



THE IMPACT OF FEDERAL REGULATION ON KENTUCKY

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January 2016

Federal regulation is applicable in the same way in all 50 states. Each state's economy, however, includes a unique mix of industries, so federal policies that target specific sectors of the economy will affect states in different ways.

Federal regulations can, by design, target some industries more than others. For example, the Dodd-Frank Wall Street Financial Reform Act of 2010 directed federal regulatory agencies to create approximately 400 new regulations targeting the financial services sector.¹ These new regulations will have a national effect because financial services matter in all states, but they will be felt more in New York than in South Carolina, simply because of the relative importance of the financial services industry in the former state.

Using the RegData database, we can examine the relative impact of federal regulation on a particular state. RegData creates an industry regulation index by counting the number of words and phrases in the *Code of Federal Regulations* that indicate a specific mandated or prohibited activity and then by classifying those regulatory "restrictions" according to which industry or industries they likely target. The 10 most-regulated industries in the United States for 2014 are listed in table 1.

By weighting industry restrictions using the importance of an industry to a state relative to its importance to the country overall, we can produce a single Federal Regulation and State Enterprise (FRASE) index that measures the impact of federal regulation on individual states. The index is thus a ratio of the impact of federal regulations on a specific state's industries to the impact of federal regulations on the nation's industries in a given year. A value of 1 would indicate that a state's private sector is affected by federal regulations to exactly the same degree as the national private sector, while a score higher than 1 would indicate a higher impact of federal regulation on a state's private sector.

For 2013, Kentucky scored a 1.30 on the FRASE index. By design, the FRASE index for the United States overall in any year will equal 1, so a score of 1.30 indicates that the impact of federal regulation on Kentucky's industries was about 30 percent higher than the impact on the nation overall.

1. Patrick A. McLaughlin and Robert Greene, "Quantifying and Projecting Dodd-Frank's Provisions," in *Dodd-Frank: What It Does and Why It's Flawed*, ed. Hester Peirce and James Broughel (Arlington, VA: Mercatus Center at George Mason University, 2012).

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Table 1. The McLaughlin-Sherouse List: The 10 Most-Regulated Industries in 2014

NAICS code	Industry name	Industry regulation index
3241	petroleum and coal products manufacturing	25.48
2211	electric power generation, transmission and distribution	20.96
3361	motor vehicle manufacturing	16.76
5222	nondepository credit intermediation	16.58
5221	depository credit intermediation	16.03
4811	scheduled air transportation	13.31
1141	fishing	13.22
5239	other financial investment activities	12.26
2111	oil and gas extraction	11.95
3254	pharmaceutical and medicine manufacturing	11.51

Source: RegData 2.2 from RegData.org.

Note: The industry regulation index is divided by 1,000 for ease of reading.

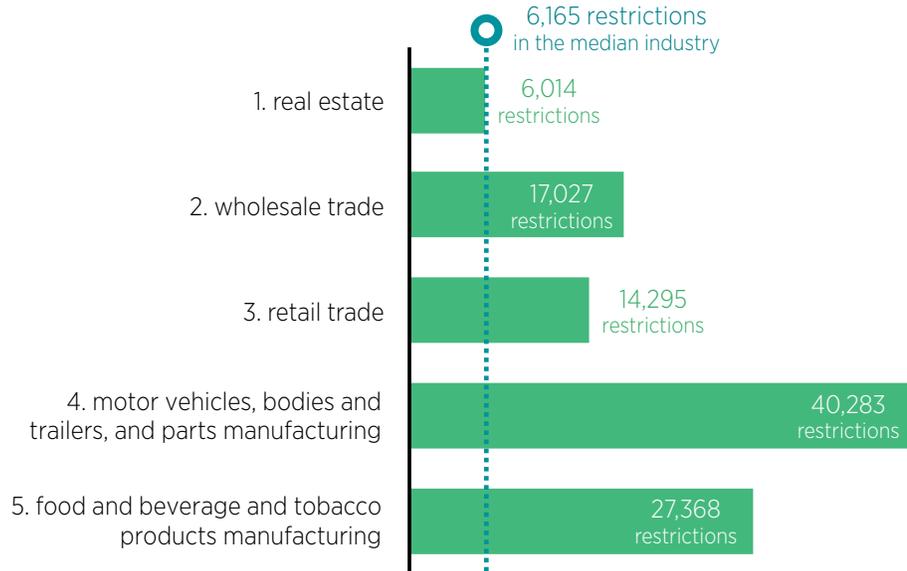
While there is some fluctuation from year to year in the ratio of the impact of federal regulation on the state to its impact on the nation, more dramatic growth occurs in the total number of such regulatory restrictions affecting the state since 1997. One way to measure this impact is to scale the weighted restrictions to the total weighted restrictions for the national economy in 1997. Doing so allows us to calculate the growth of the FRASE index relative to 1997. For Kentucky, the FRASE index, scaled by total weighted restrictions for 1997, has grown by 43 percent from 1997 to 2013.

So why is the impact of federal regulation higher for Kentucky than for the country overall? The answer lies in the particular industries that make up the state's economy and how regulated those industries are. The quantities of regulatory restrictions affecting the top five industries by contribution to Kentucky's private sector are shown in figure 1, and the contributions of those industries to the state and national private sector are compared in figure 2.

While the motor vehicles, bodies and trailers, and parts manufacturing industry is only the fourth-largest industry in Kentucky, it contributes the most to the state's FRASE score. First, the industry is highly regulated, subject to more than 40,000 industry-relevant restrictions. Second, the industry is almost three times as important to Kentucky as to the country overall, contributing up to 5.8 percent of the state's private sector as opposed to 2.0 percent of the nation's.

Figure 3 shows the top five regulators of the motor vehicles, bodies and trailers, and parts manufacturing industry. The top regulator is the Environmental Protection Agency, which accounts for more than 20,000 restrictions. The other top agencies are, in descending order, the Federal Aviation Administration, a combination of the National Highway Traffic Safety Administration and the Federal Highway Administration, the Federal Motor Carrier Safety Administration, and the Federal Railroad Administration. Unsurprisingly, these regulators comprise a mix of environmental and transportation-focused agencies.

Figure 1. Total Industry-Specific Regulatory Restrictions in Kentucky's Top Five Industries, 2013



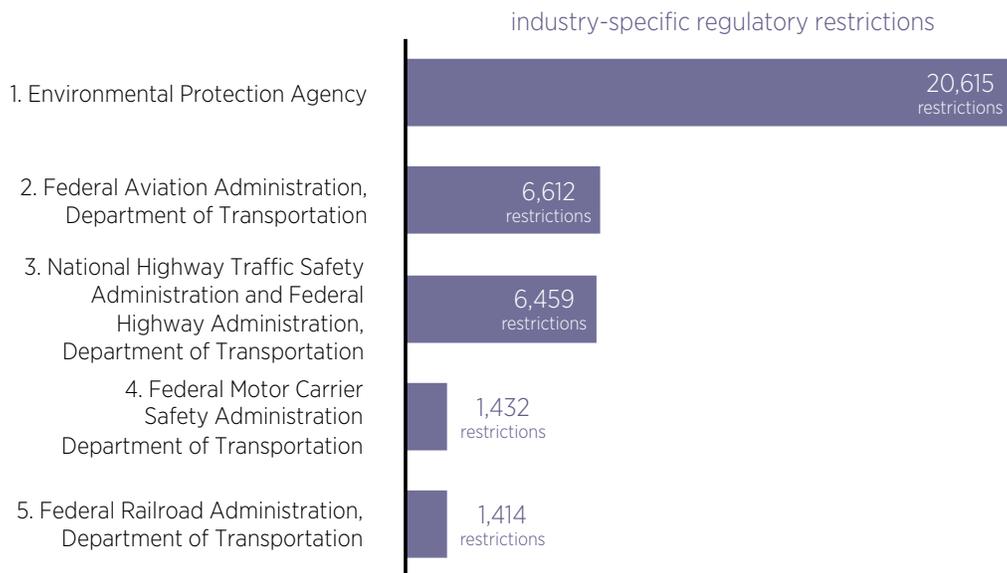
Source: RegData 2.2 from RegData.org.

Figure 2. Value Added to Private-Sector Product by Kentucky's Top Industries, 2013



Source: RegData 2.2 from RegData.org.

Figure 3. Top Regulators of the Motor Vehicles, Bodies and Trailers, and Parts Manufacturing Industry, 2013



Source: RegData 2.2 from RegData.org.

The landscape of federal regulations can change from year to year, as can the makeup of a state's economy. As those changes occur, residents of those states may have to learn new sets of regulations or deal with different regulators and regulations. Policymakers from Kentucky are uniquely situated to comment on the impact of federal regulation in their state and whether this impact is adequately represented in the current debate about regulatory and legislative impact accounting.²

2. For a recent proposal on the topic of legislative impact accounting, see Jason J. Fichtner and Patrick A. McLaughlin, "Legislative Impact Accounting: Rethinking How to Account for Policies' Economic Costs in the Federal Budget Process" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, June 2015).

APPENDIX: ABOUT THE FRASE INDEX

RegData uses text analysis and machine-learning algorithms to produce two novel data series. The first counts the number of restrictions (words such as “must,” “shall,” etc.) in each part of the *Code of Federal Regulations*, and the second measures the relevance of each part of the *Code of Federal Regulations* to each industry in the North American Industrial Classification System (NAICS). These two metrics have been combined into a single index measuring, at the national level, how regulated each sector (two-digit NAICS code) and each industry (three-digit NAICS code or four-digit NAICS code) is in each year that the *Code of Federal Regulations* is published.³ RegData has been applied in numerous research contexts, many of which are catalogued on the website RegData.org. Because RegData is a free and publicly available database, other interested parties are encouraged to download, experiment with, and apply the data in any context.

Among the many applications of RegData, the FRASE index ranks the importance of industries in a particular state to calculate the impact of federal regulation on that state. The nature of this construction means that a state in which the heavily regulated industries are also the largest industries will tend to have a high value for its FRASE index.

Using the latest version of RegData, version 2.2, the FRASE index is the ratio of the impact of federal regulations on a state’s private sector to the impact of federal regulations on the nation’s private sector in a given year. A value of 1 would indicate that the state’s private sector is affected by federal regulations to exactly the same degree as the national private sector.

Calculating the FRASE index requires a few steps. First, we calculate the importance of each industry to the private sector in a state—in this case, the state is Kentucky. To do this, we divide the value added to Kentucky’s GDP from each industry i that is in the private sector in year t by the entire state’s private-sector production in year t .⁴ We abbreviate contributions to Kentucky’s GDP from private-sector production as PSP (private-sector product). Since all calculations described here occur in year t , we dispense with time subscripts. Thus, the importance of industry i to state s , where s indicates the state of Kentucky, is simply the fraction of Kentucky’s PSP that is produced by industry i :

$$(y_{s,i}/y_s) = \text{industry } i\text{'s fraction of Kentucky's PSP, } \sim[0,1],$$

where

$$y_{s,i} = \text{value added to Kentucky's PSP from industry } i \text{ (observed, from BEA)}$$

and

$$y_s = \text{Kentucky's PSP} = \sum_{i=1}^I y_{s,i}.$$

3. For full explanations of RegData 2.2, see Omar Al-Ubaydli and Patrick A. McLaughlin, “RegData: A Numerical Database on Industry-Specific Regulations for All U.S. Industries and Federal Regulations, 1997–2012,” *Regulation & Governance*, forthcoming (also a Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, November 2014); and Patrick A. McLaughlin and Oliver Sherouse, “Industry-Specific Classification of Legal Text,” working paper, forthcoming.

4. By examining only private-sector industries, we excluded only the industry called “government.”

Second, we calculate the importance of each industry i to the national economy. This involves calculating the fraction of the country's PSP that is produced by industry i :

$$(y_i/y) = \text{industry } i\text{'s fraction of national PSP, } \sim[0,1],$$

where

$$Y_i = \text{national value added to PSP from industry } i = \sum_{s=1}^S y_{s,i}$$

and

$$Y = \sum_{i=1}^I y_i = \text{national PSP, or the sum of national value added to PSP from all industries.}$$

Third, we combine these two fractions to calculate the importance of industry i to Kentucky relative to its importance in the national economy. This relative importance of industry i to Kentucky serves as a weighting term in the next and final step.

$$\frac{(Y_{s,i}/Y_s)}{(Y_i/Y)} = w_{s,i} = \text{importance of industry } i \text{ to Kentucky relative to its importance in the national economy} = \text{weighting term.}$$

Finally, we multiply the level of federal regulation of each industry by the weighting term for Kentucky:

$$w_{s,i}r_i = \text{national regulation of industry } i \text{ weighted by its importance to Kentucky,}$$

where

$$r_i = \text{regulation of industry } i \text{ (observed, from RegData);}$$

and we then sum across all industries in the private sector in Kentucky:

$$\sum_{i=1}^I w_{s,i}r_i = \text{industry-weighted regulation index.}$$

To account for changes in the level of national regulation, we also produce a 1997-basis FRASE index by dividing the industry-weighted regulation index for a state in the current year by the industry-weighted regulation index for the United States overall in 1997.

For this particular state-level analysis, the industry-weighted regulation index for the United States and Kentucky, along with the current and 1997-basis Kentucky FRASE index and the growth in the Kentucky 1997-basis FRASE, are given in table A1.

Table A1. Summary of FRASE Index for the United States and Kentucky

Year	Industry-weighted regulation index, United States	Industry-weighted regulation index, Kentucky	Kentucky FRASE index, current basis	Kentucky FRASE index, 1997 basis	Cumulative percentage change, 1997 basis
1997	453,912	588,568	1.30	1.30	0.00%
1998	471,727	616,460	1.31	1.36	4.74%
1999	486,063	631,671	1.30	1.39	7.32%
2000	495,728	621,314	1.25	1.37	5.56%
2001	503,740	629,808	1.25	1.39	7.01%
2002	499,027	609,098	1.22	1.34	3.49%
2003	502,081	618,287	1.23	1.36	5.05%
2004	511,302	638,321	1.25	1.41	8.45%
2005	517,458	664,823	1.28	1.46	12.96%
2006	528,626	689,401	1.30	1.52	17.13%
2007	541,007	691,814	1.28	1.52	17.54%
2008	565,048	722,857	1.28	1.59	22.82%
2009	588,785	753,453	1.28	1.66	28.01%
2010	607,839	795,238	1.31	1.75	35.11%
2011	620,499	803,602	1.30	1.77	36.54%
2012	638,073	838,225	1.31	1.85	42.42%
2013	648,067	843,846	1.30	1.86	43.37%

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