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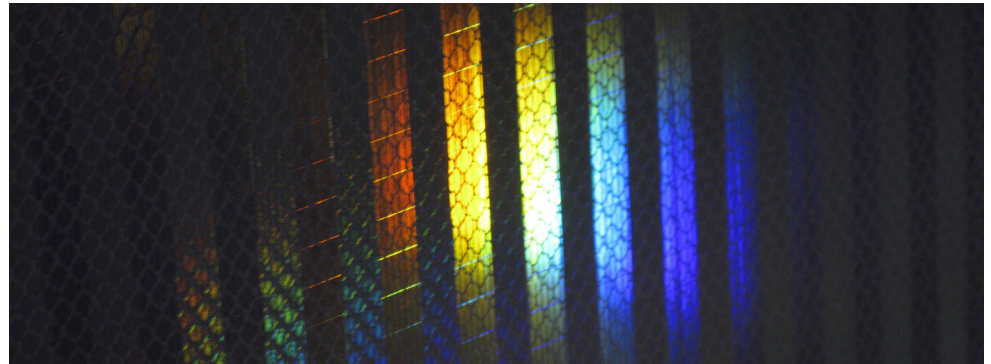
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About the Indiana Communities Institute

The Indiana Communities Institute at Ball State University utilizes a framework of research, policy, and practice to continually improve the model for community-focused economic development.

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Ranking States' Business Climates:

Developing an Average Index of State Business Climate Rankings

Indiana Communities Institute, Ball State University

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Tags: #

Abstract

Ranking states' business climates has become something of a cottage industry. *Forbes*, CNBC, Tax Foundation, George Mason University, *Chief Executive Magazine*, Institute for Legal Reform, and Pollina Corporate Real Estate each produce their own state business climate rankings using individualized methods. Not surprisingly, the seven organizations' work yielded widely different results. State rankings have often been criticized for their lack of consistency and relevance to actual economic outcomes, such as employment growth. In order to provide a more reliable state business climate ranking, we create a mean ranking system that combines the rankings from our seven different sources. The relation of our mean ranking system with state output and employment is then tested and compared to that of the individual rankings that it utilizes. We find that our mean ranking system is more closely tied to these two variables in all but two of the distinct rankings that it utilizes.



Introduction

Business climate studies and state rankings of business climates can attract a lot of attention from state economic developers and legislators. This is because they simply attempt to combine a large amount of information to diagnosis states' competitiveness in regard to economic activity and future growth. Thus, state rankings may be interpreted to reflect on how well or how poorly legislators and economic developers are doing their jobs. However, for as much popularity that ranking systems are given, they also receive significant criticism.

Most efforts to rank business climates are criticized because they are perceived to be biased, to exclude important variables, or to measure variables improperly. It is often argued that most ranking systems provide no explanation of business executives' perceptions of a state's business climate and also do not have any explanatory power of important economic indicators such as growth in state GDP, employment, and per capita income. Because it is true that the plethora of state rankings available differ greatly in their methods and results, this study argues that when taken together, a ranking system that utilizes many of them to create an average index should be more reliable than the average ranking. We present this index and examine whether an index of rankings offers greater explanatory power of state GDP and employment growth than each of its composite rankings.

Review of Relevant Literature

The attempt at accurately ranking state business climates can be said to have begun with a study commissioned in 1975 by the Illinois Manufacturing Company in association with the Fantus Company, a business location consulting firm. This first ranking focused heavily on the impact of state tax environments for manufacturing firms. However, perhaps demonstrating the skepticism that has surrounded these rankings since the beginning, the Fantus Company declined the offer to work on a second business climate study later, stating the opinion that these rankings were not appropriate for the purpose of site selection. Since then a slew of other ranking systems have come into existence, many claiming to include different variables or measure them in different ways that make them more reliable and insightful than the previous rankings (Atkinson 1990).

Explanatory Power of State

Economic Indicators

For many economists the problem with state business climate rankings is that they provide little to no explanatory power of variables that are considered to be related with a state having a strong business climate; these mainly include growth in state GDP, growth in employment, and growth in per capita income. To clearly demonstrate this, one study found that generally states with a "good business climate ranking" saw poorer outcomes in the growth of jobs and per capita income, while states ranking lower in business climate studies saw better outcomes (Freudenburg 1990).

A more recent study split rankings into two classes; those that focused mainly on productivity variables and those that focused more on tax variables. It found that the rankings focusing mainly on productivity variables had no statistically significant relation with measures of economic growth. However, it saw that rankings that focused on mostly tax variables did have some explanatory power of growth in state output, employment, and wages. In further sub-indexing, the rankings focused on tax variables, and the study found that there appeared to be two policy factors that appeared to be most strongly related with economic growth; these were uniform and simple corporate tax structures and lower spending on welfare and transfer payments (Kolko 2013). Another similar study looked at the explanatory power of the Tax Foundation Index on economic growth variables. Its initial results saw that this index offered explanatory power for state GDP growth; however, when controls for state industry composition, population density, and climate were added, the explanatory power of the model decreased significantly (Anderson 2012).

Influence of Rankings on Perceptions

State business climate rankings are undoubtedly popular despite being considered as a poor explanatory power of economic growth, and there is general skepticism surrounding their usefulness. One survey of top corporate executives saw that most chose state rankings as an important source of information for them regarding a place's business climate. It is expressed that a major reason these rankings are popular is, "They are catchy and viral and play to human inclination to take short bits of information and draw sweeping conclusions" (Curren 2014).

However, although they are popular, it seems that some rankings may measure variables not considered to be important by corporations. In a survey of executives in North Carolina, it was found

that although many rankings focus on the corporate tax incentives available within a state, the executives overall claimed to prefer overall state tax cuts to incentives (even the ones from firms receiving state tax incentives). Also, it was discovered that of the executives surveyed, only 30 percent of those leading companies that received state tax incentives knew that their company was receiving them (Jolley, Lancaster, and Gao 2015).

Further studies looking at the impact of state business climate rankings on corporate perceptions also found that they had no significant relation with the perceptions expressed by businesses. The results also found that while they are often included as criteria in rankings, the corporate, individual, and sales taxes had no significant relation with reported perceptions; only property taxes seemed to provide explanatory power of these (Motoyama and Hui 2015).

Although rankings of state business climates have been shown to provide little-to-no explanatory power of economic growth variables and of businesses perceptions, their creation is unlikely to disappear anytime soon, as can be seen by the opinions expressed by some of those critiquing them. In an arguably biased defense of the World Bank Doing Business Project, which ranks countries rather than states on their business climates, the opinion is expressed that despite the imperfections of rankings, they are still an important part of policy making, as a bad score can often induce legislators to make changes to promote business development in their areas (Besley 2015). Similarly, it is argued that rankings may be an important tool to enacting legislative developments, as it is claimed that changing legislative policies is even now the best way to get change a state's place in a ranking (Curren 2014). Also, we note that most economic activity within the United States is entirely unconnected to actual business relocation, but is rather the result of firm expansion and contractions. So, any measure of business climate indices that focuses on less than 5.0 percent of economic activity in a typical state will be largely silent on the most important factors. Finally, although it is not suggested that any firm rely only on rankings to make their location decisions, state business climate rankings could potentially be a useful tool to smaller firms that do not have the resources to do their own location analysis (Atkinson 1990).

Suggestions Offered Concerning Business Climate Rankings

Because there has been a great deal of criticism regarding the usefulness of business climate rankings, there have also been a number of suggestions concerning how these indexes might be improved. One suggestion explained that the way in which state tax environments were considered by the different indexes should be made more consistent with established growth theory. From estimates of the link between economic growth and state fiscal structures there appears to be hill-like relation (similar to a Laffer curve) where as states initially start to receive tax revenue that they use to build infrastructure and create incentives, there is a positive relation

between taxes and economic growth. However, it is suggested that if taxes get too high they may start to hinder businesses' ability to turn a profit and here there is a negative relation between taxes and economic growth. Overall, this study suggests that state fiscal structures need to be considered in a much more complex way than they currently are in rankings (Bania and Stone 2008).

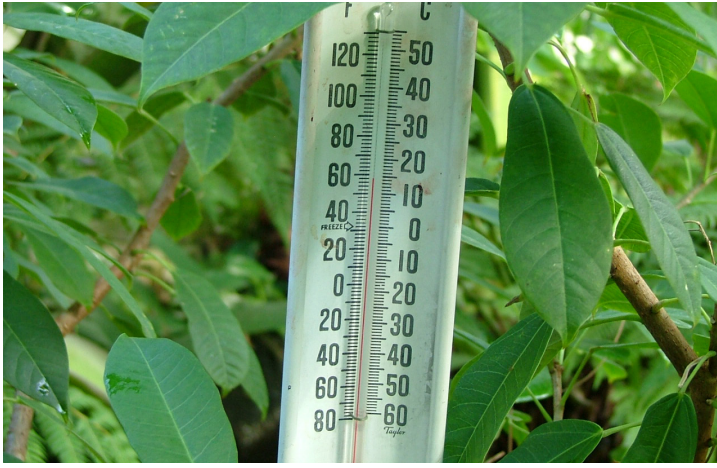
Another suggestion regarding how state rankings may be improved involves using a certain technique called Data Envelopment Analysis (DEA), which is a much more systematic approach than what is typically done. It is suggested that industry in each state is divided into eight sectors and the outputs of each sector be measured with their inputs. With this approach a state's performance would be measured by the extent to which they have high outputs (value-added and value of shipments) compared to their inputs (cost of materials, production hours, and capital expenditures) (Ali and Nakosteen 2005). Although this approach seems very methodical, it also seems very limited in that it only considers the efficiency shown by industries in a state and does not appear to consider many of the factors important to a relocating firm.

Data and Empirical Approach

There are a large number of state ranking systems in existence that use a variety of different approaches and therefore yield widely varying results. For example, George Mason's Mercatus Center ranked Alaska's business climate No. 1, while both CNBC and the Tax Foundation listed it 47th. CNBC awarded Minnesota first place, but the Tax Foundation ranked it 47th. George Mason ranked Ohio seventh, while the Tax Foundation ranked it at 44th in the US. Because these ranking systems all follow different approaches, they individually cannot provide exceedingly accurate information, but taken together we are much more likely to derive broad yet more reliable conclusions from them. In this section, a mean ranking system that utilizes seven individual state rankings is discussed along with an approach to testing this mean ranking against its composite rankings.

Developing a Mean Ranking System

Dual Nobel Prize winner Linus Pauling (chemistry and peace) taught us, "The best way to have a good idea is to have lots of ideas." Similar to ideas, more valid data produce more reliable results. In the spirit of this idea, we created an index that employs seven recognized and respected reviewer's rankings to create a more reliable measure of states' business climates. This Pauling methodology works similarly to the Dow Jones 30 Industrials Stock Market Index by averaging the individual components to produce a score representative of a basket of state business climate reviews. Instead of 30



What is clear is that little sense can be made of state business climate rankings from any single source, except to cite one when it supports a state's good image and ignore it when it does not.

benchmarks, this state ranking tally averages seven sources deemed valid and reliable for the purposes of this work.

By computing the mean average scores from the seven sources, we obtain the ranking of states found in *Appendix Table A1*, listed from those with the best business climates to those rated worst (for data from our seven state ranking sources please see *Appendix Table A2*). These composite rankings reveal that states like Utah, North Carolina, Indiana, and Nebraska are considered favorable environments to firms, while states like New Jersey, California, and West Virginia are not.

As the seven different scoring systems used in determining the rank of each state often differed significantly, we calculated the mean average difference between the best and worst score assigned to each state to be 27.6. Using a range of scores this wide, one might question whether the overall ranking is reliable. Because a median score is generally used when dealing with data that has a wide range of entries, the states were also ranked using the median score for each state, as seen also in *Appendix Table A1*.

Unlike mean scores, which factor in each given value equally and can vary drastically when given one oddity, median scores better represent the typical score. This characteristic of the median score is why data on the median household income of an area may be useful over the mean household income. If the mean were used, one millionaire settled in the area could significantly skew the data. It is useful to view both mean and median-based rankings, each having its own merits. Applying a median score did not materially change how each state was ranked. Using our original rankings, which relied upon a mean score for each state, Indiana ranked third. When

ranking the states based on their median score, Indiana was fourth. The state whose rank differed the most between the two systems was Montana, which moved only eight spots (from 28th to 20th) using the mean ranking system compared with the median rank.

We also found that both averaging methods yielded the same eight of the 10 top-ranked states and all 10 bottom-ranked states, suggesting significant convergence of the data. We conclude that the data supports the hypothesis that the combined ranking system is more reliable than the component parts individually.

Furthermore, we can calculate the variance of the scores for each state from both the mean and median to determine which measurement better fits the data. After calculating the variances, we found that for every state except Arkansas, the variance from the mean was greater than the variance from the median (in Arkansas these two were equal) as shown in *Appendix Table A2*. Therefore, we can say that the mean score is better representative of the data and present the mean ranking as a better representation of all the other rankings.

Evaluating the Mean Ranking System

As previously discussed, a major criticism provided by those evaluating state business climate rankings is that the rankings often are not related with important economic indicators such as growth in state GDP, growth in the employment rate, and growth in income. In order to test the validity of our mean ranking system, we examine the explanatory power that the percentage change in state GDP and the percentage change in the state employment to population ratio have on the ranking system we developed. The percentage change in the year immediately preceding the development of the seven rankings that our mean ranking is composed of is used for state GDP and the employment to population ratio. The results of our mean ranking system are then compared to the results of each of the seven rankings of which our mean ranking is composed. Our employment data is from the Bureau of Labor Statistics, while data on state population and state GDP is retrieved from the Bureau of Economic Analysis.

Results

The regression results for the explanatory power of the percent change in state GDP and the employment to population ratio on each ranking system reveal that these two variables better explain our mean ranking system than all but two of the seven ranking systems that it is composed of. *Table 1* displays these initial results.

The sign of the coefficient is reflected in the ranking system itself. A lower score is better than a higher score, so the lower the index score, the better economic performance. In examining these results, it is important to note that in the data for each ranking system (including our mean ranking) only the discrete ranks from 1 to 50 were used rather than a more exact score given to each state. This

Table 1. OLS Regression Results of Various Ranking Systems

Source: Author calculations.

Dependent Variable	Coefficient for % Change GDP	Coefficient for % Change Employment/ Population	R-squared	Adjusted R-squared	Root MSE
Mean Rankings	-2.038271	-3.429787	0.088	0.0492	14.214
Tax Foundation Rankings	-1.858642	-0.3008909	0.0411	0.003	14.575
George Mason Rankings	-1.557074	-0.3478496	0.0295	-0.0118	14.663
Forbes Rankings	-2.744156	-4.906304	0.1661	0.1306	13.592
CNBC Rankings	-2.637815	-6.08335	0.1866	0.152	13.423
Chief Executive Rankings	-1.478829	-2.801926	0.0503	0.0098	14.505
Institute for Legal Reform Rankings	0.8472254	-1.434901	0.006	-0.0357	14.835
Pollina Rankings	-0.834019	-3.634838	0.0368	-0.0042	14.608

likely limits the predictive power of the data but is done for the sake of consistency, as many of the ranking systems examined only provided a rank for each state rather than a precise score.

The two ranking systems that our two independent variables were better predictors of were the rankings created by Forbes and CNBC. This might suggest that if an individual or corporation were more interested in rankings that were tied well with state output and employment they would be better off considering these two ranking systems rather than our mean ranking. Better yet, they could consider a mean ranking consisting only of these two sources. However, it is not certain whether this would persist over time, as we examine only a short period.

For the sake of testing these two alone, we created a second mean ranking system simply by using the mean average of the ranks provided by Forbes and CNBC. When tested, the two independent variables provided even better explanatory power of this ranking than of either the rankings provided by Forbes or CNBC. This result supports our claim that rankings can be expected to be more reliable when they combine other rankings so that they are composed of more data. These results are included in *Table 2*.

Table 2. OLS Regression Results for Forbes and CNBC Rankings

Source: Author calculations.

Dependent Variable	Coefficient for % Change GDP	Coefficient for % Change Employment/ Population	R-squared	Adjusted R-squared	Root MSE
Mean Rankings	-2.038271	-3.429787	0.088	0.0492	14.214
Forbes Rankings	-2.744156	-4.906304	0.1661	0.1306	13.592
CNBC Rankings	-2.637815	-6.08335	0.1866	0.152	13.423
CNBC & Forbes Mean Rankings	-2.987559	-5.902056	0.2115	0.178	13.217

Conclusion

Although our mean ranking system is not the one tied most directly with growth in state output and employment, we have seen that in this regard desirable results can be obtained by combining ranking systems to yield a new ranking comprised of more data. We tested each ranking system to see how each relates with state output and employment because a widely stated criticism of those reviewing rankings has often been that they have little to no relation with these important economic indicators. However, there must be many other factors that contribute to a state business climate that are not linked to these two factors.

Some of the ranking systems that our mean ranking is composed of focus on aspects that may not be directly associated with output or employment, but are still likely to significantly impact a state's business climate. For example, some of the rankings focus more exclusively on a state's corporate tax structure or its legal climate. Some of the rankings that our mean ranking is comprised of focus on measuring a state's position with regard to very specific variables while ignoring others that appear to be important. Because of the narrow focus of many rankings, a composite ranking using data from a good number of sources is likely to be more reliable. Although the system that combines the rankings provided by Forbes and CNBC appears to be the most related to output and employment, it is likely missing much of the important data relevant to a state's business climate that is present within the other ranking systems. Thus, we present our mean ranking system comprised of seven sources as an imperfect yet more reliable and encompassing view of how the business climates of each state actually stand in comparison with one another.

Credits

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Appendix A

Table A1. State Rankings by Composite Mean and Median (1-25)

Source: Author calculations.

Rank	State	Mean	Median	Rank	State	Mean	Median
1	Utah	7.14	4	26	South Carolina	23.86	25
2	North Carolina	10.14	6	27	Michigan	25.14	25
3	Indiana	10.29	7	28	Oregon	25.14	26
4	Nebraska	10.43	8	29	Minnesota	25.29	26
5	South Dakota	10.43	8	30	Alaska	26.43	28
6	North Dakota	11.00	9	31	Wisconsin	26.86	28
7	Wyoming	12.14	9	32	Massachusetts	30.71	28
8	Virginia	13.71	10	33	Alabama	31.14	31
9	Colorado	14.43	11	34	Kentucky	32.93	34
10	Tennessee	14.43	12	35	Louisiana	33.71	34
11	Florida	14.71	12	36	Arkansas	35.00	35
12	Texas	15.29	14	37	Maine	35.00	35
13	Idaho	15.86	15	38	Mississippi	35.71	35
14	Iowa	16.86	16	39	Maryland	36.07	36
15	Georgia	18.00	17	40	New York	36.57	37
16	Kansas	20.36	19	41	Vermont	36.86	37
17	Washington	20.43	20	42	New Mexico	37.07	39
18	Delaware	21.57	21	43	Connecticut	37.57	39
19	Oklahoma	22.29	22	44	Pennsylvania	38.14	40
20	Montana	22.43	22	45	Hawaii	39.14	42
21	Ohio	22.57	22	46	Illinois	40.14	45
22	Nevada	22.71	23	47	Rhode Island	41.29	45
23	Arizona	22.86	23	48	West Virginia	42.29	47
24	Missouri	22.86	24	49	California	42.57	47
25	New Hampshire	22.86	24	50	New Jersey	44.57	47

Table A2. Data from Seven Original Sources and Composite Rankings Along with Variance Scores

Source: Author calculations.

State	Tax Foundation	George Mason	Forbes	CNBC	Chief Exec Mag.	Institute for Legal Reform	Pollina	Mean	Median	Variance (by mean)	Variance (by median)	Variance by Median - Variance by Mean
Alabama	28	13	45	41	24	46	21	31.14	28	167.14	178.67	11.52
Alaska	4	1	44	47	34	12	43	26.43	34	408.62	470.50	66.88
Arizona	23	32	23	34	9	25	14	22.86	23	80.48	80.50	0.02
Arkansas	39	29	35	32	33	41	36	35.00	35	17.00	17.00	0.00
California	48	44	32	27	50	47	50	42.57	47	85.95	108.83	22.88
Colorado	20	22	5	4	11	16	23	14.43	16	62.29	65.17	2.88
Connecticut	42	47	39	33	45	22	35	37.57	39	72.62	75.00	2.38
Delaware	14	30	17	38	20	1	31	21.57	20	155.62	158.50	2.88
Florida	5	5	20	16	2	44	11	14.71	11	208.57	224.67	16.10
Georgia	36	26	11	5	5	31	12	18.00	12	163.33	205.33	42.00
Hawaii	30	40	43	50	44	30	37	39.14	40	54.81	55.67	0.86
Idaho	19	15	22	14	18	6	17	15.86	17	25.81	27.33	1.52
Illinois	31	50	38	19	48	48	47	40.14	47	133.81	188.67	54.86
Indiana	8	16	8	13	6	18	3	10.29	8	30.24	36.33	6.10
Iowa	41	18	14	10	13	4	18	16.86	14	136.81	146.33	9.52
Kansas	22	24	21	24.5	27	19	5	20.36	22	52.56	55.71	3.15
Kentucky	26	45	28	36.5	28	39	28	32.93	28	52.70	81.04	28.34
Louisiana	35	35	40	46	7	49	24	33.71	35	205.90	207.83	1.93
Maine	33	42	48	44	30	14	34	35.00	34	128.33	129.50	1.17
Maryland	40	37	33	36.5	40	28	38	36.07	37	18.37	19.38	1.01
Massachusetts	24	48	18	20	46	17	42	30.71	24	194.90	247.50	52.60
Michigan	13	34	30	22	43	24	10	25.14	24	134.81	136.33	1.52
Minnesota	47	31	13	1	31	13	41	25.29	31	279.24	317.33	38.10
Mississippi	18	33	49	43	39	43	25	35.71	39	121.57	134.17	12.60
Missouri	17	14	26	26	26	42	9	22.86	26	116.81	128.33	11.52
Montana	6	10	24	28	29	34	26	22.43	26	107.95	122.83	14.88
Nebraska	29	4	3	7	25	3	2	10.43	4	131.95	180.17	48.21
Nevada	3	12	34	45	8	35	22	22.71	22	249.24	249.83	0.60
New Hampshire	7	20	37	30	21	5	40	22.86	21	187.81	191.83	4.02
New Jersey	50	49	41	39	47	38	48	44.57	47	25.62	32.50	6.88
New Mexico	38	36	47	24.5	36	45	33	37.07	36	56.54	57.88	1.34
New York	49	46	29	35	49	21	27	36.57	35	131.95	134.83	2.88
North Carolina	16	27	2	9	3	7	7	10.14	7	76.14	87.67	11.52
North Dakota	25	2	4	6	19	15	6	11.00	6	76.00	105.17	29.17
Ohio	44	7	15	23	22	27	20	22.57	22	130.95	131.33	0.38
Oklahoma	32	9	16	31	16	33	19	22.29	19	91.90	104.50	12.60
Oregon	12	25	12	21	42	32	32	25.14	25	123.48	123.50	0.02
Pennsylvania	34	41	36	40	35	37	44	38.14	37	13.14	14.67	1.52
Rhode Island	45	38	46	48	37	26	49	41.29	45	67.24	83.33	16.10
South Carolina	37	17	25	29	10	36	13	23.86	25	117.48	119.00	1.52
South Dakota	2	3	9	11	23	9	16	10.43	9	53.29	55.67	2.38
Tennessee	15	8	19	17	4	23	15	14.43	15	41.95	42.33	0.38
Texas	10	19	6	2	1	40	29	15.29	10	217.90	250.50	32.60
Utah	9	11	1	3	15	10	1	7.14	9	30.14	64.17	4.02
Vermont	46	39	42	42	41	2	46	36.86	42	242.81	273.67	30.86
Virginia	27	21	7	12	14	11	4	13.71	12	63.24	66.67	3.43
Washington	11	23	10	8	32	29	30	20.43	23	109.62	117.33	7.71
West Virginia	21	43	50	49	38	50	45	42.29	45	107.24	115.83	8.60
Wisconsin	43	28	31	15	12	20	39	26.86	28	139.14	140.67	1.52
Wyoming	1	6	27	18	17	8	8	12.14	8	79.14	99.17	20.02
Total Mean Average:										115.50	128.61	13.11