

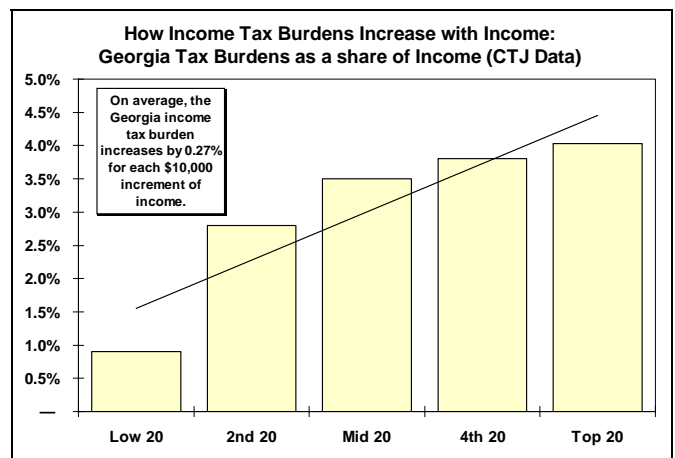
Does Personal Income Tax Progressivity Inhibit Economic Growth? April 2004

What is the relationship between income tax burdens and state economic growth? A December 2003 study by the Oklahoma Council of Public Affairs (OCPA), titled *Income Tax Progressivity in Oklahoma: Hindering Economic Growth, Varying State Revenue*, attempts to weigh in on this issue. The authors of the report claim that Oklahoma’s personal income tax is among the most progressive in the nation, and that states with especially progressive income taxes tend to experience slow economic growth. This paper evaluates OCPA’s findings and shows that their study has two important flaws: Oklahoma’s income tax is far less progressive than OCPA claims, and, when properly measured, there is no statistical linkage between income tax progressivity and economic growth.

Measuring Tax Progressivity: the Right Way and the Wrong Way

The main goal of the OCPA paper is to show that Oklahoma’s income tax is more progressive¹ than that of most other states. The authors make this case by presenting four different statistical measures of progressivity.

Three of the four progressivity measures presented by OCPA use previously published data from other research organizations. These three measures are all designed to provide a rough estimate of the average rate at which income tax burdens increase with income. The chart at right demonstrates the intuitive meaning of these measures using the example of the Georgia personal income tax: the bars show the income tax burden as a share of income for each quintile, while the black line represents the average growth trend in tax burdens across the entire population. In Georgia, this average growth trends tells us that for every \$10,000 of added income, the Georgia income tax burden as a share of income increases by 0.27 percent.



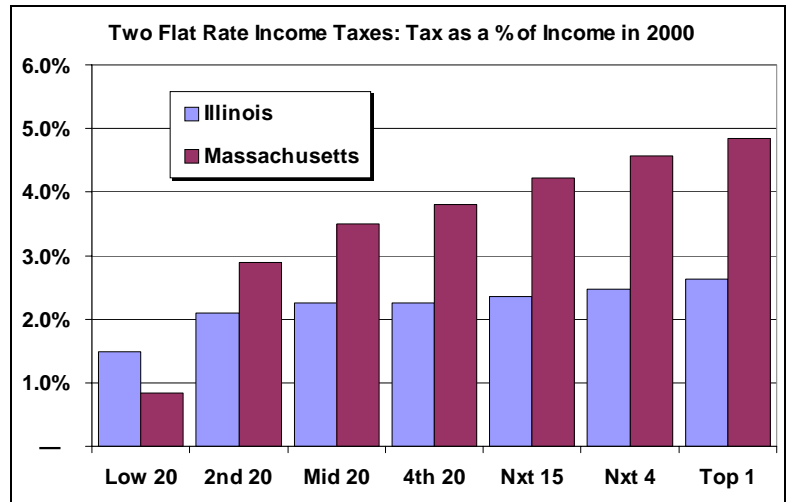
These three measures share the same limitations—in particular, each measure assumes that what matters is the average rate at which state income tax burdens grow for the entire population of a state, including all income levels—but they do include some basic information about the progressivity of a state’s income tax.

The fourth measure of progressivity used in the paper, which was calculated entirely by

¹A progressive tax requires higher-income taxpayers to pay a higher percentage of their income in tax than lower-income taxpayers.

OCPA, takes an entirely different approach. This statistic, which we will call the “OCPA measure,” defines income tax progressivity as the difference between the top tax rate and the bottom tax rate in a particular state. This approach is misleading, for several reasons.

First, if the only thing that matters in determining tax progressivity is the difference between the bottom and top tax rates, then flat-rate income taxes should be the least progressive tax systems—and all flat-rate taxes should have the same impact on state economies. Yet, as the chart at right shows, flat-rate tax states that offer generous exemptions and low-income credits (like Massachusetts) are substantially more progressive than low-exemption flat-rate states (like Illinois)—and Massachusetts income tax burdens are higher at most income levels than are Illinois income tax burdens. The OCPA measure predicts that these two very different tax systems would have exactly the same impact on economic growth.



Second, some states that have progressive tax rates require the vast majority of taxpayers to pay at the top rate, usually because the top tax rate starts at a very low income level. For example, single Alabama taxpayers pay at the top tax rate if their taxable income exceeds \$3,000. This means that almost 75 percent of taxpayers pay at the top rate—making it effectively a flat tax. As the chart at right shows, any of the other three progressivity measures would capture this result: by any of these other measures, Alabama’s income tax is among the least progressive in the nation. Yet because the OCPA measure simply looks at the difference between the top and bottom tax rates, it ranks the Alabama tax the 27th most progressive in the nation.

Measure	Rank
OCPA	27
CTJ	39
Minn. Single	41
Minn. Married	40
Suits Index	42

Finally, and most important for Oklahoma’s ranking, the OCPA measure does not factor in the impact of tax deductions, exemptions and credits—items that reduce effective tax burdens. This is important because many states, including Oklahoma, allow tax deductions that disproportionately benefit wealthier taxpayers. Oklahoma is one of nine states that allow taxpayers to deduct federal income tax payments on their state income tax forms. Because federal income taxes are quite progressive, this tax break primarily benefits the very wealthiest Oklahomans, sharply reducing the effective income tax burden paid by high-income residents. By omitting the impact of this deduction, the OCPA measure makes the Oklahoma income tax seem much more progressive than it actually is.

Selective Use of Regression Analysis Yields Misleading Results

If the OCPA report presents four measures of tax progressivity, why should it matter if one of them is especially flawed? The answer is twofold. First, when it comes time to demonstrate the

statistical linkage between tax progressivity and economic growth, the OCPA report includes only one of these four measures—the flawed OCPA measure. Second, the report simply ignores the single most widely accepted measure of tax progressivity, the “Suits index.” In fact, the OCPA report does not even mention that this measure exists.

The chart in Appendix I shows how the use of the OCPA measure systematically distorts the progressivity rankings determined under the Suits Index. Not surprisingly, of the five states whose progressivity rankings are most exaggerated under the OCPA measure, four of them (including Oklahoma) allow a deduction for federal income taxes paid. By contrast, all of the other four measures of tax progressivity described in this report take the impact of this deduction into account—which means that any of these alternative measures will give a more accurate depiction of Oklahoma’s income tax progressivity.

In short, the OCPA measure is fatally flawed—and has the effect of making Oklahoma’s income tax seem much more progressive (and neighboring states like Kansas much less regressive) than it actually is. In fact, the use of the OCPA measure instead of the more appropriate Suits Index approach actually reverses the answer to a very basic question: whether the Oklahoma income tax is more, or less, progressive than the Kansas income tax. While the flawed OCPA measure claims that Oklahoma’s income tax is more progressive than the Kansas income tax, the table at right shows that the Suits Index tells us exactly the opposite: that the Kansas personal income tax is substantially more progressive than the Oklahoma income tax.

Comparing Oklahoma and Kansas: Which Income Tax is More Progressive?		
State	Rank	
	OCPA	Suits index
Kansas	28	16
Oklahoma	9	26
Who's More Progressive:	Oklahoma	Kansas

Unfortunately, OCPA chooses to discard the more accurate measures of tax progressivity and uses only the OCPA measure in its simple regression analyses. Why would OCPA choose the most flawed measure of tax progressivity to make its case? The table below suggests one answer: none of the more accurate measures supports the story OCPA wants to tell. This table shows that the impact of income tax progressivity on economic growth becomes insignificant when any of these other four measures are used—and that the alleged impact disappears entirely when the Suits Index is used.²

What does this data mean? The “slope coefficient” tells us the average marginal effect that one variable has on another. For example, it could be concluded from a regression analysis that for each hour a college student studies, their grades go up by 5 percent on average—producing a slope coefficient of .05. The authors of the OCPA study claim that for each additional unit of tax progressivity, economic growth decreases by 0.066857 (or 6.6857%). In comparison, when the

Income Tax Progressivity & Economic Growth: 5 Simple Regression Analyses			
Progressivity Variable	Slope Coefficient	T-Ratio	R-Squared
OCPA Measure	0.00	-3.54	0.238
CTJ	-0.01	-0.97	0.023
Minn. Single	-0.02	-1.90	0.082
Minn. Married	-0.01	-1.84	0.078
Suits Index	0.00	0.10	0.000

²Though our regression analysis using the OCPA measure in this table does not perfectly match the results of the OCPA study, they do come very close and follow the same trend.

Suits Index is used to measure progressivity, the slope coefficient is zero—meaning that the progressivity of an income tax structure has no marginal effect on economic growth.

The “t-ratio” tells us whether or not a perceived relationship between variables is meaningful. The t-statistic is used because an observed casual relationship could be the result of random error and not due to any actual cause and effect. For example, there might be an observed correlation between the amount of rainfall a city gets and its poodle population, but common sense (and the t-statistic) would tell us that poodles don’t cause rain or vice versa. For this analysis, the t-ratio would have to be greater, in absolute terms, than about 2 to be considered statistically significant at a 95% confidence level. The inaccurate OCPA measure is significant, with a t-ratio of -3.54, whereas the Suits Index shows no significance with a t-ratio of +0.10.

The “r-squared” statistic tells us how much of the variation in economic growth is explained by the variable we’re looking at. So, for example, the OCPA measure explains 23.8 percent of the variation in economic growth across states. By contrast, none of the other variables explain more than 8 percent of the variation in economic growth, and the Suits Index explains almost none of the variation in growth between states.

For each of the statistics described here, the inaccurate “OCPA measure” is the only one among the five measures surveyed here that indicate any sort of a statistically valid relationship between tax burdens and economic growth. Any one of the other four more accurate measures tells us that there is no significant relationship between these variables.

Oversimplified Regression Analyses are Worse than No Regression Analyses

The OCPA analysis also suffers from a more fundamental flaw that makes the measurement errors described so far a moot point: their simple regression does not take into account *any* other differences between states that might affect state economic growth. None of these regressions shed any light on whether a particular state’s economic growth pattern is the result of changes in other types of tax (including corporate taxes, property taxes, and sales taxes), government spending behavior, regional and national economic trends, demographic changes, or the weather. The OCPA’s regression results are fatally weakened by the fact that *any* external factor affecting economic growth could be responsible for the pattern they attribute to reliance on a progressive personal income tax. The authors of the OCPA study do recognize this, noting that “these results will have to be confirmed with subsequent research using more sophisticated models,” but nonetheless state repeatedly a claim that simply cannot be validated by their regression results: that “the more progressive an income tax structure it is, the more it harms economic growth.”

Conclusion

State economic growth is determined by an array of social, economic and political factors determined on the local, national, and international levels. When properly done, regression analysis can help infer the impact of a policy change that occurs under controlled experimental conditions—that is, conditions under which the researcher can control all factors other than the policy change that is of interest. But the OCPA analysis has two important flaws that make their regression results useless in describing the linkage between taxes and economic growth. First, OCPA uses an extraordinarily flawed measure of tax progressivity in its regressions, and fails to use three readily available, and technically superior, progressivity measures that are available

within OCPA's own paper. In addition, OCPA completely ignores the Suits Index, which is widely seen as the best measure of tax progressivity. OCPA's choice to use its own flawed measure of tax progressivity is especially troubling given that none of the more accepted progressivity measures support OCPA's assertion that progressive income taxes hurt state economic growth.

Second, even casual reflection should reveal that many factors affected state economic growth in the 1990s—none of which are controlled for by OCPA's research design. The authors of the OCPA study simply assert that the empirical relationship they find is a meaningful one—without testing alternative hypotheses about why this relationship might exist.

Examining the economic impact of a single policy variable without attempting to control for *any* other causal factors is not an exercise which should be taken seriously. The impact of tax laws on economic growth is, rightly, a topic of great interest. But the OCPA analysis adds precisely nothing to our understanding of the effect of income taxes on state economic growth.

APPENDIX I: How the OCPA Rate Progressivity Measure Distorts Progressivity Rankings

