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FEDERAL REGULATION AND THE STATES

THE IMPACT OF FEDERAL REGULATION ON MASSACHUSETTS

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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, Massachusetts scored a 0.77 on the FRASE index. By design, the FRASE index for the United States overall in any year will equal 1, so a score of 0.77 indicates that the impact of federal regulation on Massachusetts's industries was more than 20 percent lower 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 Massachusetts, the FRASE index, scaled by total weighted restrictions for 1997, has grown by 39 percent from 1997 to 2013.

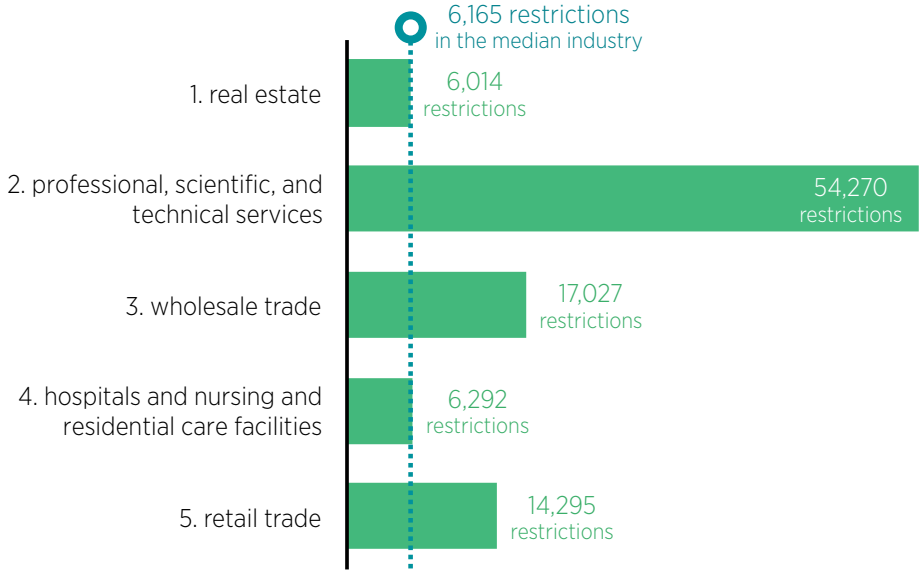
As shown in table A1 in the appendix, this significant growth in the 1997-based FRASE score contrasts with the more modest growth in the current-year FRASE. The constant-basis index diverges from the current-basis version because it takes into account the growth in regulation nationwide over time. The constant-basis FRASE for Massachusetts grew even while the current-basis FRASE remained flat. This difference suggests that it was the overall growth in regulation, rather than disproportionate growth in the regulation of industries important to Massachusetts, that increased the impact of federal regulation on the state since 1997.

So why is the impact of federal regulation lower for Massachusetts 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 top five industries by contribution to the state'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.

Two of Massachusetts's top five industries, real estate and hospitals (which includes nursing and residential care facilities), are regulated at about the median for all industries. Two more—wholesale trade and retail trade—are more highly regulated, but matter less to Massachusetts's private sector than to the nation's as a whole. Both these factors keep the impact of federal regulation low on Massachusetts compared to the impact on the entire United States.

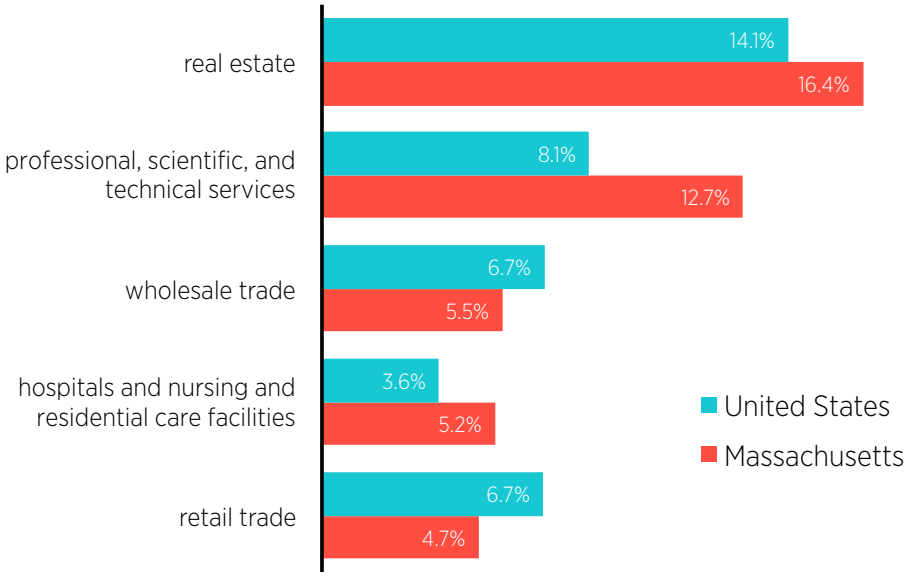
In terms of regulatory restrictions, the one stand-out industry for Massachusetts is professional, scientific, and technical services. This industry is subject to a large number of restrictions—more

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



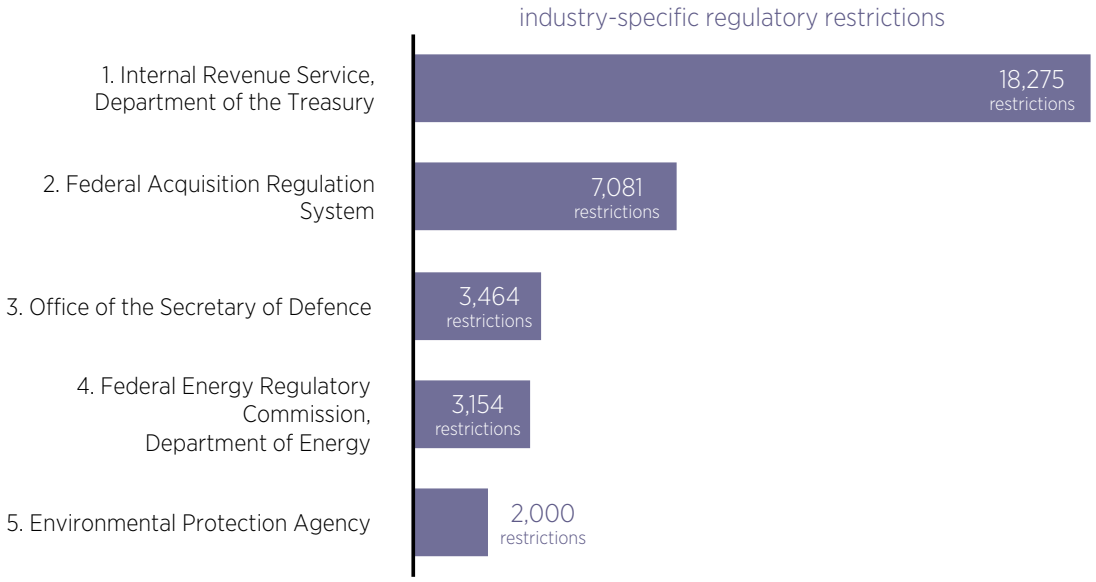
Source: RegData 2.2 from RegData.org.

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



Source: RegData 2.2 from RegData.org.

Figure 3. Top Regulators of the Professional, Scientific, and Technical Services Industry, 2013



Source: RegData 2.2 from RegData.org.

than 50,000—but it is also one of the most broadly defined in the industry classification system. It includes legal services, accounting, tax preparation services, architecture, engineering, geophysical surveying—even interior and graphic design. The expansiveness of this industry explains the high number of restrictions, but it also makes precise measurement of the impact of federal regulations more difficult for Massachusetts than for other states that feature other industries.

So who is doing the regulating of this broad industry? The top five regulators of the professional, scientific, and technical services industry are shown in figure 3.

The top regulator, relevant to all subcategories within the industry but particularly to lawyers, accountants, and tax preparers, is the Internal Revenue Service. Responsible for more than 18,000 industry-specific restrictions, the IRS accounts for about one-third of the industry total. Other regulations come from the Federal Acquisition Regulations, the Office of the Secretary of Defense, the Federal Energy Regulatory Commission, and the Environmental Protection Agency.

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 affected states may have to learn new sets of regulations or deal with different regulators. Policymakers from Massachusetts are well situated to comment on the impact of federal regulation in their state and whether that 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 Massachusetts. To do this, we divide the value added to Massachusetts'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 Massachusetts'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 Massachusetts, is simply the fraction of Massachusetts's PSP that is produced by industry *i*:

$(y_{s,i}/y_s)$ = industry *i*'s fraction of Massachusetts's PSP, ~[0,1],

where

$y_{s,i}$ = value added to Massachusetts's PSP from industry *i* (observed, from BEA)

and

y_s = Massachusetts's PSP = $\sum_{i=1} y_{s,i}$.

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) = industry *i*'s fraction of national PSP, ~[0,1],

where

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

and

$Y = \sum_{i=1}^{I} y_i$ = 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 Massachusetts relative to its importance in the national economy. This relative importance of industry *i* to Massachusetts serves as a weighting term in the next and final step.

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

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

$w_{s,i}r_i$ = national regulation of industry *i* weighted by its importance to Massachusetts,

where

r_i = regulation of industry *i* (observed, from RegData);

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

$\sum_{i=1}^{I} w_{s,i}r_i$ = 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 Massachusetts, along with the current and 1997-basis Massachusetts FRASE index and the growth in the Massachusetts 1997-basis FRASE, are given in table A1.

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

Year	Industry-weighted regulation index, United States	Industry-weighted regulation index, Massachusetts	Massachusetts FRASE index, current basis	Massachusetts FRASE index, 1997 basis	Cumulative percentage change, 1997 basis
1997	453,912	356,844	0.79	0.79	0.00%
1998	471,727	378,178	0.80	0.83	5.98%
1999	486,063	386,629	0.80	0.85	8.35%
2000	495,728	389,942	0.79	0.86	9.28%
2001	503,740	389,686	0.77	0.86	9.20%
2002	499,027	398,517	0.80	0.88	11.68%
2003	502,081	399,681	0.80	0.88	12.00%
2004	511,302	399,747	0.78	0.88	12.02%
2005	517,458	405,670	0.78	0.89	13.68%
2006	528,626	420,886	0.80	0.93	17.95%
2007	541,007	438,454	0.81	0.97	22.87%
2008	565,048	445,581	0.79	0.98	24.87%
2009	588,785	458,178	0.78	1.01	28.40%
2010	607,839	459,411	0.76	1.01	28.74%
2011	620,499	462,189	0.74	1.02	29.52%
2012	638,073	481,640	0.75	1.06	34.97%
2013	648,067	496,224	0.77	1.09	39.06%

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