

EP C POLICY BRIEF

APRIL 2026

KEY POINTS

- Marginal tax rates determine how much of the next dollar earned a taxpayer keeps — and incentives at the margin shape behavior
- Higher marginal tax rates reduce the after-tax return to work and can decrease incentives to work or invest in skills
- New research using large language models can help shed light on taxpayers' responses to taxation

WHERE YOU CAN FIND THIS RESEARCH:



USING A.I. TO PREDICT PEOPLE'S RESPONSES TO TAXES

A central principle of economics is that incentives matter. In a market economy, prices provide incentives. When airline tickets are expensive, you might opt for a road trip instead. When ice cream is on sale, you might stock your freezer.

But the prices we face are determined by more than supply and demand — taxes matter too.

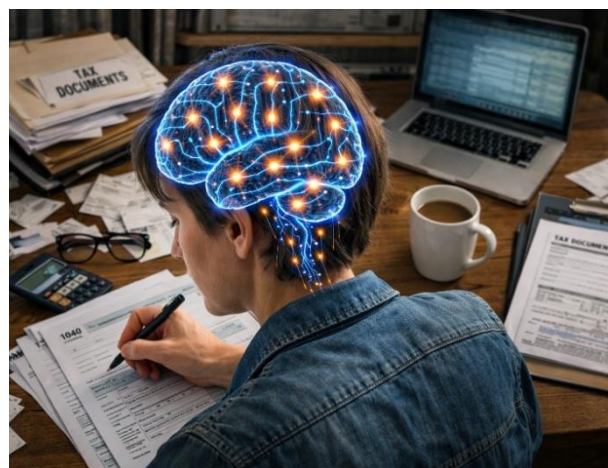
Each April, as Americans prepare their returns, most focus on their total tax bill. Economists, however, often focus on something different: the *marginal tax rate*. A marginal tax rate (MTR) is the share of the next dollar earned that must be paid in taxes. If your marginal rate is 30 percent, you keep 70 cents of the next dollar you earn. Thinking “at the margin” is essential for understanding how taxes influence decisions. It’s this marginal tax rate that is relevant for how income taxes affect the price of labor — what you take home for another hour worked or for investing in new skills.

When marginal tax rates rise, the after-tax wage falls. Decades of research show that individuals respond to these changes, though the size of the response varies. Higher marginal tax rates have been shown to reduce labor supply, discourage investment in education and skill development, shift income across legal forms, and potentially affect tax compliance decisions.

The research that has uncovered these behavioral responses to taxation have employed different methods, but all come

with significant costs. One needs large datasets with detailed data, often from administrative sources such as the IRS to find these relationships.

In recent research, a team of economists, including Jason DeBacker, Roxana Gonzalez-Cortes, and Max Ghenis, explore whether AI, in the form of large language models (LLMs), can help us understand taxpayer responses and offer a platform to test new policy ideas in real time. They did this by simulating two very different types of studies of the behavioral responses in the context of LLMs. First, they replicated a study that used a large panel of tax returns and exploited changes in federal and state tax rates over time. Notably, they let LLM instances stand in for the human taxpayers. Second, they used the prompts from a laboratory experiment in which individuals exerted effort to earn a reward under varying tax regimes. They then presented LLM instances with the same tradeoffs and asked it to respond as the humans in the lab did.



The economists' research revealed that, in some cases, LLMs return behavioral responses on par with humans. For example, if the tax rate goes up one percentage point, earnings fall by about 0.4 percent. But the context matters, as does the model. Some LLMs are much more sensitive to taxes than actual humans, perhaps indicating that there are real life frictions in changing labor supply or earnings that are not accounted for by the LLMs. Still, the study revealed the potential, as well as the limitations, of what AI models can do to support new research related to tax policy.

What are the implications of this research for South Carolina? Marginal tax rates reflect the combined effects of federal and state income taxes, payroll taxes, and the phase-in and phase-out of tax credits. The accompanying figure shows how marginal tax rates vary with employment income in South Carolina. Marginal rates can rise sharply at relatively modest income levels due to the interaction of state income taxes and federal credit phase-outs. In certain income ranges, combined

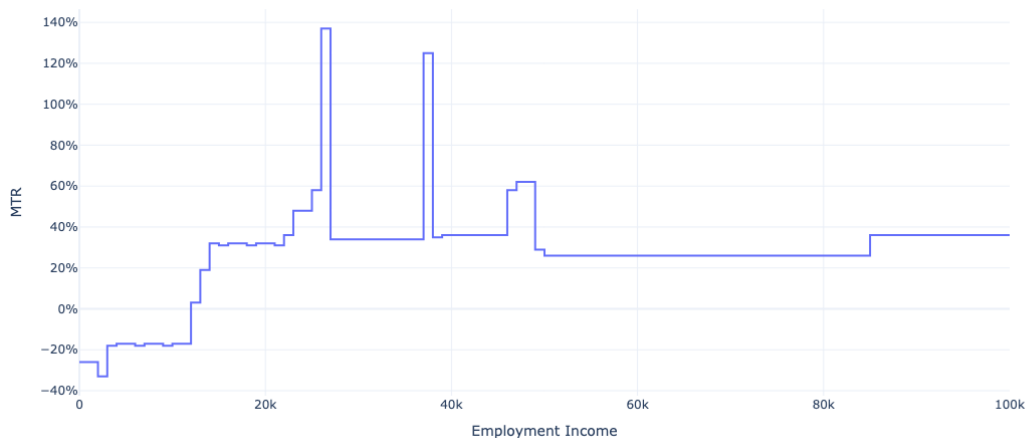
marginal rates can exceed 100% — meaning earning one more dollar leaves you with *less* income after accounting for taxes and benefits.

These high marginal rates reduce real economic activity such as hours worked and the amount of education individuals choose to invest in. The General Assembly is currently considering a bill to reform the individual income tax system in South Carolina aimed at reducing marginal tax rates for taxpayers in in the top four quintiles. These changes in tax rates will induce changes in the behavior of South Carolina taxpayers. We can use national studies to help infer what may happen, but ideally, we would use information tailored to our unique state. The goal of this research is to help find ways to leverage AI to do just that, helping decisionmakers more quickly and accurately quantify the costs and benefits of new ideas.



Darla Moore
School of Business
UNIVERSITY OF SOUTH CAROLINA

Marginal Tax Rates in South Carolina, Accounting for State and Federal Income Taxes, Payroll Taxes, and Federal Benefits Programs



Jason DeBacker, PhD is a Professor of Economics at University of South Carolina

Roxana Gonzalez-Cortes is a doctoral student in the Department of Economics at University of South Carolina

Max Ghenis, MS is the Co-Founder and CEO of PolicyEngine

The mission of the South Carolina Economic Policy Center (EPIc) is to connect decision-makers in and beyond South Carolina to applied economic research in the Department of Economics at the Darla Moore School of Business. For more information about EPIc, or to collaborate, please visit: https://sc.edu/study/colleges_schools/moore/research_and_centers/centers/sc_epic/index.php