating losses, we use the net present value of the tax change rather than the actual year-by-year change in tax liability. We also address the yearly fluctuations in the timing of the payment of the repatriation tax by smoothing the effects of the provision over eight years. Although these methods provide a more consistent estimate of distributional effects, they differ from the estimated yearly changes in revenue produced by the JCT. And our adjusted revenue estimates are based on a calendar year, while JCT revenue estimates are for fiscal years. For brevity, we will hereafter refer to our measure as "revenue" rather than as "adjusted revenue."

We measure the distributional effect of plans in 2018 by the change in average after-tax income for tax units in each income group. Our distributional analysis examines the effect of plans on tax units categorized by income percentiles, measured as expanded cash income.¹⁰ This is a constructed measure of pretax income that includes adjusted gross income, above-the-line deductions (such as student loan interest and individual retirement account deductions), employer-paid health insurance, cash and cash-like government transfers, and a variety of other sources of income that households receive. This broad measure of income is used to rank tax

units in their respective income groups and provides better estimates of overall burden than narrower measures of income.¹¹ We define these quintiles as follows (2018 dollars):

- Below \$25,100
- \$25,101 to \$49,3000
- \$49,3001 to \$85,900
- \$85,901 to \$153,300
- Over \$153,300

ANALYSIS

As discussed, the TCJA was passed more quickly than previous tax proposals of this magnitude, limiting the depth and number of contemporary publicly available analyses. Later analyses have focused on the effects and implications of the law rather than considering alternatives or possible trade-offs among groups.¹² In this section, we analyze the results from simulating thousands of alternatives to the TCJA while limiting choices to key individual income tax provisions. We explore the trade-offs these plans offer in terms of their benefits to tax units in different income groups at a given overall revenue cost and in terms of their benefits to tax units versus the overall revenue cost of the plan. To accomplish this, we focus on two model outputs for 2018: the change in revenue and the average change in after-tax income. In our simulations, we modify many of the individual income tax parameters that the TCJA affected, but we do not modify TCJA provisions affecting corporate taxes, the estate tax, or other taxes. Table 1 describes the parameters and their alternative values we used in our model.

Our parameter options include a variety of TCJA values, prior law values, and others. For the CTC, for example, we consider changes to the income threshold for refundability and the maximum refundable amount but not the amount of the credit itself. In some simulations, we go beyond the measures enacted by the TCJA, such as by eliminating the SALT deduction entirely. We also consider options that raise the cap on the SALT deduction from \$10,000 to \$20,000 rather than eliminating it, exceeding the SALT deduction for about 97 percent of tax units in our model. We consider individual income tax rates at their TCJA values, their prior-law values, and rates in between; we also consider a 10 percent increase in all individual marginal income tax rates.

In each simulation, we select a unique combination of parameter values. As a baseline, we first modeled estimates under prior law and under the TCJA for calendar year 2018. The difference in after-tax income before and after the TCJA changes is used to calculate the average percent change in after-tax incomes for each income or demographic group under different alternatives. Similarly, we use the difference in revenue under the two regimes to calculate the change in revenue. We used the same approach for all simulations.

Figure 1 describes the relationship between the change in revenue and the average percent change in after-tax income for all tax units under the TCJA and all 9,215 variations that we considered. At (0,0) lies Point A, which represents prior law. At the intersection of the dotted lines lies Point B, which represents the TCJA. We estimate that in 2018, the TCJA increased average after-tax income 2.21 percent and reduced tax revenue by \$243 billion. The vertical thickness of the point cloud demonstrates the range of different plans that produce the same average change in after-tax income but cost either more or less than the TCJA. For example, the cost of plans that cut tax rates is partially offset by an increase in taxable income because lowering tax rates encourages taxpayers to increase their labor supply or savings amounts and thereby increases their taxable income. Other changes, such as the standard deduction, do not change the incentives to work, so there is no

similar offset. Consequently, it is possible that two different plans offer the same benefit to taxpayers but - different costs to the Treasury.

TABLE 1

Key Parameters and the Alternative Values Used in the Simulations
Calendar year 2018



Parameter	Values			
Statutory tax rates	I^a	II^b	III	IV
Bracket 1	10.0%	10.0%	10.0%	11.0%
Bracket 2	15.0%	12.0%	13.0%	13.2%
Bracket 3	25.0%	22.0%	24.0%	24.2%
Bracket 4	28.0%	24.0%	26.0%	26.4%
Bracket 5	33.0%	32.0%	32.5%	35.2%
Bracket 6	35.0%	35.0%	35.0%	38.5%
Bracket 7	39.6%	37.0%	38.5%	40.7%
Standard deduction	I^a	II	III^b	IV
Single	\$6,500	\$9,250	\$12,000	\$13,200
Married filing jointly	\$13,000	\$18,500	\$24,000	\$26,400
Head of household	\$9,750	\$13,875	\$18,000	\$19,800
Married filing separately	\$6,500	\$9,250	\$12,000	\$13,200
Personal exemption	I^b	II	III^a	IV
	\$0	\$2,500	\$4,150	\$5,500
AMT exemption	I^a	II^b		
Single	\$55,400	\$70,300		
Married filing jointly	\$86,300	\$109,400		
Head of household	\$55,400	\$70,300		
Married filing separately	\$41,350	\$54,700		
AMT phase-out threshold	I^a	II^b		
Single	\$123,300	\$500,000		
Married filing jointly	\$164,500	\$1,000,000		
Head of household	\$123,300	\$500,000		
Married filing separately	\$82,250	\$500,000		
Limit on SALT deduction	I	II^b	III	IV
	\$0	\$10,000	\$15,000	\$20,000
CTC refundable amount	I^b	II	III	
	\$1,000	\$1,400	\$2,000	
Earned income threshold for refundable CTC	I	II	III^b	
	\$0	\$1,250	\$2,500	

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).

Note: This report analyzes the results from 9216 simulations, which are combinations of all possible parameter options in the table. The limit on the SALT deduction being zero means the SALT deduction is repealed.

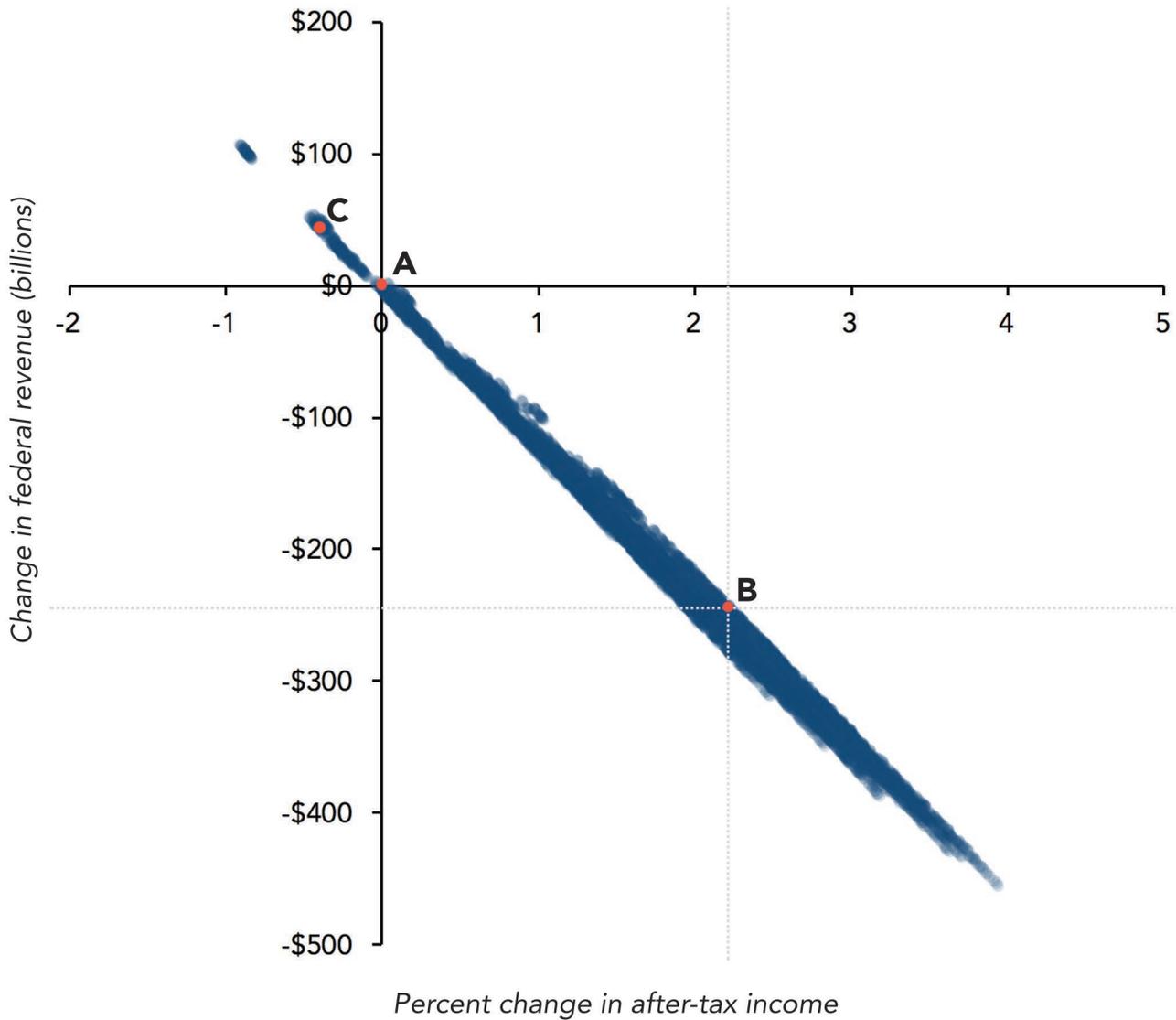
(a) Prior-law tax parameters.

(b) Tax Cuts and Jobs Act parameters.

AMT = alternative minimum tax; CTC = child tax credit; SALT = state and local tax.

FIGURE 1

Percent Change in After-Tax Income versus Adjusted Revenue Change Calendar year 2018



Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).

Notes: The intersection of the horizontal and vertical dotted lines represents the overall adjusted revenue change and percent change in after-tax income of the TCJA. Points A, B, and C represent, respectively, pre-TCJA, the TCJA, and the TCJA with the rates and standard deviation set to pre-TCJA levels.

Point C represents a specific alternative: returning tax rates and the standard deduction to their pre-TCJA levels.¹³ This would increase revenue by \$44 billion, but would also lead to a decrease of 0.5 percent in average after-tax income. If, instead, we return tax rates to their pre-TCJA values but increase the standard deduction to \$9,250 for single filers and \$18,500 for joint filers, the change in revenue is only -\$8 billion and the change in after-tax income is less than 0.05 percent. This returns us to the approximate pre-TCJA level of after-tax income and revenue.

An important aspect of these simulations is the wide variation in their estimated impact on federal revenue in 2018. Of the 9,216 plans we consider (including the TCJA), 3,548 (38 percent) cost the federal treasury more than the TCJA while also increasing average after-tax income; 258 (3 percent) increase revenue and reduce after-tax income. But 5,394 plans (59 percent) cost less than the TCJA while still reducing federal revenue and increasing after-tax income for some groups. These plans cost less, and some may be less regressive, than the TCJA.

NUMERIC ANALYSIS OF TRADE-OFFS

As widely discussed, the TCJA cut taxes for the vast majority of households, and tax units with larger incomes tended to receive larger percentage increases in after-tax income. Table 2 shows the percent change in average after-tax income for various expanded cash income groups. Among tax units in the bottom quintile, we estimate that the TCJA increased average after-tax incomes 0.4 percent. Tax units in higher quintiles saw progressively larger increases, with average tax units in the top quintile receiving an increase of about 3 percent. Within the top quintile, the biggest beneficiaries were tax units in the top 5 percent of the income distribution (this is primarily because the TCJA scaled back the AMT). The increase in average after-tax income for tax units in the top 1 percent of expanded cash income was lower than the average for the top 5 percent, primarily because of the cap on SALT deductions and certain business provisions that restricted the ability of some taxpayers to deduct losses.

TABLE 2

Percent Change in After-Tax Income for Income Groups under the Tax Cuts and Jobs Act Calendar year 2018 estimates



Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Top 10 percent	Top 5 percent	Top 1 percent
0.4	1.2	1.6	1.9	3.0	3.4	3.8	3.5

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).

The alternative plans shown in figure 1 also generate different distributional outcomes than the TCJA. Consider the plan represented by Point C (returning tax rates and the standard deduction to their pre-TCJA

values). The average change in after-tax income for tax units in each quintile are listed as part of Plan A in table 3. Relative to prior law, the first four quintiles now see losses on average, whereas the top quintile sees a slight increase in after-tax income. Plan B then adds an increase in the standard deduction to \$18,500 for married couples (\$9,250 for single filers), an increase that is less generous than the one in the TCJA. In this case, revenue decreases by \$8 billion in 2018 (rendering the plan approximately revenue neutral). Average after-tax incomes increase in the bottom two quintiles, decrease in the third and fourth quintiles, and increase in the top quintile. Plan C reverts the standard deduction to its pre-TCJA level but lowers tax rates to the levels in column III of Table 1 (with a top rate of 38.5 percent) and eliminates the SALT deduction. In this case, revenue declines by about \$10 billion (again rendering the plan roughly revenue neutral). As in the original plan shown in Plan A, this plan reduces after-tax income for the first four quintiles but raises it for the top quintile. These simple examples illustrate the power of our approach. Except for the changes just described, Plans A, B, and C contain the same AMT, CTC, and personal exemption provisions in the TCJA. But unlike the TCJA, the plans do not significantly increase the federal budget deficit, and they produce a very different distributional result. Of course, these are only three possible alternative plans, and it is easy to locate others.

TABLE 3

Percent Change in After-Tax Income for Income Groups under the Tax Cuts and Jobs Act Calendar year 2018 estimates



	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Plan A: Return tax rates and standard deduction to pre-TCJA levels	-0.5	-0.6	-1.0	-1.0	0.2
Plan B: Plan A, but raise standard deduction to \$9,250 single, \$18,500 jointly	0.1	0.2	-0.2	-0.4	0.3
Plan C: Plan A, but slightly lower tax rates and eliminate SALT deduction	-0.5	-0.3	-0.5	-0.5	0.9

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).
SALT = state and local tax.

Table 4 provides some summary statistics for the variety of alternative distributions available in the thousands of plans we consider. The mean change in after-tax income in the first four quintiles is roughly similar to the change calculated for the TCJA. But the mean change for the top quintile is well below that quintile’s change under the TCJA. This reflects our decision to focus on parameter changes that include prior law and intermediate steps. Because most of the changes we consider benefit this quintile (by increasing their average after-tax income), averaging the effects of the TCJA with intermediate changes or prior law necessarily produces a smaller benefit.¹⁴ Note that there is more variability in after-tax income changes among higher

income groups. For example, changes in after-tax income vary between -0.7 and 1.2 percent in the bottom quintile but -0.5 to 4.5 percent in the top quintile. This occurs because tax units in progressively higher income groups pay larger shares of their income in taxes.

TABLE 4

Minimum, Mean, and Maximum Changes in After-Tax Income for Income Groups under Alternative Plans

Calendar year 2018 estimates



	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Top 10 percent	Top 5 percent	Top 1 percent
Mean	0.5	1.2	1.7	1.8	2.0	2	2.2	1.9
Maximum	1.2	2.7	3.7	4.2	4.5	4.4	4.4	3.7
Minimum	-0.7	-0.8	-1.3	-1.6	-0.5	0	0.5	0.4

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).

TABLE 5

Zero-Order Correlations of Changes in After-Tax Income among Income Groups

Calendar year 2018 estimates



Quintile	1	2	3	4	5
1	1.000	--	--	--	--
2	0.958	1.000	--	--	--
3	0.861	0.955	1.000	--	--
4	0.751	0.872	0.974	1.000	--
5	0.396	0.533	0.688	0.805	1.000
Top percentile					
10	0.235	0.361	0.514	0.646	--
5	0.118	0.232	0.374	0.506	--
1	0.045	0.148	0.273	0.394	--

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).

-- = values not presented in the table because they are redundant.

Because the changes in tax provisions that we consider tend to increase the incomes of all groups (compared with prior law), or at least benefit some and leave others unaffected, the fortunes of the groups are connected. For example, if we assume that all other changes in the TCJA were enacted, the change to the standard deduction increased the average after-tax income of those in all five quintiles as well as those in the top 10, 5, and 1 percent of incomes. We show this connection in Table 5, where we show the correlations of after-tax income among the groups. Although all of the correlations are positive, they are strongest between

adjacent groups. But the top quintile is less correlated with the fourth quintile than are the third and second quintiles. Correlations between first four quintiles and the top 10, 5, and 1 percent are even weaker.

We can also view how changes in tax provisions affect more than one group by considering the plan that maximizes the benefit of the top quintile. It has the greatest reduction in revenue: about \$455 billion. Because each tax provision is set to minimize revenue under this plan, it is also the plan that maximizes the benefits to each group.

Assuming the TCJA’s reduction in revenue represents the maximum cost Congress was willing to consider, we next limit our analysis to plans that cost no more than the TCJA (table 6). The minimums remain unchanged because they are always associated with increased revenue. Notice also that imposing this constraint slightly reduces the maximum benefit to the bottom quintile and reduces the mean from 0.5 to 0.3. This indicates that the most expensive plans do not provide much benefit to tax units in the bottom quintile. The third through top quintiles face larger reductions in the means, and maximums are also lower. Surprisingly, the maximum gain for tax units in the top groups remain nearly the same. But the maximum gain under all plans we consider is close to the gain under the TCJA. This reflects the difficulty in locating trade-offs among tax parameters that can increase the after-tax income of those groups without further reducing revenue.

TABLE 6
Percent Change in After-Tax Income under Alternative Policies
in which Tax Revenue Exceeds that under the TCJA
 Calendar year 2018 estimates



	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Top 10 percent	Top 5 percent	Top 1 percent
Mean	0.3	0.9	1.1	1.1	1.5	1.6	1.8	1.5
Maximum	1.1	2.4	2.8	2.8	3.4	3.8	4.2	3.6
Minimum	-0.7	-0.8	-1.3	-1.6	-0.5	0	0.5	0.4

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).

Limiting our analysis to plans with revenue loss approximately the same as under the TCJA also allows us to better understand the trade-offs among the groups. In table 7, we show the partial correlations of changes in average after-tax incomes while controlling for revenue. As before, the correlations among the first four quintiles are positive, although they are lower than those in table 5. This reflects that imposing a budget constraint forces trade-offs among tax benefits provided to the different groups. More strikingly, each of the first four quintiles are negatively correlated with the top quintile, and even the correlation coefficient between the fourth quintile and the top quintile is -0.90. The correlation between the first four quintiles and the top groups is even more negative. We therefore conclude that within our constraint, plans benefitting both the top quintile and other quintiles are rare.

TABLE 7

Partial Correlations of Changes in After-Tax Income among Income Groups

Calendar year 2018 estimates



Quintile	1	2	3	4	5
1	1.000	--	--	--	--
2	0.945	1.000	--	--	--
3	0.811	0.916	1.000	--	--
4	0.520	0.642	0.879	1.000	--
5	-0.818	-0.911	-0.995	-0.899	1.000
Top percentile					
10	-0.742	-0.843	-0.968	-0.950	--
5	-0.687	-0.785	-0.925	-0.955	--
1	-0.580	-0.653	-0.769	-0.798	--

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).

Note: The table shows the correlations of changes in after-tax income among income groups, controlling for the total
 -- = values not presented in the table because they are redundant.

Examining the plans that maximize the benefit to the top quintile in table 6 also shows this trade-off. Under this plan, average after-tax incomes in the top quintile increase 3.4 percent. Rather than maximizing the benefits to each group, this plan keeps the income threshold of the refundable CTC at \$1,250 and restores the standard deduction to its pre-TCJA level. Further, the plan reduces the personal exemption to \$2,500 but does not eliminate it or restore it to its pre-TCJA value. Consequently, the average change in after-tax income for the bottom quintile is only 0.1 percent. The next three quintiles see average increases of 0.6 percent, 1.0 percent, and 1.6 percent, respectively. All of these are below the change in after-tax income produced by the TCJA.

Maximizing the benefit to the bottom quintile while constraining revenue losses to be no more than the TCJA creates a different set of tradeoffs. Here, average after-tax income of the bottom quintile increases by 1.2 percent. To accomplish this the personal exemption is increased to \$5,500, the standard deduction is at TCJA level, and the CTC refund amount is set to its maximum. To pay for these increases, tax rates revert to their pre-TCJA level, as does the AMT phase-out threshold. The state and local tax deduction is eliminated. Consequently, these plans increase after-tax incomes 2.4 percent for the second quintile, 2.7 percent for the third quintile, and 2.5 percent for the fourth quintile. They increase average after-tax income 1.5 percent for the top quintile and 1.2 percent for those with incomes in the top 5 percent.

GRAPHICAL ANALYSIS OF TRADE-OFFS

In this section, we explore in more depth how different plans affect tax units in each income group and the trade-offs among these groups. Highlighting plans that cost less than the TCJA displays a clear pattern: it is relatively easy to find plans that benefit each of the first four quintiles. In particular, many plans that benefit the second through fourth quintiles also benefit the first. But in our analysis, plans that primarily benefit the top quintile while losing less federal revenue than the TCJA do not benefit the other four, and plans that primarily benefit any of the bottom four quintiles while losing less than the TCJA do not benefit the top.

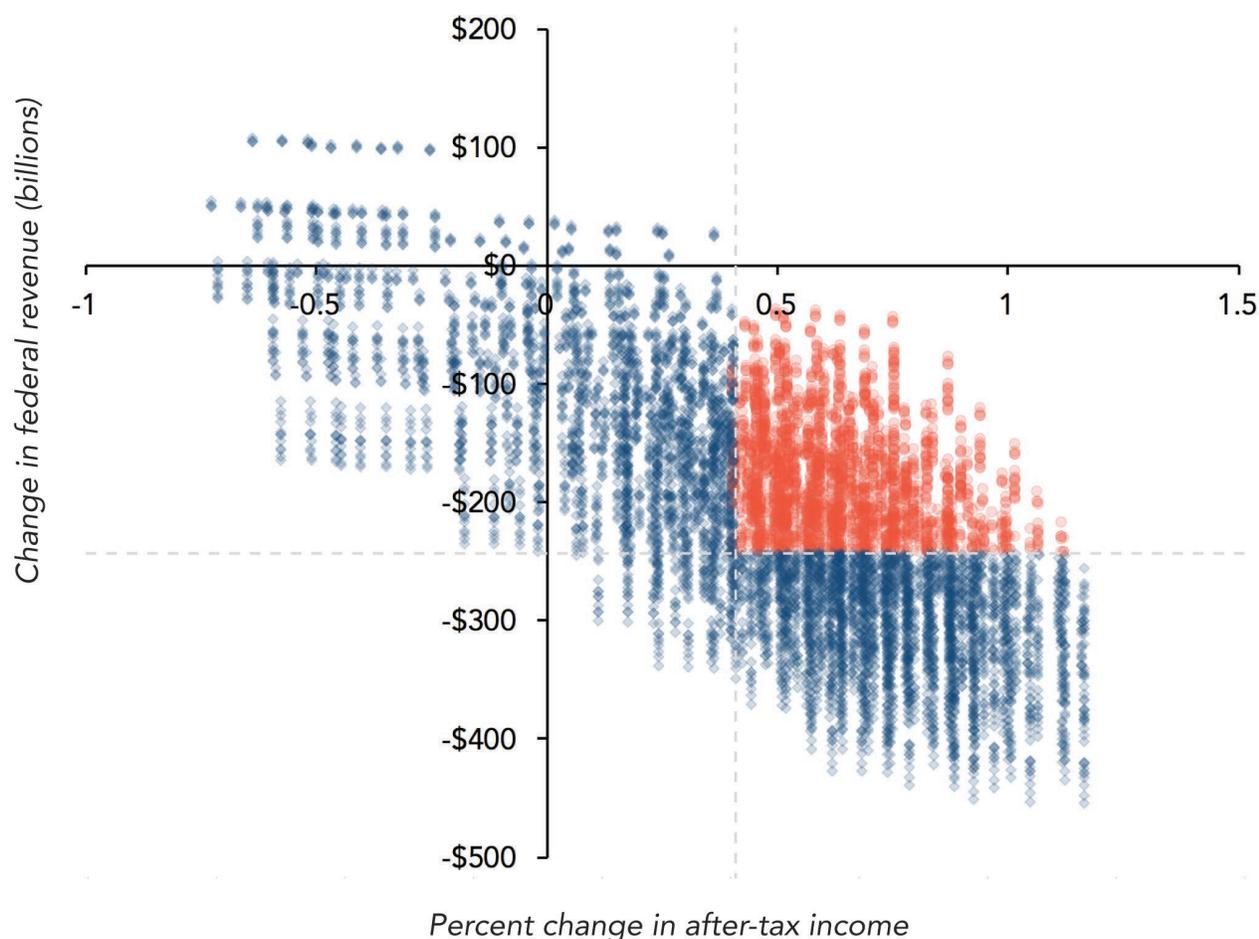
Figure 1 showed a roughly linear relationship between revenue loss and the average percent change in after-tax income for all tax units, but this relationship does not hold for tax units in each income group. So, we can construct plans that both reduce revenue loss and improve average after-tax income for tax units in each group. In figure 2, we plot the percent change in average after-tax income for tax units in the bottom quintile against the change in revenue. As in figure 1, the dotted lines represent TCJA levels for revenue and percent change in after-tax incomes, and they intersect at the TCJA plan. The vertical groupings of points in the scatterplot represent plans that change revenue but have little effect on the after-tax income of tax units in the bottom quintile. For example, variation in the max SALT deduction has little effect on these tax units. Marked in red are the plans (about 31 percent of all plans) that lose less revenue than the TCJA and increase the average after-tax income of tax units in the bottom quintile. There are also a small number of plans that increase revenue above prior law and benefit tax units in the bottom quintile (represented by dots in the upper-left quadrant). But overall, half the plans that lose less revenue than the TCJA increase after-tax incomes in the bottom quintile by more than the TCJA.

Moreover, in the upper right-hand corner of figure 2, there is a concave frontier between revenue and after-tax income. The plans along the frontier alternately increase the standard deduction and the personal exemption. As the frontier flattens, each change represents a smaller increase in revenue and a larger loss in after-tax incomes of tax units in the bottom quintile. The horizontal set of points in the upper left corner represent variations in the CTC provisions. They have very little impact on federal revenue, but they have a noticeable effect on the average incomes of tax units in the bottom quintile. Although these options reduce the average income of filers in the bottom quintile compared with prior law, there are similar horizontal strings in which filers' average income increases.

FIGURE 2

Percent Change in After-Tax Income for Bottom Quintile versus Revenue Change Calendar year 2018

- Plans losing less revenue than TCJA and increasing average after-tax income for bottom quintile



Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).

Note: The intersection of the horizontal and vertical dotted lines represents the overall adjusted revenue change and percent change in after-tax income of the TCJA.

The effect of the CTC provisions is even clearer in subgroups. Figure 3 repeats the plot in figure 2 but limits the sample to tax units filing jointly with child dependents. The striking vertical lines are formed by variations of the CTC provisions; these represent changes in revenue. Their lack of horizontal movement indicates that plans on the same line have no effect on the group’s after-tax income. The plans either form vertical lines or cluster around a vertical line, illustrating that of the many provisions we examine, the earnings threshold for the refundable

CTC and the amount of the CTC that is potentially refundable have the greatest effect on the after-tax income of low-income tax filers with children. The chart is broken into three groups of three lines. The lines are grouped by the amount of the \$2,000 child tax credit that is potentially refundable. Moving from left to right, the first group of three lines has a maximum refundable amount of \$1,000, the middle group of \$1,400 (the value under the TCJA), and for the right-most group, the full \$2,000 per child is potentially refundable. Within each group, the individual lines consist of three different earnings thresholds for the refundable portion of the CTC. Again, moving from left to right within each grouping, the left-most line in each group has a refundability threshold of \$2,500 (the value under the TCJA), the middle line \$1,250, and the right-most line \$0.

FIGURE 3

Percent Change in After-Tax Income for Married Tax Units with Children in the Bottom Quintile versus Revenue Change



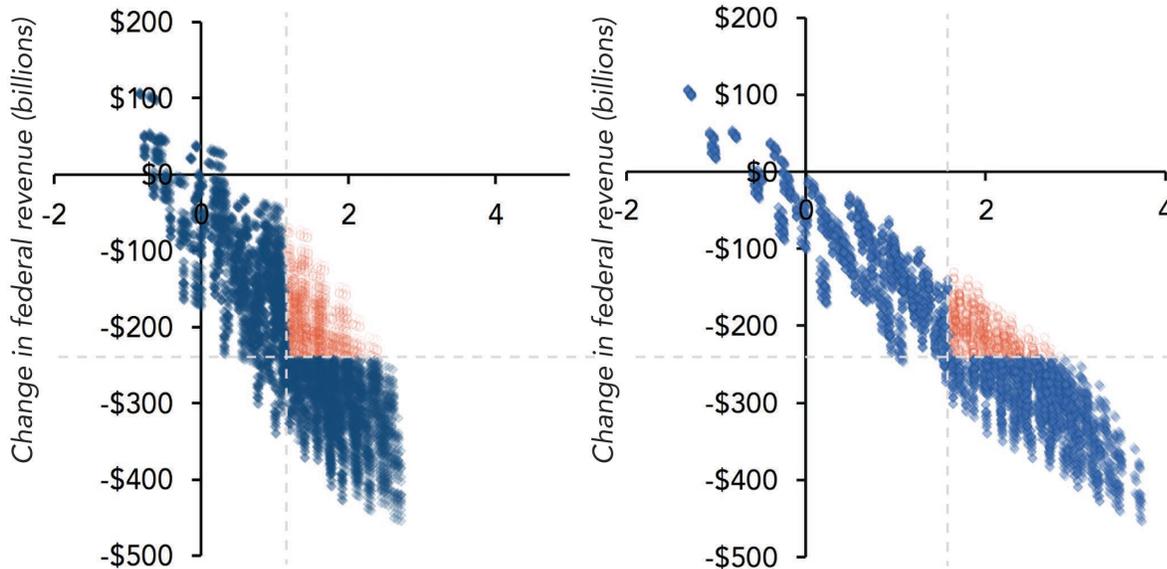
Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).

Note: The intersection of the horizontal and vertical dotted lines represents the overall adjusted revenue change and percent change in after-tax income of the TCJA.

FIGURE 4

Percent Change in After-Tax Income for Second, Middle, Fourth, and Top Quintiles versus Revenue Change

● Plans losing less revenue than TCJA and increasing average after-tax income for quintile

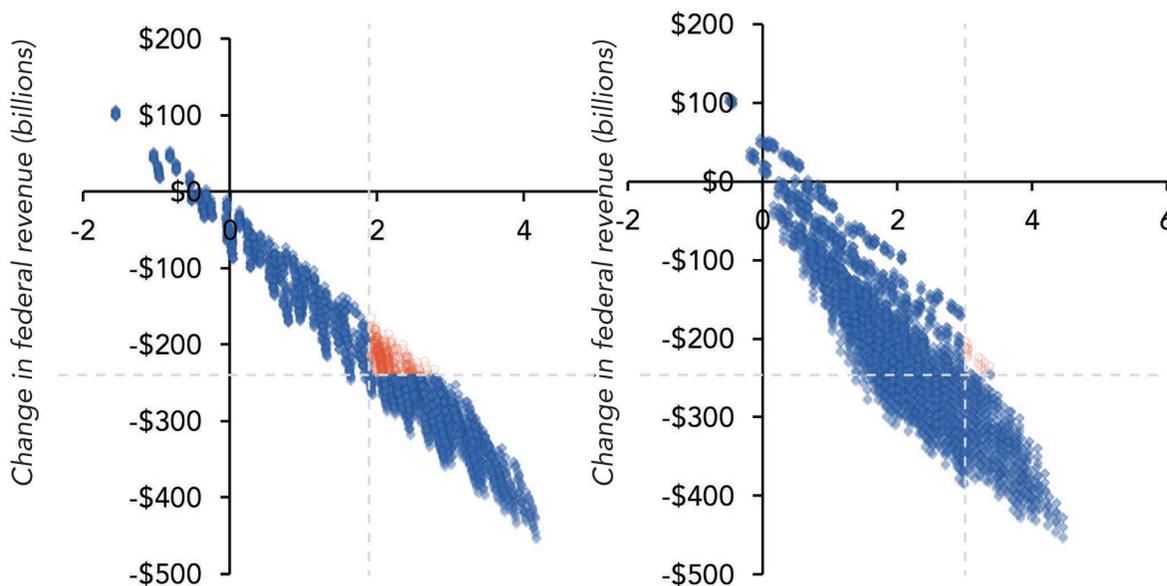


Percent change in after-tax income

Panel A: Quintile 2

Percent change in after-tax income

Panel B: Quintile 3



Percent change in after-tax income

Panel C: Quintile 4

Percent change in after-tax income

Panel D: Quintile 5

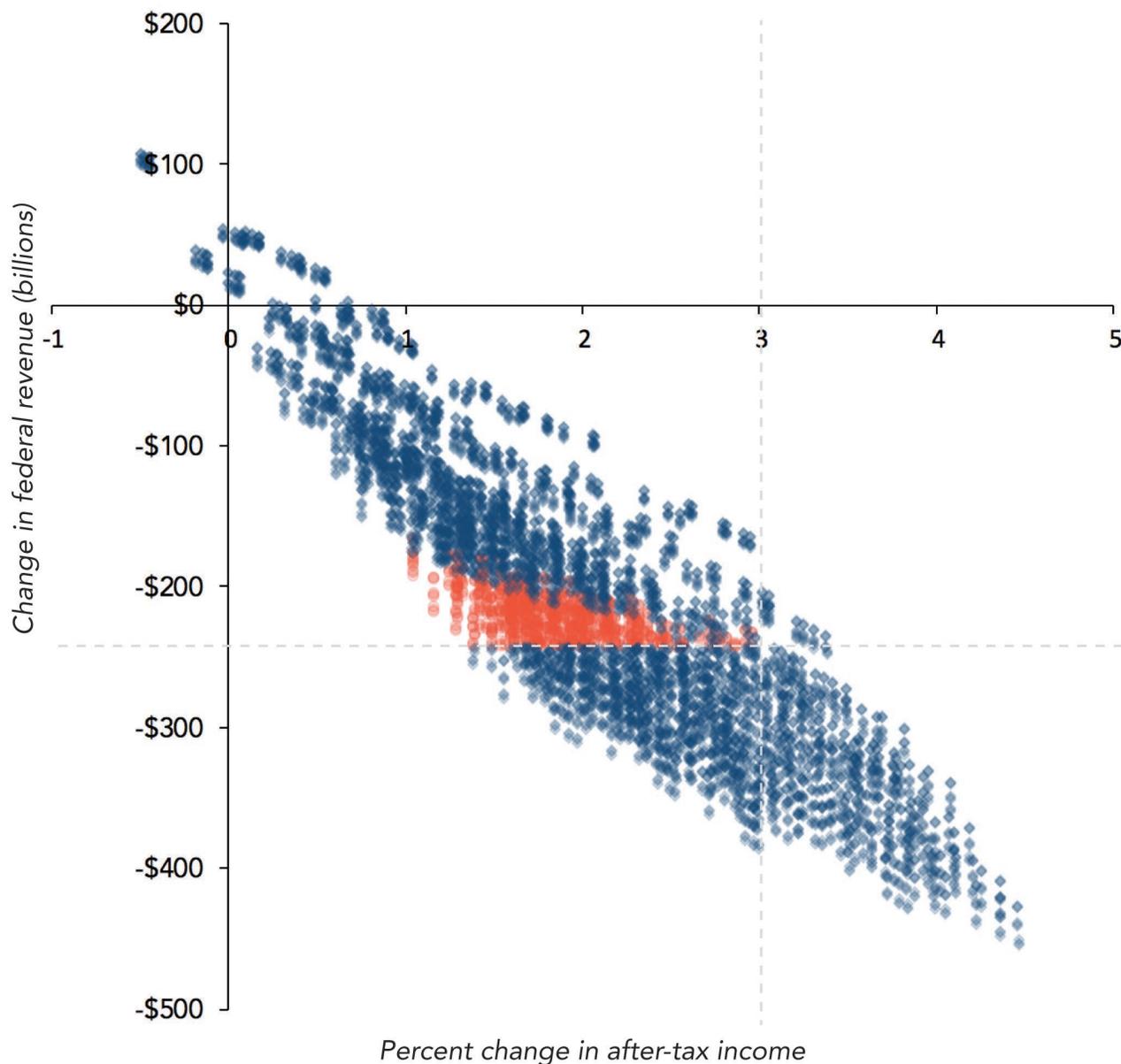
Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).

Note: The intersection of the horizontal and vertical dotted lines represents the overall adjusted revenue change and percent change in after-tax income of the TCJA.

FIGURE 5

Percent Change in After-Tax Income for Tax Units in the Top Quintile versus Revenue Change

- Plans losing less revenue than TCJA and increasing average after-tax income for fourth quintile



Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).

Note: The intersection of the horizontal and vertical dotted lines represents the overall adjusted revenue change and percent change in after-tax income of the TCJA.

As we move to higher quintiles, increasingly fewer plans both increase after-tax income and reduce the cost relative to the TCJA. In figure 4, we plot the percent change in average after-tax income for the second through top quintiles. In the second quintile, 3 percent of plans we considered increase revenue above prior law, and less than 0.1 percent of plans also increase average after-tax income above the TCJA level. For the third and fourth quintiles, no plans both increase revenue above prior law and increase after-tax income above the TCJA level. As before, plans marked in red cost less than the TCJA but increase average after-tax income more than the TCJA. In the second quintile, 22 percent of plans accomplish both goals; that figure falls to 18 percent for the third quintile and 13 percent for the fourth quintile. For the top quintile, less than 1 percent of plans cost less, and benefit tax units more, than the TCJA. This small number is because it is difficult to construct policies from our range of options that benefit the top quintile that do not cost more in terms of forgone revenue.

The top quintile also stands apart in that plans that raise the average after-tax incomes of any of the bottom four quintiles do not raise average after-tax incomes of the top quintile. This can be seen in figure 5, which plots the change in after-tax income for tax units in the top quintile against the change in revenue. Plotted in red are plans that are less costly than the TCJA and raise average after-tax incomes of the fourth quintile above the level found in the TCJA. Because none of those plans plotted in red lie to the northeast of the intersection of the dotted blue lines (the intersection that represents the revenue and distributional outcome of the TCJA), it is clear that none of them raise average after-tax incomes in the top quintile more than the TCJA. Similarly, less-costly plans that raise after-tax incomes for the first three quintiles relative to the TCJA also have no overlap with plans that raise after-tax incomes for the top quintile.

The reverse is also true: among plans that cost less but raise the after-tax incomes of the top quintile more than the TCJA do not similarly benefit tax units in any of the bottom four quintiles. Figure 6 plots the change in average after-tax incomes of the fourth quintile against revenue. Plans in red raise after-tax incomes of tax units in the bottom quintile more than the TCJA; plans in black circles do the same for tax units in the top quintile. There is a strong overlap in plans benefitting both the first and fourth quintiles—many of the red dots lie to the northeast of the intersection of the dotted blue lines—but there is no overlap at all between plans benefitting the fourth and top quintiles.

Figure 7 further explores the trade-off between income groups by plotting the percent change in average after-tax income of tax units in the bottom 80 percent against that value for the top 20 percent. Each color represents one of five bins, defined by revenue change. The TCJA, marked in red, is in the bin of revenue changes ranging from -\$265 billion to -\$240 billion. Plans with revenue changes in that range increase the average after-tax incomes of the bottom 80 percent up to 2.6 percent, although in that case incomes of the top quintile only increase 1.4 percent. From the figure, there are plans that increase the after-tax income of the top quintile by about 1 percent that increase the average after-tax income of up to 2 percent and cost no more than \$240 billion. Plans that provide a TCJA-level increase in after-tax incomes to tax units in the bottom 80 percent

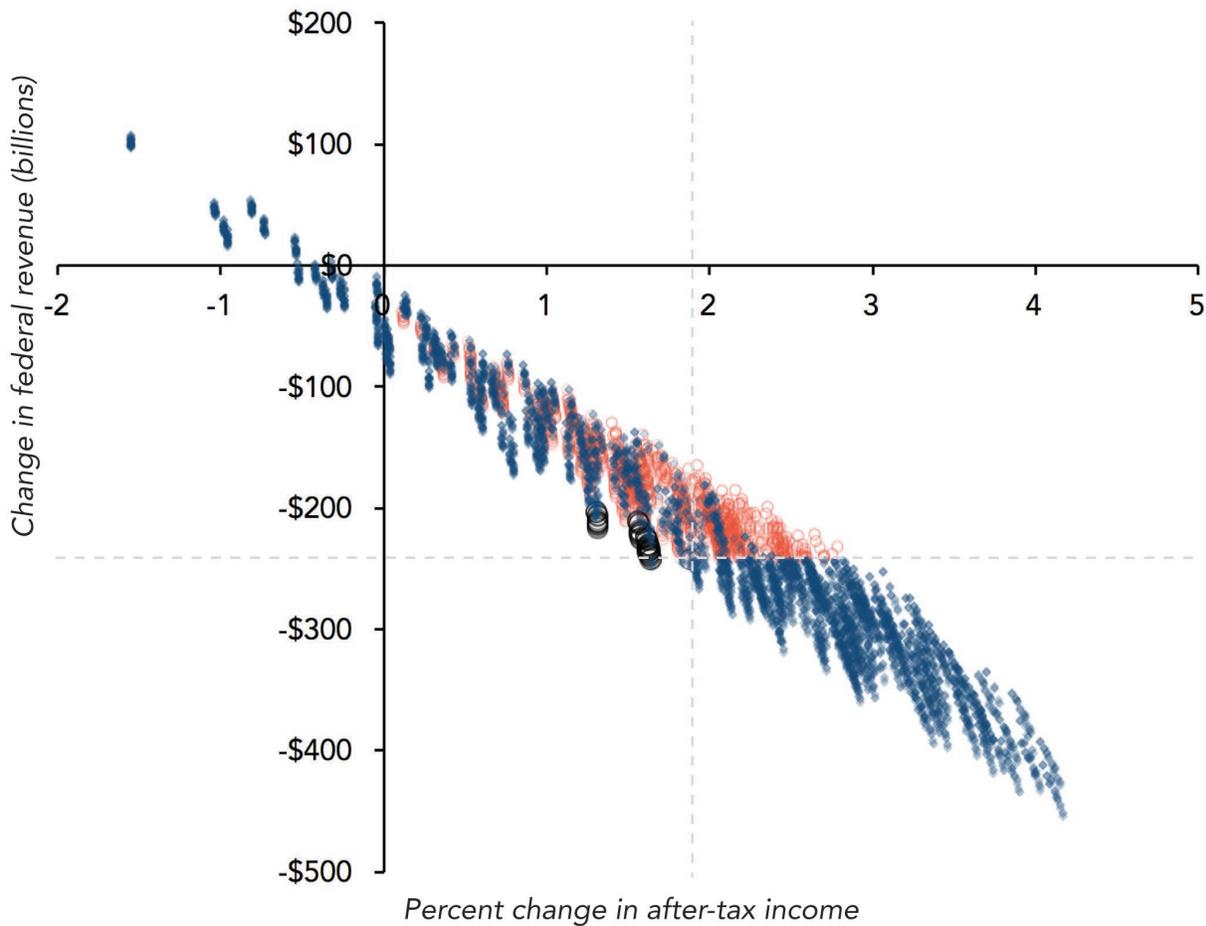
could cost as little as \$142 billion, although in that case after-tax incomes in the top quintile rise about 0.7 percent.

Finally, for about the same cost as the TCJA (between \$240 billion and \$265 billion in lost revenue), incomes in the bottom 80 percent and the top 20 percent could have been increased by an average of 2 percent each. Average incomes in both groups could be increased about 1 percent at a cost of \$116 billion to \$154 billion. Average incomes in both groups could be raised about 3 percent at a cost of \$322 billion to \$455 billion.

FIGURE 6
Percent Change in After-Tax Income for the Fourth Quintile versus Revenue Change



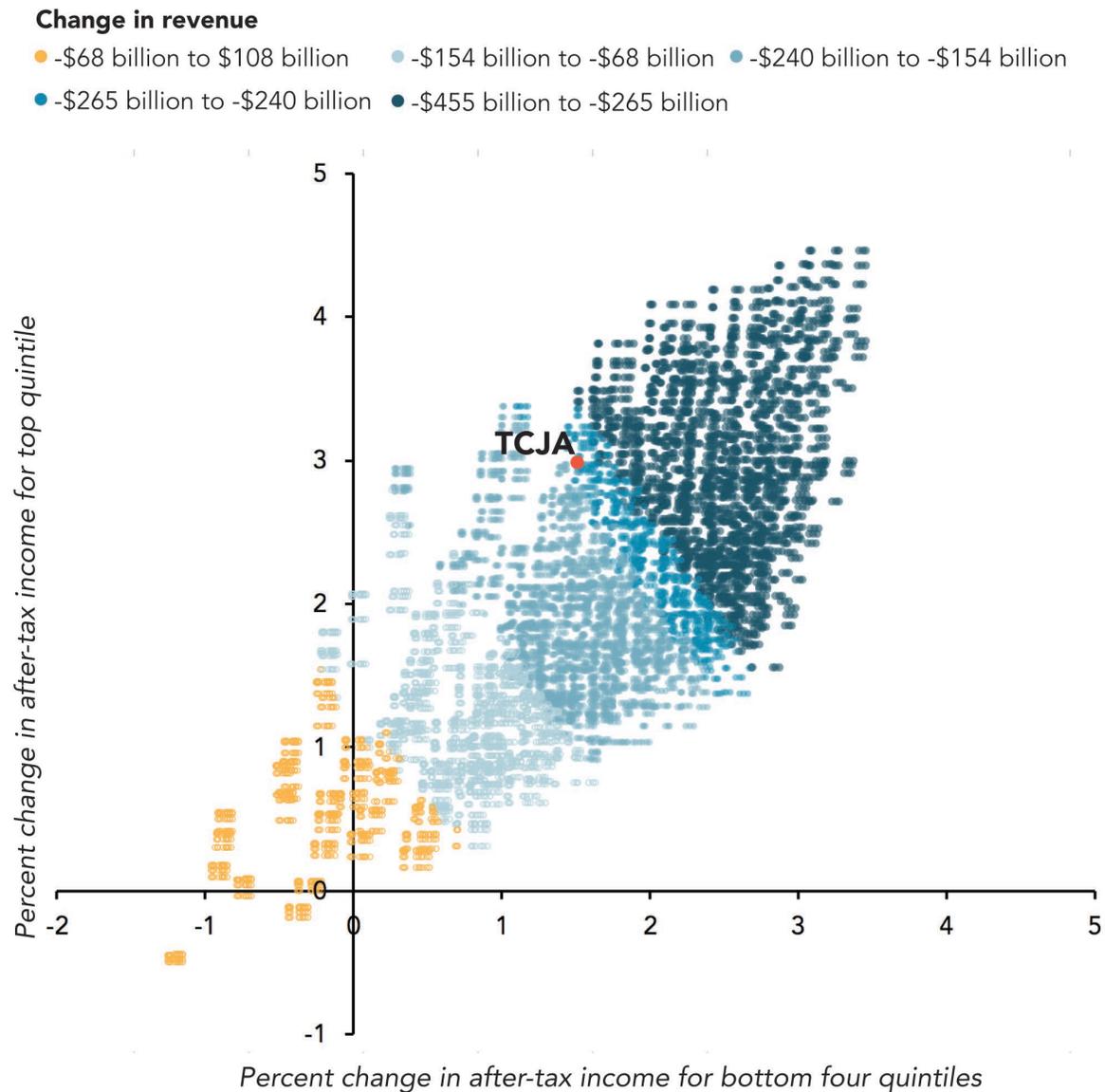
- Plans losing less revenue than TCJA and increasing average after-tax income for bottom quintile
- Plans losing less revenue than TCJA and increasing average after-tax income for top quintile



Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).
Note: The intersection of the horizontal and vertical dotted lines represents the overall adjusted revenue change and percent change in after-tax income of the TCJA.

FIGURE 7

Percent Change in After-Tax Income for the Top Quintile versus Percent Change in After-Tax Income for the Bottom Four Quintiles



Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).

ALTERNATIVES TO THE TCJA

We now consider possible alternatives to the TCJA. First, we consider plans that fully repeal the SALT deduction and distribute the revenue generated. Second, we locate the least costly plan that raises average after-tax incomes of each quintile by at least 1 percent. Finally, we locate the plan that costs no more than the TCJA but maximizes the smallest percentage increase among the quintiles.

Repealing the SALT Deduction

The TCJA implemented a \$10,000 limit on the deductible amount of state and local income, sales, and property taxes. Over the years, outright repeal has been widely discussed in political debates and was included in the initial version of TRA86. Here we consider three alternatives with the set of plans that repeal the SALT deduction. First, we locate the plan with the largest overall percentage increase in after-tax income. Second, we locate the plan that raises the most revenue. Finally, we locate the least expensive plan that raises average after-tax incomes of all five quintiles relative to prior law.¹⁵ In other words, we locate the least costly plan that still provides a broad cut in taxes that is paid for by repealing the SALT deduction.

Across the 9,216 plans, adding repeal of the SALT deduction leads to a change in revenue that varies between -\$421 billion and \$108 billion. In comparison, keeping the TCJA cap of \$10,000 leads to a range of -\$440 billion to \$53 billion.

Naturally, the plan that raises the most revenue would tend to reduce tax units' after-tax income the most, and vice versa. Under the plan that raises \$108 billion, the average decrease in after-tax income would be 0.9 percent overall, with the bottom quintile losing 0.6 percent and the fourth quintile losing the most, 1.6 percent. This plan, shown as plan 1 in Table 8, has the highest tax rates (the pre-TCJA rates), the lowest standard deduction, the prior-law value of the AMT exemption, the least generous CTC phase-out threshold, no personal exemption, and a \$1,000 refundable amount out of the \$2,000 maximum amount of CTC.

Under the plan that loses \$421 billion, the increase in average after-tax income would be 3.7 percent overall, with the bottom quintile increasing 1.2 percent and the fourth and top quintiles increasing almost 4 percent. This is plan 2 in table 8, and it has the TCJA tax rates, the highest standard deduction and personal exemption, the AMT exemption and phase-out threshold found in the TCJA, and CTC refundability up to \$2,000.

With the SALT deduction repealed, the most affordable plan that raises the average after-tax income of all five quintiles costs about \$30 billion. This plan would reduce revenue by 12 percent of the reduction caused by the TCJA and raise average after-tax incomes 0.2 percent, ranging from 0.1 percent for the fourth quintile to 0.6 percent for the second quintile. Listed as plan 3 in Table 8, it keeps the prior-law tax rates, increases the standard deduction to the TCJA level, repeals personal exemption and SALT deduction, imposes the lower AMT exemption and phase-out threshold, and a \$1,000 refundable amount out of the \$2,000 maximum amount of CTC. This plan reduces benefits to the top quintile but keeps benefits to the lower quintiles by keeping the

standard deduction at the TCJA level. The top quintile also benefits from this and from corporate tax cuts that we do not address in this analysis.

TABLE 8

Key Estimate Results and Parameters in Selected Plans
Calendar year 2018



Parameter	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5
Revenue change (billions)	\$108	-\$421	-\$30	-\$174	-\$242
Percent change in after-tax income					
All	-0.9	3.7	0.2	1.4	2.0
Bottom quintile	-0.6	1.2	0.2	1.0	1.1
Second quintile	-0.8	2.7	0.6	2.0	2.4
Third quintile	-1.3	3.7	0.5	2.0	2.7
Fourth quintile	-1.6	4.0	0.1	1.6	2.5
Top quintile	-0.5	4.0	0.2	1.1	1.5
Statutory tax rates					
Bracket 1	10%	10%	10%	10%	10%
Bracket 2	15%	12%	15%	15%	15%
Bracket 3	25%	22%	25%	25%	25%
Bracket 4	28%	24%	28%	28%	28%
Bracket 5	33%	32%	33%	33%	33%
Bracket 6	35%	35%	35%	35%	35%
Bracket 7	39.6%	37%	39.6%	39.6%	39.6%
Standard deduction					
Single	\$6,500	\$13,200	\$12,000	\$13,200	\$12,000
Married filing jointly	\$13,000	\$26,400	\$24,000	\$26,400	\$24,000
Head of household	\$9,550	\$19,800	\$18,000	\$19,800	\$18,000
Married filing separately	\$6,500	\$13,200	\$12,000	\$13,200	\$12,000
Personal exemption	\$0	\$5,500	\$0	\$2,050	\$5,500
AMT exemption					
Single	\$55,400	\$70,300	\$55,400	\$55,400	\$70,300
Married filing jointly	\$86,300	\$109,400	\$86,300	\$86,300	\$109,400
Head of household	\$55,400	\$70,300	\$55,400	\$55,400	\$70,300
Married filing separately	\$41,350	\$54,700	\$41,350	\$41,350	\$54,700
AMT exemption					
Single	\$123,300	\$500,000	\$123,300	\$123,300	\$123,300
Married filing jointly	\$164,500	\$1,000,000	\$164,500	\$164,500	\$164,500
Head of household	\$123,300	\$500,000	\$123,300	\$123,300	\$123,300
Married filing separately	\$82,250	\$500,000	\$82,250	\$82,250	\$82,250
Limit on SALT deduction	\$0	\$0	\$0	\$10,000	\$0
CTC refundable amount	\$1,000	\$2,000	\$1,000	\$2,000	\$2,000
Earned income threshold for refundable CTC	\$2,500	\$0	\$2,500	\$0	\$0

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1).
AMT = alternative minimum tax; CTC = child tax credit; SALT = state and local tax.

Minimize Revenue Loss while Raising the Average Income of Each Quintile at Least 1 Percent

This plan would lose approximately \$174 billion and increase the average after-tax income for all tax units 1.4 percent, increasing the income of both the top and bottom quintiles just more than 1 percent, the second and middle quintiles 2 percent, and the fourth quintile 1.6 percent. This plan sets the statutory tax rates and the AMT exemption and threshold to their prior-law values. The personal exemption is partially restored to \$2,050. But the plan has the highest standard deduction and a CTC amount that is potentially refundable up to \$2,000, and it reduces the earnings threshold on the CTC from \$2,500 to \$0 (plan 4 in Table 8). Relative to the TCJA, lower income quintiles benefit from the restored personal exemption. The revenue loss is offset by restoring the statutory tax rates to their pre-TCJA levels. Revenue is also generated by restoring the AMT values to those of prior law. This partially offsets the cost of raising the standard deduction beyond the TCJA level.

Maximize the Minimum Average Increase of a Quintile without Losing Additional Revenue

Among all the plans in our simulations, the plan that maximizes the smallest gain would raise after-tax incomes of the bottom quintile 1.1 percent. After-tax incomes in the second quintile increase an average of 2.4 percent, and those in the third quintile increase slightly more than 2.7 percent on average. Incomes in the fourth quintile increase about 2.5 percent, and those in the top quintile increase about 1.5 percent. The increases in the bottom four quintiles all exceed those of the TCJA, while the incomes in the top quintile increase by much less than under the TCJA. The plan would cost approximately \$0.5 billion less than the TCJA. It uses the tax rates, the AMT phase-outs the CTC parameters as the previous plan. However, it uses the TCJA level for the AMT exemption amount, lowers the standard deduction to its TCJA value and increases the personal exemption to \$5,500; it also eliminates the SALT deduction (plan 5 in Table 8).

CONCLUSION

In this report, we considered alternatives to the TCJA using the Tax Policy Center's new ability to run its microsimulation tax model in the cloud, which allows us to execute thousands of simulations quickly and efficiently. We calculated the resulting change in revenue and the distributional effects of 9,216 separate plans, altering certain aspects of the major individual income tax provisions of the TCJA. For each plan, we calculated the overall change in revenue and the percent change in average after-tax income for each income quintile and for certain income groups within the top quintile. We also examined the impact on certain demographic groups, such as married couples with children.

We find many plans that cost less than the TCJA but provide greater benefits (in terms of after-tax incomes) to tax units in the bottom four quintiles. For any given quintile, we find plans that raise average after-tax income more than the TCJA while costing less, although these plans are easier to find for the bottom four quintiles than for the top quintile. And although many plans cost less than the TCJA while benefitting tax units in each of the bottom four quintiles, we find no plan that benefits the top quintile more than the TCJA while benefitting any of the bottom four quintiles more than the TCJA.

We identified plans that satisfy various criteria. For example, by repealing the SALT deduction on top of the other provisions in the TCJA, we find that it is possible to raise the average after-tax incomes of all five quintiles while reducing revenue by only \$29 billion. Further, we find that the least expensive plan to raise after-tax incomes in each quintile at least 1 percent costs \$174 billion (compared with the \$243 billion cost of the TCJA). Finally, we constructed a plan that costs the same as the TCJA but raises average after-tax income in each quintile at least 1.1 percent.

Future use of TPC's new modeling capacity includes analyzing the effect of changes to interacting provisions of the tax code, such as the earned income tax credit and the CTC. We will also be able to rapidly respond to broad policy proposals by estimating the relative revenue and distributional trade-offs for many alternatives.

NOTES

- ¹ The Tax Cuts and Jobs Act of 2017, Pub L. No. 115-97, 131 Stat. 2054 (2017).
- ² See the public law summary for the Tax Cuts and Jobs Act: <https://www.congress.gov/bill/115th-congress/house-bill/1/summary/49>. The Treasury Department released a “unified framework” on September 27, 2017. See US Department of the Treasury (2017).
- ³ As we explain later in the report, adjusted revenue smooths certain corporate and individual provisions to limit yearly fluctuations in distributional changes.
- ⁴ See also “Table T18-0147 - Characteristics of Alternative Minimum Tax (AMT) Payers; Percentage Affected by the AMT, 2017-2018, 2025-2026,” Tax Policy Center, October 2, 2018.
- ⁵ See “Table T18-0161 - Tax Benefit of the Itemized Deduction for State and Local Taxes, Baseline: Current Law, Distribution of Federal Tax Change by Expanded Cash Income Percentile, 2017,” Tax Policy Center, October 16, 2018, and “Table T18-0163 - Tax Benefit of the Itemized Deduction for State and Local Taxes, Baseline: Current Law, Distribution of Federal Tax Change by Expanded Cash Income Percentile, 2018,” Tax Policy Center, October 16, 2018.
- ⁶ See “Table T18-0193 - Tax Benefit of the Child Tax Credit, Baseline: Current Law, Distribution of Federal Tax Change by Expanded Cash Income Percentile, 2017,” Tax Policy Center, October 16, 2018, and “Table T18-0195 - Tax Benefit of the Child Tax Credit, Baseline: Current Law, Distribution of Federal Tax Change by Expanded Cash Income Percentile, 2018,” Tax Policy Center, October 16, 2018.
- ⁷ A tax unit is defined as an individual filer, a married couple filing jointly, or either of those who would file a tax return if their income or other characteristics required them to do so. A tax unit is similar to a household, but differs in certain situations. A cohabitating, unmarried couple, for example, would be one household but two tax units.
- ⁸ For more detailed information on TPC’s tax model, see “Brief Description of the Tax Model,” Tax Policy Center, last updated August 23, 2018, <https://www.taxpolicycenter.org/resources/brief-description-tax-model>.
- ⁹ Other measures are problematic. See William Gale, “The Right Way, and the Wrong Way, to Measure the Benefits of Tax Changes,” *TaxVox* (blog), November 20, 2017, <https://www.taxpolicycenter.org/taxvox/right-way-and-wrong-way-measure-benefits-tax-changes>.
- ¹⁰ For more information on the construction of the expanded cash income measure, see “Income Measure Used in Distributional Analyses by the Tax Policy Center,” Tax Policy Center, accessed March 13, 2019, <https://www.taxpolicycenter.org/resources/income-measure-used-distributional-analyses-tax-policy-center>.
- ¹¹ See Rosenberg (2013).
- ¹² See for example, Gale et al. (2018).
- ¹³ We use the income tax brackets defined by the TCJA.
- ¹⁴ See table 1 in Sammartino et al. (2018).
- ¹⁵ Note that this is an average increase. Within each quintile, some tax units saw an increase in taxes while other tax units saw a decrease.

REFERENCES

- Birnbaum, Jeffrey H., and Alan S. Murray. 1987. *Showdown at Gucci Gulch: lawmakers, lobbyists, and the unlikely triumph of tax reform*. New York: Random House.
- Gale, William, Hilary Gelfond, Aaron Krupkin, Mark J. Mazur, and Eric Toder. 2018. "A Preliminary Assessment of the Tax Cuts and Jobs Act of 2017." *National Tax Journal* 71 (4): 589–612.
- Joint Committee on Taxation. 2017. "Estimated Budget Effects of the Conference Agreement for H.R.1, The 'Tax Cuts And Jobs Act.'" JCX-67-17. <https://www.jct.gov/publications.html?func=startdown&id=5053>.
- Kelly, Jessica, Kyle Ueyama, and Alyssa Harris. Forthcoming. "Scaling Microsimulation Modeling in the Cloud: A Guide." Washington, DC: Urban Institute.
- Rosenberg, Joseph. 2013. "Measuring Income for Distributional Analysis." Washington, DC: Urban Institute. <https://www.taxpolicycenter.org/publications/measuring-income-distributional-analysis>.
- Sammartino, Frank, Philip Stallworth, and David Weiner. 2018. "The Effect of the TCJA Individual Income Tax Provisions across Income Groups and across the States." Washington, DC: Urban-Brookings Tax Policy Center. http://www.taxpolicycenter.org/sites/default/files/publication/154006/the_effect_of_the_tcja_individual_income_tax_provisions_across_income_groups_and_across_the_states.pdf.
- Tax Policy Center. 2017. "Distributional Analysis of the Conference Agreement for the Tax Cuts and Jobs Act." Washington, DC: Urban-Brookings Tax Policy Center. <https://www.taxpolicycenter.org/publications/distributional-analysis-conference-agreement-tax-cuts-and-jobs-act/full>.
- US Department of the Treasury. 2017. *Unified Framework for Fixing Our Broken Tax Code*. Washington, DC: US Department of the Treasury.

ABOUT THE AUTHORS

Robert McClelland is a senior fellow in the Urban-Brookings Tax Policy Center. Previously, he worked in the tax analysis division of the Congressional Budget Office, where he examined the impact of federal tax policy on charitable giving and bequests, the realization of capital gains, labor supply, and small businesses. He worked for the Congressional Budget Office from 1999 to 2005 and from 2011 to 2016, and in between, he directed the division of price and index number research at the Bureau of Labor Statistics. He received a BA in economics and environmental studies from the University of Santa Cruz and a PhD in economics from the University of California, Davis.

Daniel Berger is a former research analyst in the Tax Policy Center, where he studied federal tax policy and worked on the Tax Policy Center's microsimulation model, which produces revenue and distributional estimates of the federal tax system. Before joining Urban, Berger was a researcher at the Pew Charitable Trusts in the Government Performance division. Berger is now a quantitative economic and statistics senior at Ernst and Young. He received his MPP from Georgetown's McCourt School of Public Policy.

Alyssa Harris is a former programmer and analyst on the research programming team in the Office of Technology and Data Science at the Urban Institute. She works with researchers to maintain and enhance microsimulation models, such as the Transfer Income Model, and to translate policies and research principles into code. Harris holds a BS in computer science and a BA in economics and mathematics from Rhodes College, and a master's degree in economics from the University of Virginia.

Chenxi Lu is a research analyst in the Urban-Brookings Tax Policy Center, where she works on the microsimulation model of the federal tax system. Lu earned her BA in mathematical economics from Fudan University and her MPP from Georgetown University.

Kyle Ueyama is a senior programmer and data scientist in the Office of Technology and Data Science at the Urban Institute, where he works on a wide range of projects, such as the Modeling in the Cloud initiative. He is an experienced programmer in R and Python, and he helps lead the users groups for both languages. He holds a master's degree in quantitative methods from Columbia University and a bachelor's degree in political science from the University of California, Los Angeles.



The Tax Policy Center is a joint venture of the
Urban Institute and Brookings Institution.



BROOKINGS

For more information, visit taxpolicycenter.org
or email info@taxpolicycenter.org