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Would a significant increase in the top income tax rate substantially alter income inequality?

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Executive Summary

The high level of income inequality in the United States is at the forefront of policy attention. This paper focuses on one potential policy response: an increase in the top personal income tax rate. We conduct a simulation analysis using the Tax Policy Center (TPC) microsimulation model to determine how much of a reduction in income inequality would be achieved from increasing the top individual tax rate to as much as 50 percent. We calculate the resulting change in income inequality assuming an explicit redistribution of all new revenue to households in the bottom 20 percent of the income distribution. The resulting effects on overall income inequality are exceedingly modest.

That such a sizable increase in top income tax rates leads to such a limited reduction in income inequality speaks to the limitations of this particular approach to addressing the broader challenge. To be sure, our results do not speak to the general desirability of a more progressive tax-and-transfer schedule, just to the fact that even a significant tax increase on high-income households and corresponding transfer to low-income households has a small effect on overall inequality.

The high level of income inequality in the United States continues to receive substantial policy attention, for good reason. While there is general agreement that it is a challenge our nation should address, *how* to address it is much less clear. In this analysis, we examine the potential effects of one policy option: an increase in the top income marginal tax rate.

We conduct a simulation analysis using the Tax Policy Center (TPC) microsimulation model to determine how much of a reduction in income inequality would be achieved simply by taxing high levels of personal income at a higher marginal rate, and redistributing the associated revenue to the lowest-income households. The results of this analysis lead to the conclusion that fairly substantial increases in the top income tax rate would have a relatively small effect on the distribution of after-tax income, even with explicit redistribution.

A [March 2015 analysis](#) for The Hamilton Project written by one of us (Kearney), along with Brad Hershbein and Larry Summers, showed that a sizable increase in the share of men with a college degree would reduce inequality in the bottom half of the earnings distribution, largely by pulling up the earnings of those near the 25th percentile. But that analysis also revealed that such an improvement in college attainment would not significantly reduce overall earnings inequality. The reason is that a large share of earnings inequality is at the top of the earnings distribution, and changing college shares will hardly affect those differences.

That analysis prompts a follow-up question: if a reasonable expansion in educational attainment would not substantially reduce overall inequality, what would? An obvious candidate policy to consider is raising top income tax rates. We thus investigate whether a large increase in marginal tax rates at the top end of the income distribution would have a more notable effect on inequality than the increase in educational attainment previously analyzed.¹

¹ To be sure, the policy conversation about income inequality should not be framed as a set of mutually exclusive solutions—e.g., through changes in education *versus* changes in taxes and transfers. But clarifying how much any one policy lever could be expected to accomplish will help determine which combination of policy responses is likely to be most effective. It is with that goal in mind that we pursue this analysis.

A Simulation Exercise

We conduct a simulation exercise using the Tax Policy Center microsimulation model to examine how the distribution of post-tax income would change under three tax schedule scenarios²:

1. Raise the top individual income tax rate from 39.6 percent to 45 percent;
2. Raise the top individual income tax rate from 39.6 percent to 50 percent; or
3. Raise the top individual income tax rate to 50 percent for income greater than \$1 million for joint filers and \$750,000 for single filers.

We restrict our attention to changes in the top marginal tax rate and do not consider other options, such as scaling back exemptions to expand the tax base or applying the highest income tax rate to households at lower levels of income.

Our initial analysis does not adjust for any behavioral responses to the change in taxes (i.e., we assume households will earn the same pre-tax income regardless of the change in the top marginal income tax rate). In these results the only effect on household incomes – and on the corresponding income distribution – is the reduction of post-tax income by households subject to the higher tax rate. We subsequently model explicit redistribution of the new tax revenue and behavioral responses among high-income households.³

² TPC's microsimulation model uses the 2006 public-use file from the Internal Revenue Service's Statistics of Income (SOI) Division, which contains information from 145,858 income tax returns filed in 2006. The 2006 data are then transformed to represent the tax filing population in 2011. Pre-tax income is defined as "expanded cash income," which is adjusted gross income (AGI) plus above-the-line adjustments, employer-paid health insurance and other nontaxable fringe benefits, employee and employer contributions to tax-deferred retirement savings plans, tax-exempt interest, nontaxable Social Security benefits, nontaxable pension and retirement income, accruals within defined benefit pension plans, inside buildup within defined contribution retirement accounts, cash and cash-like transfer income, employer's share of payroll taxes, and imputed corporate income tax liability. Post-tax income is expanded cash income less federal individual income taxes net of refundable credits, corporate income taxes, payroll taxes, estate taxes, and excise taxes. State and local taxes are not considered.

³ In this essay our reference to "households" is technically a reference to tax filing units.

Increasing the top income tax rate from 39.6 to 45 percent would increase the income tax burden of households in the 95-99th percentiles of income (as defined before taxes are paid) by an average of \$3,508. Households in the top 1 percent would see their income tax liability go up by \$58,233 on average. And households in the top 0.1 percent would experience an average income tax increase of \$297,582.

A larger hike in the top income tax rate to 50 percent would result, not surprisingly, in larger tax increases for the highest income households: an additional \$6,464, on average, for households in the 95-99th percentiles of income and an additional \$110,968, on average, for households in the top 1 percent. Households in the top 0.1 percent would experience an average income tax increase of \$568,617.

How would these reductions in after-tax income affect overall income inequality? To answer that question, we calculate the Gini coefficient on the full distribution of post-tax income under the three different tax policy scenarios. (The Gini coefficient is an index that ranges from 0, if everyone had the same earnings, to 1, if a single person had all the earnings and everyone else had none.)

Perhaps surprisingly, increasing the top marginal tax rate to 45 percent or 50 percent has a trivial effect on overall income inequality. This can be seen in Table 1 below. Under current tax provisions, the after-tax Gini coefficient is .574. This compares to a Gini of .610 calculated over pre-tax income. Raising the top income tax rate to 45 percent reduces the Gini coefficient only from .575 to .573. Raising it to 50 percent brings the Gini to .571. If the 50 percent top tax rate is applied to income only above \$1 million for married filers and \$750,000 for single filers, the resulting Gini is .572.

By way of comparison, the Hershbein, Kearney, Summers [education simulation analysis](#) referred to above resulted in a .021 drop in the Gini coefficient for earnings inequality, from .568 to .547. That is only a small nudge toward the lower level of earnings inequality in 1979: a Gini of .435. In other words, increasing the top

marginal income tax rate to 50 percent has the same, almost imperceptible, impact on overall inequality as does substantially increasing the share of the population receiving a college degree.⁴

Table 1: simulated impacts of top tax rate increases on Gini coefficient

Before tax income	0.610
After tax income – Current law	0.574
After tax income – Top rate to 45%	0.573
After tax income – Top rate to 50%	0.571
After tax income – Top rate to 50%, at \$1M/\$750K	0.572

In the next set of calculations, we tabulate what would happen to income inequality under all three tax scenarios if all of the additional revenue collected were redistributed evenly to all households in the bottom 20 percent.

Increasing the top rate to 45 percent would bring in an additional \$49.4 billion in revenue. Dividing that evenly among the 36.1 million households in the bottom income quintile (defined over households) would give each of those households an additional \$1,370 in post-tax income.

Increasing the top rate to 50 percent with the same redistribution scheme would bring in an additional \$95.6 billion in revenue, leading to an additional \$2,650 in post-tax income for the bottom fifth of households. Applying a new top rate of 50 percent to income above \$1 million for married filers and above \$750,000 for single filers would bring in an additional \$63.5 billion in revenue, which would result in \$1,760 in additional post-tax income for households in the lowest quintile.

The reduction in income inequality resulting from each of these tax and redistributive plans is quite modest. The Gini coefficient falls from .574 under the current income tax schedule to .567, .560, and .565 respectively. These are very small reductions in the calculated statistic: .007,

⁴ Note that the current analysis considers total tax-filing-unit income; the Hershbein, Kearney, and Summers simulation focused on individual earnings.

.015, and .010, under the three tax increase scenarios.

Incorporating potential behavioral responses does not alter this general finding.⁵ Essentially, adjusting for a reduction in taxable income among the highest-income households in response to a higher marginal tax rate leads to the same overall reduction in inequality. (The highest income households reduce their pre-tax income, which would amplify the reduction in income inequality, but that leaves less revenue to redistribute.) Under the three plans of a higher top rate with explicit redistribution and a behavioral response at the top end, the Gini coefficient falls from .575 to .569, .565, and .568, respectively.

Table 2: simulated impacts of top tax rate increases with explicit redistribution on Gini coefficient

	Gini
Before tax income	0.610
After tax income - Current law	0.574
After tax income - Top rate to 45%	0.567
After tax income - Top rate to 50%	0.560
After tax income - Top rate to 50%, at \$1M/\$750K	0.565

We have also examined how income ratios change in response to these three tax proposals. The use of percentile ratios to measure income inequality has the advantage of being simple to calculate and understand.⁶

Under the current income tax schedule, the ratio of household after-tax income at the 99th percentile to the median is 10.43. Increasing the top income tax rate to 45 percent reduces this to 10.42. A raise in the top rate to 50 percent does not do much more, bringing the ratio to 10.42. The 90/50 ratio is 3.51 under current tax policy. (The large difference in the 99/50 and 90/50

reflects the skewness in the income distribution.) Increasing the top income tax rate has no effect on the 90th or 50th percentile of the distribution, so this ratio is unchanged.

As can be seen in Table 3, the simulated tax policy changes have a larger impact on the 99/10 and 90/10 ratios of income, since the assumed redistribution appreciably increases the after-tax income of those in the bottom 20 percent. Under the three scenarios, with the explicit redistribution, the 99/10 ratio falls from 49.68 to 42.23, 37.06, and 40.53, respectively. The 90/10 ratio falls from 16.73 to 14.23, 12.49, and 13.65, respectively.⁷

It is important to note that these improved ratios reflect increases in income at the bottom of the income distribution, driven by an explicit targeted redistribution to low-income households. Without redistribution, there is no change at all in the 90/10 ratio.

Conclusion

In this analysis we have simulated the effects of increasing the top income tax rate under three possible reforms: (a) raise the top individual income tax rate from 39.6 to 45 percent; (2) raise the top individual income tax rate from 39.6 to 50 percent; and (3) raise the top individual income tax rate to 50 percent for income greater than \$1 million for joint filers, \$750,000 for single filers. We calculate the resulting change in income inequality under these scenarios assuming an explicit redistribution of all new revenue to households in the bottom 20 percent of the income distribution. The resulting effects on overall income inequality are exceedingly modest, with changes in the Gini coefficient of less than 0.01.

That such a sizable increase in the top personal income tax rate leads to a strikingly limited reduction in overall income inequality speaks to the limitations of this particular approach to addressing the broader challenge. It also reflects

⁵ We redo the simulation assuming that households with more than \$100,000 in pre-tax income reduce their pre-tax income in response to an increase in the income tax rate, with an income elasticity of .4.

⁶ Under the current tax schedule, household after-tax income is \$7,795 at the 10th percentile, \$37,147 at the 50th, \$130,440 at the 90th, and \$387,284 at the 99th. The top 0.1 percent of households have after-tax income above \$1.66 million.

⁷ By way of comparison, the Hershbein, Kearney, Summers simulation that considered a 10 percent increase in college attainment among high-school educated males had the effect of reducing the 90/25 earnings ratio from 16.39 to 11.69.

Table 3: simulated impacts of top tax rate increases with explicit redistribution on income percentile ratios

	r99/50	r90/50	r99/10	r90/10
Before tax income	12.60	3.90	61.10	18.93
After tax income - Current law	10.43	3.51	49.68	16.73
After tax income - Top rate to 45%	10.42	3.51	42.23	14.23
After tax income - Top rate to 50%	10.42	3.51	37.06	12.49
After tax income - Top rate to 50%, at \$1M/\$750K	10.43	3.51	40.53	13.65

the fact that the high level of U.S. income inequality is characterized by a wide divergence in income between higher-income households and those at the middle and below. The top income tax rate only applies to households above the 95th percentile of income.

To be sure, there might be good reasons to increase top income tax rates for other purposes beyond reducing income inequality—for example to raise much needed revenue for the federal government. In addition, the tax-and-transfer policies analyzed would provide substantial benefits to low-income households if the revenue were explicitly redistributed. Thus,

our results do not speak to the desirability of the tax-and-transfer policy, just to the fact that even a significant tax increase on the highest-income households and transfer to low-income households has a small effect on overall inequality.

This analysis, coupled with the previous one, in turn leaves us with the open and important question: if neither a substantial expansion in education nor a big increase in the top marginal tax rate would significantly affect measured income inequality, what would?

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BROOKINGS

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Raising the top marginal tax rate would not do much to reduce overall income inequality – additional observations

By: William G. Gale, Melissa S. Kearney and Peter R. Orszag

In a policy brief released two weeks ago on the Brookings website, we evaluated the impact on income inequality of raising the top marginal income-tax rate as high as 50 percent. We considered two baseline cases: assigning the new revenue without explicit redistribution and alternatively redistributing all of the new revenue to households in the bottom 20 percent of the income distribution. We concluded that raising the top marginal income tax rate, by itself, would have little effect on the overall inequality of income and that raising the rate and using the funds to support the bottom 20 percent of households would boost the income of the latter group but, again, not have that much effect on the overall level of inequality.

We are grateful to those who have weighed in on this analysis via social media and email. The purpose of this note is to respond briefly and promptly to some of the reactions we have received.

I. Background and Context

Income inequality has been rising in the United States for years. Although not all inequality is bad or counterproductive, the steady rise in inequality has prompted policymakers and researchers to look for ways to stem and reverse the trends. Perhaps the most daunting aspect of addressing long-term trends in inequality is the sheer magnitude of the rise in income inequality over time. For example, Larry Summers has noted that to restore the 1979 distribution of income would require a shift of about \$1 trillion (about 5.6 percent of GDP) away from the top 1 percent and toward the bottom 80 percent.

An implication of Summers' point is that it would take massive policies to undo all or most of the rise in inequality that has occurred. Thus, it should not be surprising that the policies that we examine – policies that are an order of magnitude smaller than \$1 trillion, but still are large relative to those considered to be in the realm of the politically feasible – do not offset much of the overall increase in inequality that has occurred over the past 35 years.

II. Analysis and Extensions

In our earlier work, we described the results of a simulation analysis that quantified the decline in overall after-tax, after-transfer income inequality that would result from raising the top personal income tax rate by more than 10 percentage points – to 50 percent. We found that the effect on overall income inequality across households, as captured by the Gini coefficient, was small. If, hypothetically, all of the revenue from that policy change were redistributed to the bottom 20 percent of households, the Gini coefficient still does not change much, though the 99/10 ratio of household income would fall appreciably, because households at the 10th percentile would see a sizable increase in income.

One reaction to our work has taken issue with our use of the Gini coefficient. We used the Gini coefficient as our primary measure because, despite its limitations, it remains the dominant measure of inequality used in policy debates. We acknowledge that the Gini coefficient is more sensitive to changes in the middle of the income distribution than in the tails of that distribution. But our results are not substantially affected by employing the alternative metric (suggested by Marshall Steinbaum) of the top 1 percent’s share of income, as reported in Table 1 below. (For simplicity, we ignore behavioral responses here.)

Table 1: Gini and top 1 percent share under current law and simulated reform

<u>After-tax income</u>	<u>Gini</u>	<u>Top 1 percent share</u>
Current law	.574	.1640
Top rate to 50 percent	.571	.1571
Top rate to 50 percent and redistribute revenue to bottom 20 percent	.560	.1558

Source: Urban-Brookings Tax Policy Center model

With targeted redistribution of the revenue raised, increasing the top marginal tax rate to 50 percent would reduce the after-tax Gini coefficient by 2.4 percent (from .574 to .560) and reduce the top 1 percent share by 5 percent (from .1640 to .1558). We do not believe using the top 1 percent share materially changes the conclusion: whether the policy reduces inequality by 2.4 percent or 5 percent, we would continue to characterize it as small relative to overall inequality.

A second criticism that we received is that these changes would appear large if compared to changes in long-term inequality trends. Since the TPC model does not have historical data, we have to turn to alternate sources to make comparisons for changes over time. The data below are from the

Congressional Budget Office, which captures somewhat different concepts of income and have different units of analysis than the TPC model. Nonetheless, these numbers can be used to provide some useful context.

Table 2: Trends in Gini and Top 1% share of after-tax income

	1979	2007	2011	Change, 1979-2007	Change, 1979-2011
<i>After-benefit, after-tax income: Gini</i>	.358	.465	.436	0.107 (29.9%)	0.078 (21.8%)
<i>After-benefit, after-tax income: top 1% share</i>	.074	.167	.126	0.093 (126%)	0.052 (70.3%)

Source: Congressional Budget Office. 2014. *The Distribution of Household Income and Federal Taxes, 2011*. <http://www.cbo.gov/publication/49440>

Table 3: Share of trend offset by raising top marginal tax rate

	Change in Gini	Share remaining of change 1979-2007	Share remaining of change 1979-2011	Change in top 1 percent	Share remaining of change 1979-2007	Share remaining of change 1979-2011
Top rate to 50 percent	-0.003	97.2%	96.2%	-0.0069	92.6%	86.7%
Top rate to 50 percent and redistribute revenue to bottom 20 percent	-0.014	86.9%	82.1%	-0.0082	91.2%	84.2%

Source: Table 1 and 2

A comparison of the changes in after-tax inequality measures from the TPC model and the changes

in these measures over time indicates that raising the top marginal tax rate to 50 percent would leave in place between 82 and 97 percent of the increase in inequality since 1979 (see Table 3). This estimate is not precise, because it depends on the end year used (2007 or 2011), the metric used, whether the revenue is redistributed, and it introduces potential inaccuracies from mixing data produced by the TPC model with those computed by the CBO methodology. Nonetheless, it suggests to us that the changes produced by our simulated tax increase leaves in place the vast majority of the long-term trend of widening income inequality. Note also that, again, looking at the top 1 percent share does not give a different impression than does looking at the Gini coefficient.

A third reaction to our analysis is that the proposal we analyzed was not ambitious enough, in that it only applied to the top marginal tax rate – and thus a very small share of tax filing units – and only applied to ordinary income. A policy of increasing the top marginal tax rate to 50 percent, much less fully redistributing all the revenue to the bottom 20 percent, does not strike us as a modest proposal. Indeed, it is clearly beyond the politically feasible in the near future. Nonetheless, we agree that other policy options are possible. In particular, policies that raised the tax rates on capital gains and dividends or that taxed accrued wealth could well be targeted more closely on the income of the extremely wealthy. However, given the concern about the Gini's lack of responsiveness to extremes, it is unclear how much this would affect the Gini coefficient. Our point is merely that an increase in the top marginal tax rate by itself would not do much to reduce after-tax income inequality.

III. Conclusions and Interpretations

Our analysis focused on the top marginal tax rate and on overall income inequality because there is a lot of policy and political attention paid to these two particular issues. The results of our straightforward simulation analysis cast doubt on the notion that one could do much to stop or reverse the long-term trends in income distribution solely by raising the top rate, even by amounts that are admittedly larger than politically palatable. One reason is that the widening of the income distribution that has been going on for a long time has created vast disparities in income that are not limited to just the very top of the distribution. A second reason is that much of the income going to the wealthiest households takes the form of capital gains, dividends, or accrued but unrealized wealth, none of which is affected by changes in the ordinary income tax rate.

A related reason is that the overall size of the modeled reduction in after-tax income for top income households is not big relative to income distribution trends. Whereas Summers noted that it would require a \$1 trillion shift in resources to offset the long-term impacts of inequality, raising the top tax rate to 50 percent would yield one-tenth as much – something like \$96 billion in revenue (and presumably less if we adjusted for behavioral responses).

As we stated in the initial draft, “our results do not speak to the desirability of the tax-and-transfer policy” that we examined. It would be quite possible to combine the policies we explored with others

and make a more notable dent into inequality. However, it appears that no single policy within the realm of the politically feasible could in fact substantially offset the long-term, powerful trends in income inequality. Our analysis helps make that point.

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