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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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