

# Fiscal Fact

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## Taxes and Economic Outcomes: A Wonk's Response to *Governing Magazine*

By  
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Recently, *Governing Magazine* ran a blog post analyzing our 2014 *State Business Tax Climate Index* and its relationship to key economic outcomes like wages and employment-to-population ratios.<sup>1</sup> We were glad to see a major publication taking up the task of exploring the vital relationship between taxes and economic outcomes, as the well-documented negative effects of taxes on economic growth are extremely important.<sup>2</sup> However, *Governing's* analysis, which suggests that taxes are insignificant to economic outcomes, is flawed on several grounds. It looks at a small sample size across an insufficient timespan, ignores the basic mathematical characteristics of *Index* scores, fails to control for interrelated economic and policy effects, does not control for other important variables, and misunderstands the kind of effect taxes have on the economy.

*Governing's* analysis uses a series of univariate regressions, which aim to discern if two variables have a straightforward linear association. Put simply, these regressions ask, "If one variable goes up, does the other variable generally go up or down?" Regression models can be modified to find more complex and non-linear relationships or to account for more variables, but those used by *Governing Magazine* did not include such modifications.

The *State Business Tax Climate Index* assesses variables that matter for economic growth. There is ample evidence for this, both on an *a priori* basis from economic theory and on an empirical basis from rigorous, fair comparisons. If those arguments are not enough, then policymakers can also look at surveys of businesses and hear from the taxpayers themselves: high, distortionary taxes hurt.

### Time Period Selection and Sample Sizes

*Governing* uses 2014 *Index* scores as independent variables to predict the most recent state-level employment-to-population ratios and median incomes. They found that there was essentially no relationship between 2014 *Index* scores and these variables on a single-year, cross-sectional basis. But tax

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<sup>1</sup> Mike Maciag, *Analysis: Do Business-Friendly Tax Climates Yield The Most Jobs?*, GOVERNING.COM BY THE NUMBERS BLOG, Oct. 10, 2013, <http://www.governing.com/blogs/by-the-numbers/state-business-tax-climates-jobs-data-analysis.html>.

<sup>2</sup> William McBride, *What Is the Evidence on Taxes and Growth?*, TAX FOUNDATION SPECIAL REPORT NO. 256 (Dec. 18, 2012), <http://taxfoundation.org/article/what-evidence-taxes-and-growth>.

policies aren't likely to move key economic variables overnight, and state *Index* scores can change significantly each year, so a single snapshot year isn't likely to capture the whole story due to its small sample size.

A simple one-period regression is looking at the wrong time-frame. Some states that have bad *Index* scores now had good scores several years ago. State tax policies have changed radically since even the 1990s, let alone the 1980s, 1970s, or earlier, when many companies were expanding and establishing operations in many states. Flagship economic variables like employment and median income measure the sum of all past influences and tend to be fairly stable.

For an example, consider Illinois. No matter Illinois' worsening tax climate today, the state has still "inherited" companies like the Chicago Mercantile Exchange, Sears, and Archer Daniels Midland.<sup>3</sup> Illinois is now struggling to keep those companies thanks to its bad tax policy, but it still benefits from having a history of better policies.<sup>4</sup> Economic outcomes like business investment and employment only respond to changes in tax policy with a time delay. What matters is the difference in rates of change after alterations in tax policy. A one-period cross-sectional analysis will not answer this question, thus it is not very useful for assessing the impact of a policy intervention, and a regression on simple levels of income and employment isn't even measuring the right variables.

Moreover, as states change their tax codes, adding new kinds of tax provisions and eliminating others, the exact variables tracked by the *Index* have changed as well. Serious statistical study requires a large sample. Looking at fifty cases across one year is far too small. Even if the last several years of *Index* scores were used, assessing the effects of major macroeconomic policies like taxation requires decades of data.

### **Index Scores are Ordinal, not Cardinal**

The *Index* ranks the fifty states with scores of 1 through 50, or what is referred to as an ordinal system, rather than a cardinal system of raw numbers. This makes statistical inference based on regressions much harder. For regressions to be useful and informative, they need wide variation in independent variable values.

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<sup>3</sup> Joseph Henschman & Kail Padgett, *Illinois Approves Sharp Income Tax Increase, Fourth-Highest Corporate Tax Rate*, TAX FOUNDATION FISCAL FACT NO. 256 (Jan. 13, 2011) <http://taxfoundation.org/article/illinois-approves-sharp-income-tax-increase-fourth-highest-corporate-tax-rate>.

<sup>4</sup> Joseph Henschman, *Illinois Legislators Hint that Tax Increases Are Driving Away Jobs*, TAX FOUNDATION TAX POLICY BLOG, June 24, 2011, <http://taxfoundation.org/blog/illinois-legislators-hint-tax-increases-are-driving-away-jobs>; Aditya Yellajosyula, *Illinois Faces More Incentive Demands Due to High Corporate Rate*, TAX FOUNDATION TAX POLICY BLOG, Oct. 17, 2013, <http://taxfoundation.org/blog/illinois-faces-more-incentive-demands-due-high-corporate-rate>; Andrew McIntosh & Scott Drenkard, *Running in Circles: Illinois' Failed Experiment with Tax Hikes and Credits*, TAX FOUNDATION TAX POLICY BLOG, June 8, 2012, <http://taxfoundation.org/blog/running-circles-illinois%E2%80%99-failed-experiment-tax-hikes-and-credits>.

But ordinal rankings create an arbitrarily defined amount of variation and force the fifty states to have fifty distinct values which may not precisely match the underlying data.<sup>5</sup>

Furthermore, ordinal rankings create an impression of uniform differences across the dataset. This is not reflective of reality. Many states have very similar tax codes and cluster near the middle of our rankings, so that relatively small policy changes can move them several rankings. At the top and bottom of the rankings, however, gaps between ranks are much wider. The gap between the 5th and 6th ranked states is not necessarily the same as the gap between the 16th and 17th or 30th and 31st.

We present a ranking system because we think that the differences between state tax systems can best be described ordinally, not cardinally. A 0.1 score change may not matter to businesses much on its own, but it does matter if other states changed around it, altering *relative* tax rates across states. Because of these interacting effects, a ranking system makes a great deal of sense for talking about *competitive* tax codes. Rankings provide straightforward comparison tools for businesses and policymakers to know where the various states stand and thus more closely fulfill the purpose of the *Index*.

### **Index Scores and Economic Outcomes are Interrelated**

Regressions require that values be randomly distributed with respect to each other. For example, in a medical study, if giving a treatment to one person alters the outcomes for someone else, statistical inference becomes much more difficult. Any set of data where a change in treatment for one case alters other cases is a dataset unsuited for simple regression. Unfortunately, both the *Index* and the economic outcomes being measured fail this test. Changes in *Index* component scores can change the final scores of other states, while changes in economic fundamentals for a state can obviously bleed over into other states.

Even unranked *Index* scores are affected by other states' scores; or, put in more statistically meaningful terms, *Index* scores are conditionally dependent on other states' *Index* scores. We adjust the weighting of components based on the amount of variation in each category; thus, changes in tax policies in one state (especially by states at the more extreme scores) can alter the scores of other states. In the vast majority of state tax changes, this effect is very small, but it does exist, confounding the normal statistical inferences from regressions.

That's not the only problem of interrelated variables, however. Economic outcomes also bleed over between states. A boom in shale gas in the Dakotas will be a boon for the pipeline industry in Nebraska, no matter the tax code. A sales tax increase in Vermont will help retailers in sales-tax-free New Hampshire. The economic outcomes of state tax policies will tend to affect nearby states, so that economic outcomes are partially determined by other states' policies and economic fundamentals.

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<sup>5</sup> To their credit, *Governing* did not regress rankings on economic outcomes but used the raw scores. We address the issue of ordinal numbers here, however, because it is a common error which leads to statistically biased results.

## Taxes Are One Important Variable

In trying to explain economic outcomes using exclusively taxes, *Governing* omits crucial variables. We look at taxes because taxes are one of the few determinants of future economic outcomes that legislators can easily and directly change. We do not argue that taxes are the only thing that matters. For that very reason, we just recently posted a follow-up to the *Index* discussing the importance of finding apples-to-apples comparisons precisely because we recognize that other factors are very important for overall economic outcomes.<sup>6</sup> A simple, uncontrolled regression, such as that used in the *Governing* piece, tries to compare apples to oranges and, unsurprisingly, it does not work.

Indeed, in the *Index* report, we address precisely this issue, emphasizing that the *Index* only measures taxes. We note that it does not measure, for example, crime, electricity costs, healthcare access, or many other important factors included in other state rankings. From the *Index* report (emphasis added):

The Tax Foundation's State Business Tax Climate Index is an indicator of which states' *tax systems* are the most hospitable to business and economic growth. The Index does not purport to measure economic opportunity or freedom, *nor even the broad business climate, but the narrower business tax climate*. We do so not only because the Tax Foundation's expertise is in taxes, but because *every component of the Index is subject to immediate change by state lawmakers*.<sup>7</sup>

## Taxes Matter on the Margin

Finally, the main effect of taxes is on the margin, rather than average economic outcomes, and so taxes matter more for a state's economic growth going forward than its economic levels today. Many states have vast accumulations of resources. For example, the financial industry is already well-entrenched in New York City, while California has strong network economies for aerospace and high-tech work. Although poor tax policies could drive these businesses out of state, the far more likely effect is simply that new investment (or "marginal" changes in investment) flows to other states.

A large accumulation of capital per worker will boost worker incomes.<sup>8</sup> States that encourage business investment and expansion (capital inflow, or an accumulation of capital) can improve their workers' productivity and income. Better tax policies can encourage that kind of change. The primary effect of a state's business tax climate is not that it will determine the level of income or capital per worker right now, but that it will play a role in determining the future rate of growth in those and other economic outcomes.

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<sup>6</sup> Lyman Stone, *Taxes and Economic Outcomes: Indiana and Wyoming* Edition, TAX FOUNDATION TAX POLICY BLOG, Oct. 11, 2013, <http://taxfoundation.org/blog/taxes-and-economic-outcomes-indiana-and-wyoming-edition>.

<sup>7</sup> Scott Drenkard & Joseph Henschman, *2014 State Business Tax Climate Index*, TAX FOUNDATION BACKGROUND PAPER NO. 68 (Oct. 9, 2013), <http://taxfoundation.org/article/2014-state-business-tax-climate-index>.

<sup>8</sup> William McBride, *JCT: Corporate Tax Falls Partly on Labor*, TAX FOUNDATION TAX POLICY BLOG, Oct. 17, 2013, <http://taxfoundation.org/blog/jct-corporate-tax-falls-partly-labor>.

## Evidence for the Index

For all these caveats, the *Index* is a valuable indicator when used properly. There is no shortage of evidence that taxes matter, and that high, unprincipled taxes hurt. Most directly, multiple studies comparing various indices of business tax climates find that states with good *Index* scores perform better than states with poor *Index* scores on various key indicators of economic growth. One such study, carried out by the Anderson Economic Group for the state of Michigan, found that the *Index* predicted private-sector job growth, growth rates of personal income, and increasing state economic output better than other indexes that focused more on government spending.<sup>9</sup>

Another study, carried out by the Center for Applied Economics at the University of Kansas, looked at *Index* scores by comparing border-regions of states, which will tend to have similarities in other factors like demographics and natural resources. This study, which looked at growth rates across fair comparisons of similar regions across more meaningful timespans, found that better *Index* scores were associated with faster growth in wages, population, employment, and business-ownership.<sup>10</sup>

If these empirical assessments of the *Index* are not convincing enough, there is an abundance of economic literature assessing the economic effects of tax policy generally. The negative effects of distortionary tax incentives, marriage penalties, unindexed tax brackets, and other specific provisions are well-documented in microeconomics literature. But, more importantly, the damaging macroeconomic effects of taxes have been documented in numerous studies. Of the 26 major studies we reviewed, covering both state and international tax policies, 23 found that taxes had negative effects on economic growth.<sup>11</sup>

Beyond these academic approaches to assessing the deleterious effects of bad tax policy, surveys of businesses also repeatedly show that tax policy weighs heavily on business decisions and thus economic activity. The National Federation of Independent Business's *Small Business Economic Trends* reported that as recently as September of this year, taxes were the second most important small business problem, just behind government regulation.<sup>12</sup> The same story holds for large businesses. A recent PWC report on CEOs found that taxes were the "top business threat to growth."<sup>13</sup>

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<sup>9</sup> Anderson Economic Group, Patrick L. Anderson & Caroline M. Sallee, *Benchmarking for Success: A Comparison of State Business Taxes*, Aug. 3, 2006,

<http://www.andersoneconomicgroup.com/LinkClick.aspx?link=upload%2fDoc1950.pdf&tabid=125&mid=411>.

<sup>10</sup> Gregory Bittlingmayer, Liesel Eathington, Arthur Hall, & Peter F. Orazem, *Business Climate Indexes: Which Work, Which Don't, and What can they say about Kansas?*, prepared for Kansas, Inc., June 2005,

<http://www.kansasinc.org/pubs/working/Business%20Climate%20Indexes.pdf>.

<sup>11</sup> See McBride, *supra* note 2.

<sup>12</sup> National Federation of Independent Business, William C. Dunkelberg & Holly Wade, *Small Business Economic Trends October 2013 Report*, SMALL BUSINESS ECONOMIC TRENDS, Oct. 2013, <http://www.nfib.com/Portals/0/PDF/sbet/sbet201310.pdf>.

<sup>13</sup> PWC 16th Annual Global CEO Survey: Dealing With Disruption, *Tax Strategy and Corporate Reputation: a tax issue, a business issue*, [http://www.pwc.com/en\\_GX/gx/tax/publications/assets/pwc-tax-strategy-and-corporate-reputation-a-tax-issue-a-business-issue.pdf](http://www.pwc.com/en_GX/gx/tax/publications/assets/pwc-tax-strategy-and-corporate-reputation-a-tax-issue-a-business-issue.pdf).

So whether you use rigorous empirical studies of the *Index*, relevant academic studies of taxation, or surveys of business owners themselves, taxes matter.

## **Conclusion**

Because taxes are so important for economic growth, legislators who have the power to change them have a duty to understand their effects and ensure their states adopt sound tax policies. It is true that a simplistic regression between *Index* scores and static economic variables doesn't produce significant results, but that doesn't provide grounds to say taxes don't matter. The criticisms offered in the *Governing* piece are statistically and theoretically off base and ultimately miss the point. Taxes do matter for economic growth, and the academic literature bears this out. In fair, apples-to-apples comparisons, states with better tax climates do perform better. That's why the *Index* matters: it provides a useful tool for businesses and policymakers to understand how a state stands on one clearly-defined set of variables and how that standing can be improved.

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