



The Earth isn't Flat, and Neither is Illinois'—or any other state's—Income Tax



POLICY BITE

Though there is a widespread belief that only states with graduated tax rate structures can deliver “progressive” tax policies, research shows that flat rate tax systems can also redistribute tax burdens. State income tax liabilities depend upon various factors that interact with state (and federal) tax systems in complex ways. In addition to a focus on statutory tax rates and vertical equity (in which tax liabilities rise with taxable income), consideration of horizontal equity (in which taxpayers with equivalent taxable incomes have equal tax liabilities) is important. With respect to Illinois, while in 2011 the state had only one statutory tax rate (5%), the share of income that tax filers actually paid (which is called the “average” tax rate):

- varied from below zero to above 5% over the entire population;
- was between 4.5 and 5% for only about 4% of tax filers and was greater than the statutory rate of 5% for about 4.3% of filers;
- was zero for a small portion of the middle third of tax filers, was between 4% and 5% for about 60% of them and was above 5% for about 3.9% of filers in this group; and
- was similar for tax filers in the middle and top thirds of the income distribution, but slightly more tax filers in the top third had an average rate near or above 5%.

RESEARCH BRIEF

Many members of the public and some people in the policymaking world believe that only states with graduated tax rate structures (where there are different tax rates for different income

brackets) can deliver “progressive” tax policies that result in tax liabilities rising with incomes. Policy discussions centered around the fairness of states’ flat versus graduated income tax systems often focus mainly on statutory rates and vertical equity, the term used when tax liabilities rise with ability to pay.

This discussion assumes that tax tables provide sufficient information to compare tax systems. But these analyses oversimplify state tax systems by ignoring horizontal equity, which is said to be achieved when tax filers with the same taxable incomes have the same tax liabilities.

In a recent paper by David Merriman, Michael Disher, Francis Choi, and Xiaoyan Hu, supported with funding from the Government Finance Research Center and the Institute of Government & Public Affairs, the authors demonstrate that tax rates are just one of many determinants of state personal income tax liability and that graduated tax rates are not the only way to achieve a progressive tax system. In fact, the dichotomy between flat and graduated rate systems has been exaggerated, and tax systems cannot simply be divided into progressive and regressive groups.

Let’s establish a couple of definitions. When a state applies a single tax rate regardless of income to a particular group of tax filers, married couples, for example, we say it has a “flat” tax. By contrast,

in states with “graduated” rate taxes, different portions of a filer’s taxable income are subject to different tax rates—with the rates increasing as the segments of income get larger. The federal income tax, for example, uses a graduated structure.

Alabama is a straightforward example of a simple graduated tax structure. In 2021, in Alabama, joint filers paid the tax rates shown in Table 1 based on the level of their taxable income.

Table 1: Alabama joint filers state tax rates paid in 2021

Bottom of taxable income bracket (\$)	Top of taxable income bracket (\$)	Tax rate (%)
0	1,000	2
1,000	6,000	4
6,000		5

Source: Tax Foundation <https://perma.cc/RV9A-6AWD>

Alabama’s tax system is “graduated” because different tax rates are applied to different portions of tax filers’ taxable income. The tax rate that is applied to the last dollar of a tax filer’s income is referred to as the “marginal” tax rate. A joint Alabama tax filer with a taxable income of \$1,000 would face a marginal tax rate of 2%. A tax filer with a taxable income of \$2,000 would face a marginal tax rate of 4%. Some may also be interested in the tax filer’s “average” tax rate. The average tax rate can be defined in various ways, but generally is defined as the tax filer’s tax liability divided by their adjusted gross income (AGI). Using the example above, the tax filer with \$2,000 of taxable income would have a tax liability of 2% on the first \$1,000 of their income (paying \$20 in taxes) plus 4% on their income above \$1,000 (an additional \$40), which reflects an average tax rate of 3% (calculated as \$60 in total tax liability divided by total taxable income of \$2,000).

Marginal tax rates are of interest because they help determine tax filers’ *incentive* to earn additional taxable income. The higher the marginal tax rate, the smaller the amount of additional taxable income the tax filer gets to keep. A large literature in economics has examined the relationship between marginal tax rates and economic incentives. For example, marginal tax rates may affect the number of hours a person is willing to work or the amount of capital an investor is willing to invest in entrepreneurial activity.



Merriman, Disher, Choi, and Hu's research established that average tax rates can vary substantially across the population even in flat tax states. They also found that state income tax liabilities depend upon a large number of variables that interact with state (and federal) tax systems in complex ways. So, average tax rates rarely rise (or fall) uniformly with AGI and, as a result, tax filers with identical AGIs may face different tax liabilities and different average tax rates.

Some states tax wages at a different rate (including zero) than capital gains. Additionally, some states exclude some (or all) income from certain sources. For example, certain states wholly or partially exclude retirement income generated by capital gains even though that same income would be taxed if it were earned for non-retirement purposes. States also establish their own rules with respect to personal exemptions and may include so-called "phase-outs" that reduce the size of exemptions as various types of income change.

The authors focused specifically on the Illinois tax code and found that there are many reasons why marginal tax rates may vary even though the statutory tax rate does not. Among the most important reasons is that states often include earned income tax credits (EITCs) which supplement the earnings of low wage workers.

The federal EITC's subsidy varies with a number of factors, including family size and earned income,



and includes segments where the subsidy rises with earned income; stays constant with earned income; and eventually declines as earned income increases. Because the subsidy is positive for workers with low earnings, their marginal tax rate can be negative (i.e., a dollar of additional earned income reduces their net taxes because the subsidy more than compensates for any increase in tax liability).

Similarly, marginal state tax rates for some filers can be negative because their state EITC is calculated as a fraction of their federal EITC. Of course, as income rises and the

Marginal tax rates are of interest because they help determine tax filers' *incentive* to earn additional taxable income. The higher the marginal tax rate, the smaller the amount of additional taxable income the tax filer gets to keep.



EITC is phased out, tax rates will be higher than the statutory marginal tax rates because the EITC subsidy is reduced with each dollar earned.

Other reasons marginal tax rates may differ from the statutory rate include the fact that states often cap the value of certain tax exemptions and tax credits. Tax filers may face abrupt shifts in their marginal tax rates when their income rises to such an extent that they have hit the cap on a credit or an exemption.

Clearly, these varying marginal rates come about because of facets of the tax system other than the rate structure. In Illinois in 2011, negative marginal rates and rates above five percent were most likely the result of EITC phase-ins and phase-outs. But other facets of the Illinois tax system, which include exemptions and limits on property tax credits, may also cause marginal tax rates to differ from the single statutory rate. Based on other analyses, it's clear that other flat rate states would have similar patterns of variation in marginal rates. States with graduated rate systems will generally have even more variation in the marginal tax rates facing tax filers.

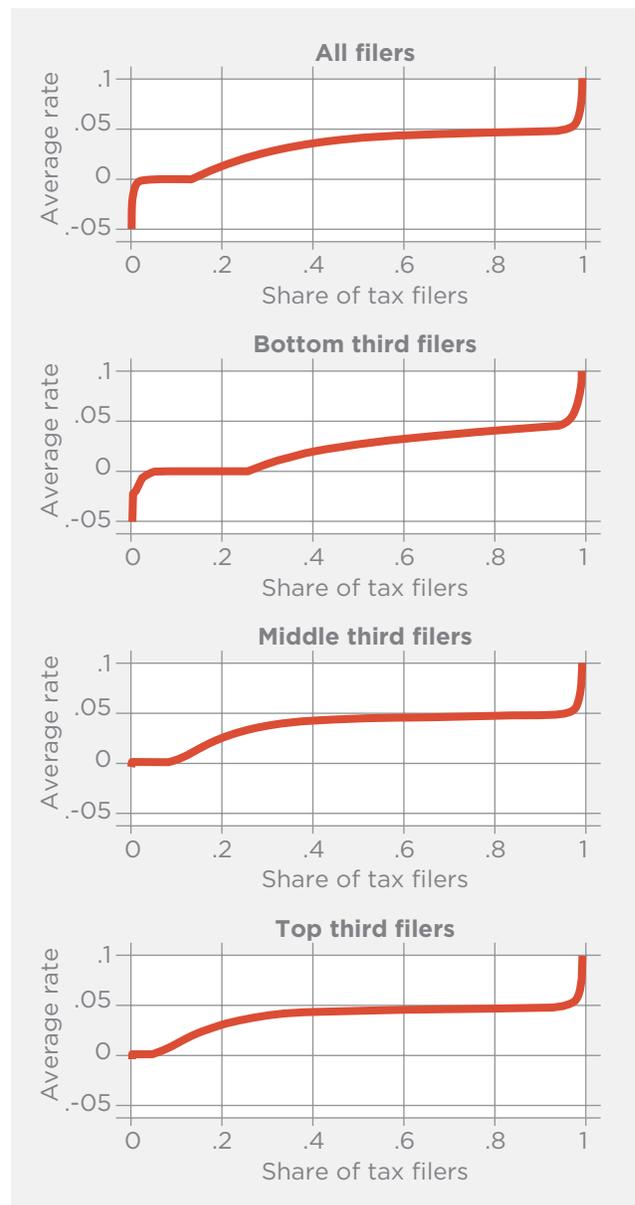
Since even in a flat tax state marginal tax rates can differ across filers, it is not surprising that average tax rates also will differ. As shown in Figure 1, among all filers, average tax rates varied from well below zero to well above 5% in Illinois in 2011. A small percentage of filers have average tax rates approaching 5% (e.g., about 4% face rates greater than 4.5% but not greater than 5%), but a surprisingly substantial share of filers (about 4.3%) actually had tax rates that exceeded Illinois' statutory rate at the time (2011) of 5%.

Figure 1 also shows that the researchers found variation in average tax rates among the middle and top third of tax filers. A relatively small portion of the middle third of tax filers has a zero average tax rate, while about 60% of tax filers in this group have an average tax rate greater than 4% but not greater than 5%. About 3.9% of filers have average tax rates above 5%. Tax filers in the top third of the AGI distribution are similar, though slightly more have an average rate near or above 5%. This suggests that tax progressivity can occur even in state tax structures, like Illinois, that have a flat statutory rate.

A more complete exploration of these topics is available in [the full report](#).



Figure 1: Average tax rate across the AGI distribution Illinois 2011



Source: Synthetic public use data file and *taxsim32*. See text for data restrictions.

ABOUT GFRC

The Government Finance Research Center (GFRC) at the University of Illinois Chicago shapes and informs public policy and scholarly discourse on government and public finance by identifying, planning and executing research, providing periodic reports and informed analyses, and offering venues at which to convene national and local discussion on fiscal and governmental issues. Contact GFRC Director Deborah A. Carroll at (312) 996-8587 or deborahc@uic.edu.

ABOUT IGPA

Since 1947, the Institute of Government and Public Affairs (IGPA) has connected scholars across the University of Illinois System with legislators, civil servants, and key decision-makers in Springfield, throughout the Land of Lincoln, and beyond. As the only U of I System-level institute dedicated to policy engagement, we connect world-class research with the needs of the state and the nation—and we support policymakers in pursuing research-driven solutions. Contact IGPA Director Robin Fretwell Wilson at (217) 244-1227 or wils@uillinois.edu.

Publisher's Notes

Any opinions expressed herein are those of the authors and not necessarily those of the Institute of Government and Public Affairs, the authors' employers, including the University of Illinois Urbana-Champaign, or the University of Illinois System.

Photography from [istockphoto.com](https://www.istockphoto.com)

Pg. 1 - Chart collage, #175256323 by Jacob Hart

Pg. 1 - Planet Earth, #824379206 by XtockImages

Pg. 2 - Notebook and taxes, #1335050708 by Khanchit Khirisutchalual

Pg. 3 - Couple doing paperwork, #1296487184 by Skynesher

Pg. 3 - Blue chart collage, #1250581414 by Dilok Klaisataporn

Pg. 4 - Shredded forms, #1299661464 by SK Howard