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Licensing growth and its effect on employment concentration

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Abstract

This study examines the relationship between the growth in state occupational licensing regulations and the change in the concentration of practitioners over time in the U.S. We exploit cross-state variances in occupational licensing data from the available datasets in 1993 and 2017. Our focus is on service-providing, low-to-moderate-income occupations. The general trend has been for states to license more occupations and to increase the burden of these licensed occupations over time. The states that had a relatively low level of licensing burdens in 1993 generally had the most growth in licensing. We find that counties with more concentrated service-providing industries are in states with higher licensing burdens, but an initial higher licensing burden is associated with lower levels of sector concentration over time.

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1. Introduction

This paper contributes to the literature by analyzing the relationship between the change in occupational licensing burdens and the change in quantity or concentration of practitioners over time. Occupational licensure is a severe form of occupational regulation because it does not allow people to practice a certain trade unless they get permission from the government. To get this permission from a government-sanctioned licensing board, an applicant must fulfill requirements, which can include a certain educational attainment, exams, experience, fees, and a criminal background check. The main argument for licensing laws is that these rules ensure safety and quality of service. The typical argument against occupational licensing is that these barriers unnecessarily block capable new entrants in the field. Famous economist Milton Friedman compared licensing regimes to medieval guilds and caste systems in his 1962 book *Capitalism and Freedom* (2002).

A basic supply and demand model predicts fewer professionals in places where barriers are high to practice the trade, assuming all else is equal. But all else is not equal. At first thought, we would expect a smaller quantity of practitioners in a place that had a lot of restrictions on new practitioners. However, these licensing rules are not exogenously or randomly applied. Licensing rules are encouraged by the incumbent professionals, and it takes an effective lobby from the profession to change the laws. A lobby is likely more powerful if they are a large, organized group. Places with a high number of practitioners will likely be the places where more burdensome rules are drawn up for new entrants. A crude look at the data may then imply a positive relationship between licensing burdens and the number of practitioners, even if those burdens are restricting entry.

A higher concentration of employment in a sector may lead to more licensing, but more licensing barriers may lead to fewer people employed in that sector. To address this endogeneity problem, we control for the initial employment concentration level and the growth of licensing rules. We test whether counties in states with initial high licensing burdens have fewer additional practitioners over time when compared to counties subjected to lower state occupational burdens. This lagged setup eliminates the possibility of causality from sector concentration to occupational regulation. To our knowledge, no other paper has examined occupational licensing over time in this way.

The empirical results align with the economic logic: places with a high concentration of practitioners is associated with high occupational barriers, but those barriers are associated with less concentration of employment over time. The following section briefly looks at the relevant literature. Section 3 describes the data and the model. Section 4 provides the results and analysis. Section 5 concludes.

2. Literature on Occupational Licensing and Entry into the Profession

Few papers have investigated the relationship between the concentration of practitioners and occupational licensing over time. Our paper has a similar setup as Meehan, Timmons, and Meehan (2017), who found increasing licensing requirements to be associated with a reduction in upward income mobility for low-income families. Plemmons (2018) analyzed individual firm

data and concluded that firms are less likely to enter a state with higher occupational licensing burdens. Snyder, Mattson, and Kanode (2020) found that counties in states with high licensing burdens had fewer business establishments during the Great Recession. A related study by Zapletal (2017) suggests that occupational licensing requirements reduce entry and exit rates. Contrary to what may be expected, Zapletal did not find a relationship between strict licensing requirements and prices or the number of practitioners. Instead, his evidence suggests that licensing requirements prevents some entry and exit. Hall and Pokharel (2016) found that the number of barbershops were negatively correlated with the number of exams required for a license. Several studies have found that the 150-hour education requirement has had a negative relationship with the number of CPA candidates or accounting graduates (Boone & Coe, 2002; Carpenter & Stephenson, 2006; and Meehan & Stephenson, 2020). Meehan (2015) examined the private security market and discovered a negative relationship between the regulations and the number of private security firms.

A similar way of examining the effect of occupational licensing on competition is to focus on worker mobility. The variance of licensing requirements across state borders can create a burdensome barrier for someone moving to a different state if the license is not transferable. Johnson and Kleiner (2020) found that between-state migration was lower for individuals that faced state-specific licensing exam requirements. Holen (1965) discovered a similar result in an earlier study. The study by Kleiner and Xu (2020) showed lower labor market fluidity with licensed professions. Pashigian (1979) provided evidence that having higher occupational licensing requirements is associated with less interstate mobility. Prantl and Spitz-Oener (2009) found that entry regulation was more likely to decrease chances for self-employment in regulated environments such as post-reunification East Germany than in less regulated West Germany.

Our study is similar to others in that we examine the relationship between licensing and entry into the field. However, we differ primarily in two ways: 1) Our study looks at changes in licensing over time, and 2) We attempt to account for the reverse causality – where more entry leads to more licensing.

3. Data

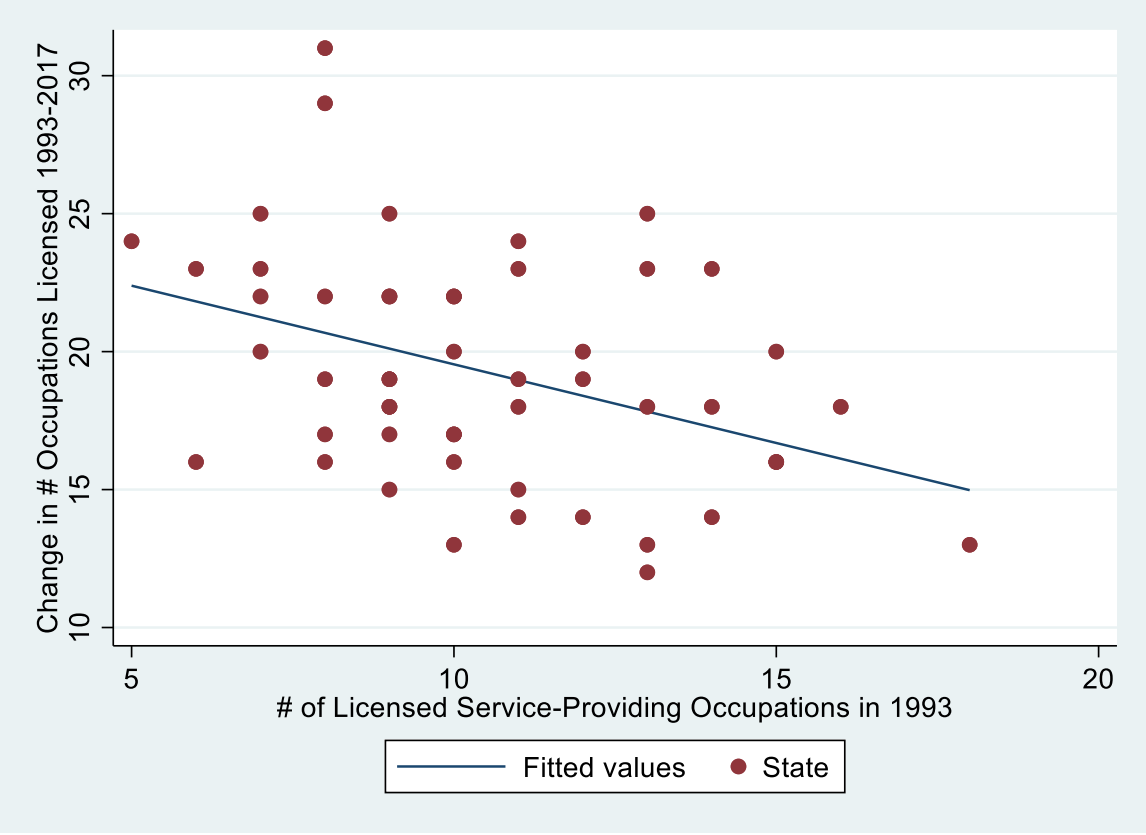
Our study focuses state occupational licensing regulations, not certification or registration rules. A licensed occupation is one where an individual cannot legally work without obtaining a license. Certification or registration are lower forms of regulation, but generally don't prohibit the practice of a trade. We use state occupational licensing data from The Institute for Justice (Carpenter, et al. 2017). They compiled occupational licensing requirements across states for low-to-moderate-income occupations, including the minimum education and experience, fees, and exams.

The Institute for Justice reports state licensing requirements 2012 and in 2017. This short window is unlikely to have significant changes in licensing rules, so we also needed to look for data on earlier years if we wanted to examine the relationship between the changes in licensing rules and the number of practitioners. Therefore, we also took advantage of a 1993 directory on state occupational licensing rules (Bianco, 1993). This directory helped us compare licensing rules over time. Timmons, Meehan, Meehan, and Hazensab (2018) put together a similar dataset using these sources that showed an increase in licensure over time for many professions.

The data from the Institute for Justice examined 102 low-to-moderate-income occupations. We reduced it to the 55 occupations that would be considered part of a service-providing industry as classified by the Bureau of Labor Statistics. We then examined the data in the 1993 Directory (Bianco, 1993) to see which of those occupations were licensed in each state at that time. We compared the number of occupations licensed in the 1993 Directory to the corresponding number in the Institute for Justice's License to Work II report (Carpenter, et al. 2017). The list of occupations we examine are in Appendix Table AI.

Figure 1 shows the relationship between the number of occupations licensed in a state in 1993 to the change it experienced by 2017. Each observation is a state. Generally, we see that states with a low number of occupations licensed in 1993 had larger increases in the number of occupations licensed by 2017. In other words, states tended to catch up to other states in the number of occupations licensed.

Figure 1: The number of occupations (out of 55) licensed by a state in 1993 and the change from 1993 and 2017.



To see state-specific data, we create a list in Appendix Table AII. This table displays the number of low-to-moderate income service-providing occupations licensed (out of 55) in 1993 and 2017. We also ranked the states, where 1 is the most licensed state and 50 is the least-burdensome state.

The reason we focused on the service-providing occupations is so we can compare this data to the change in the location quotient, which is categorized by sector. The location quotient we examine is the percentage of service employment as a percentage of all employment in the county, relative to the same ratio for the U.S. overall. This number is reported by the Bureau of Labor Statistics and calculated as follows:

$$\frac{\left(\frac{\text{\# of people employed in service providing sector in county}}{Total\ \#\ of\ people\ employed\ in\ the\ county}\right)}{\left(\frac{\#\ of\ people\ employed\ in\ service\ providing\ sector\ in\ U.S.}{Total\ \#\ of\ people\ employed\ in\ the\ U.S.}\right)}$$

We use this measurement to test our hypothesis about the relationship between occupational licensing and employment concentration. Economic logic supports a positive or negative relationship between the two. If licensing rules block entrants, it could lead to fewer practitioners and a lower concentration. However, a highly concentrated industry may be able to lobby for more licensing rules, leading to a positive relationship.

4. Model and Analysis

The direction of causality between sector concentration and occupational licensing is not clear in general, as economic reasoning would suggest causality in both directions. Because of these causality concerns, we compare two empirical strategies: 1) the panel, two-way fixed effects model (differencing within a county) and 2) cross-sectional (variation across counties).

In the first strategy, there is no way to tell which way the causation runs. In theory, causation is running both ways. Yet it is still insightful to see the sign of correlation, as we expect causality to have different signs depending on which way it runs. We expect that more firms lead to more licensing, but the increase in licensing results in fewer firms. The sign in the panel setup may show us the dominant flow of causality.

The second strategy gives us insight on if licensing is possibly affecting sector concentration. There we focus on the initial levels of licensing, and we test its relationship with future sector concentration, controlling for other changes in licensing that could be the result of changes in sector concentration. We also control for the initial sector concentration level, as those levels may not be in equilibrium from previous unobserved levels of occupational regulation. Obviously, future sector concentration will not cause past differences in occupational regulation. Therefore, we have more confidence in the second model giving support to the existence of causation going from licensing regulations to sector concentration.

The panel setup at the county level allows us to see the relationship between the growth of employment concentration and the growth of licensing. Here we are attempting to estimate the coefficients in the model:

$$Occupations\ Licensed_{it} = \beta_0 + \ Employment\ Quotient_{it}\beta_1 + Ln(Population)_{it}\beta_2 + Year\ 2017\beta_3 + \varepsilon_i \quad (1)$$

Where i represents county and t represents a year. Two-way fixed effects estimates are shown in Table I. The main independent variable here is the county-level employment quotient for the service-providing sector, as defined earlier. The dependent variable is the number of service-providing occupations in that county that require state licensure for years 1993 and 2017. We control for population. The fixed-effects model by design will control for the effect of time invariant factors. We include the 2017 dummy variable to control for the time trend.

Table I: Fixed Effects Model at County Level: Relationship between Occupational Licensure Requirements and the Employment Quotient

Fixed Effects Model at County Level: Relationship Between Licensure and Employment Quotient				
Variable	Number of service-providing occupations in that county which require state licensure in years 1993 and 2017 (jobs with less-than-average income)			
	(1)		(2)	
Employment Quotient	3.57	***	3.55	***
	0.49		*0.50*	
Ln(Pop)			0.07	
			0.27	
Year 2017	18.72	***	18.71	***
	0.07		*0.08*	
Constant	7.87	***	7.21	***
	0.40		*2.73*	
N	6144		6142	
R_sq overall	0.90		0.90	

Robust Standard Errors are in italics. *** 1% significance level, ** 5% significance level, * 10% significance level.

We observe from Table I that increases in concentration of the service industry is associated with an increase in the number of occupations licensed in that state between 1993 and 2017. This result is consistent with the view that higher concentration of practitioners leads to more licensing requirements.

The results in Table I does not provide evidence of more licensing being associated with fewer practitioners. To test for that relationship, we'll control for the initial state of licensing, the initial employment quotient, and for changes in licensing over time. We can then see if initial licensing rules are associated with fewer practitioners over time. We estimate the coefficients from the equation below:

$$Employment\ Quotient_{it} = \beta_0 + \#\ Licensed\ in\ 1993_{it}\beta_1 + \#\ Licensed\ in\ 2017_{it}\beta_2 + Employment\ Quotient\ in\ 1993_{it}\beta_3 + Ln(Pop\ 2017)_{it}\beta_4 + Ln(Pop\ 1993)_{it}\beta_5 + Establishments\ per\ k\ in\ 1993_{it}\beta_6 + \varepsilon_i \quad (2)$$

This represents a cross section with county-level data. Our goal is to examine the relationship between the 1993 occupational licensing requirements and the employment location quotient in 2017. The focus on the initial year of licensing will eliminate the reverse causality issues since the 2017 employment quotient cannot cause the 1993 employment concentration levels. We also control for the number of occupations in that county that require a license in 2017. Since a concentrated industry may lobby for an increase in licensing over time, and initial licensing levels may be correlated with future licensing levels, controlling for 2017 licensing levels allows us to see a clearer picture of the relationship between initial levels of licensing and employment concentration.

Table II reports the cross-sectional regression results at the county level and finds a negative relationship between the initial number of occupations licensed in 1993 and the location quotient in 2017. Similar results occur when we use the number of service-providing business establishments (per 1000 employed persons) as the dependent variable.

Table II: Initial Licensing Requirements and Employment Concentration and Establishments

OLS at County Level: Relationship Between Licensure and Business Concentration				
Variable	Employment Quotient of Service-Providing Industry at County Level in 2017		Business Establishments per 1k people in the County in 2017	
	(1)	(2)	(3)	(4)
# Licensed in 1993	-0.0034***	-0.0024***	-0.8000***	-0.8108***
	0.0008	*0.0007*	*0.1956*	*0.1931*
# Licensed in 2017	0.0053***	0.0011*	0.0498	0.2891*
	0.0007	*0.0006*	*0.1597*	*0.1589*
Employment Quotient 1993	0.6764***	0.5609***		
	0.0117	*0.0128*		
Ln(Pop 2017)		0.0595***		-2.0977
		0.0095		*1.8231*

Ln(Pop 1993)		-0.0226**		-1.6431*
		0.0103		*1.9843*
Establishments per k in 1993			0.8548***	*0.7662***
			0.0235	*0.0301*
Constant	0.1299***	-0.0482**	18.0944***	59.9722***
	0.0222	*0.0223*	*5.3241*	*9.5591*
N	3067	3066	3067	3066
R_sq	0.5589	0.6358	0.6149	0.622

Robust Standard Errors are in italics. *** 1% significance level, ** 5% significance level, * 10% significance level.

These results are consistent with the view that higher licensing requirements lead to fewer practitioners. The coefficient for the licensing level in 2017 is positive and statistically significant in 3 of the 4 models. This is consistent with the idea that while highly concentrated sectors will have more lobby power to increase licensing burdens, but those burdens create barriers for entrants.

From Tables I and II, we can say that more licensing is occurring in areas that have more concentrated sectors, but the licensing requirements are associated with a reduction of concentration over time.

5. Conclusions

Occupational licensing is growing, and it has recently got a lot of attention by researchers. One of the main arguments is that high licensing burdens hurt entry. This has not been easy to test because of the lack of available data on licensing burdens over time. Reverse causality is also a problem: high entry may lead to more licensing rules. Our paper takes advantage of a licensing directory complied in 1993, which we compare to the most recent licensing report in 2017. An occupation has a better chance of becoming licensed when the sector is highly concentrated. However, the increase in licensing burdens are associated with a lower concentration of practitioners in the future years.

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Appendix

Appendix Table AI: Low-to-Moderate Income Service-Providing Occupations that are Licensed in at least one State in 2017.

Occupation	NAICS code	NAICS name
Animal Control Officer	812910	Pet Care (except Veterinary) services
Animal Trainer	812910	Pet Care (except Veterinary) services
Athletic Trainer	711219	Other Spectator Sports
Auctioneer	454112	All Other Miscellaneous Store Retailers (Except Tobacco Stores)
Barber	812111	Barber Shops
Bartender	722410	Drinking Places (Alcoholic Beverages)
Bill Collection Agency	561440	Collection Agencies
Bus Driver, City/Transit	485113	Bus and Other Motor Vehicle Transit Systems
Child Care Home, Family	624410	Child Day Care Services
Coach, Head (High School Sports)	611620	Sports and Recreation Instruction
Cosmetologist	812112	Beauty Salons
Dental Assistant	621210	Offices of Dentists
Dietetic Technician	812199	Other Personal Care Services
Emergency Medical Technician	621910	Ambulance Services
Fire Alarm Installer	561621	Security Systems Services (except Locksmiths)

Florist	453110	Florists
Funeral Attendant	812210	Funeral Homes and Funeral Services
Gaming Cage Worker	713290	Other Gambling Industries
Gaming Dealer	713290	Other Gambling Industries
Gaming Supervisor	713290	Other Gambling Industries
Interior Designer	541410	Interior Design Services
Interpreter, Sign Language	541930	Translation and Interpretation Services
Landscape Contractor (Commercial)	541320	Landscape Architectural Services
Landscape Contractor (Residential)	541320	Landscape Architectural Services
Locksmith	561622	Locksmiths
Makeup Artist	812199	Other Personal Care Services
Manicurist	812113	Nail Salons
Massage Therapist	621399	Offices of All Other Miscellaneous Health Practitioners
Mobile Home Installer	453930	Manufactured (Mobile) Home Dealers
Nursery Worker	444220	Nursery, Garden Center, and Farm Supply Stores
Optician	621320	Offices of Optometrists
Packer	561910	Packaging and Labeling Services
Pharmacy Technician	446110	Pharmacies and Drug Stores
Preschool Teacher, Public School	624410	Child Day Care Services
Psychiatric Aide	621330	Offices of Mental Health Practitioners (except Physicians)
Psychiatric Technician	621330	Offices of Mental Health Practitioners (except Physicians)
School Bus Driver	485410	School and Employee Bus Transportation
Security Alarm Installer	561621	Security Systems Services (except Locksmiths)
Security Guard, Unarmed	561612	Security Guards and Patrol Services
Shampooer	812112	Beauty Salons
Skin Care Specialist	812112	Beauty Salons
Slot Supervisor	713210	Casinos (except Casino Hotels)
Social and Human Service Assistant	624190	Other Individual and Family Services
Taxi Driver/Chauffeur	485310	Taxi Service
Taxidermist	711510	Independent Artists, Writers, and Performers

Teacher Assistant, Non-Instructional	611710	Educational Support Services
Title Examiner	541191	Title Abstract and Settlement Offices
Travel Agency	561510	Travel Agencies
Travel Guide	561510	Travel Agencies
Tree Trimmer	561730	Landscaping Services
Truck Driver, Other	484230	Specialized Freight (except Used Goods) Trucking, Long-Distance
Truck Driver, Tractor-Trailer	484110	General Freight Trucking, Local
Upholsterer	811420	Reupholstery and Furniture Repair
Veterinary Technician	541940	Veterinary Services
Weigher	488490	Other Support Activities for Road Transportation

Appendix Table AII. The number of service-providing occupations licensed (out of a sample of 55) in 1993 and 2017.

State	1993 #	IJ 2017 #	Change 1993-2017	% Change	1993 Rank	2017 Rank	Rank Change
Alabama	10	30	20	200%	23	23	0
Alaska	9	27	18	200%	30	34	4
Arizona	13	31	18	138%	9	16	7
Arkansas	16	34	18	113%	2	8	6
California	13	36	23	177%	9	5	-4
Colorado	8	27	19	238%	39	34	-5
Connecticut	9	31	22	244%	30	16	-14
Delaware	9	34	25	278%	30	8	-22
District of Columbia	9	24	15	167%	30	48	18
Florida	10	32	22	220%	23	11	-12
Georgia	11	29	18	164%	17	27	10
Hawaii	7	27	20	286%	45	34	-11
Idaho	11	26	15	136%	17	40	23
Illinois	12	32	20	167%	14	11	-3
Indiana	10	27	17	170%	23	34	11
Iowa	14	32	18	129%	6	11	5
Kansas	7	29	22	314%	45	27	-18
Kentucky	10	27	17	170%	23	34	11
Louisiana	13	38	25	192%	9	2	-7

Maine	8	37	29	363%	39	3	-36
Maryland	9	31	22	244%	30	16	-14
Massachusetts	9	28	19	211%	30	31	1
Michigan	15	31	16	107%	3	16	13
Minnesota	12	26	14	117%	14	40	26
Mississippi	7	30	23	329%	45	23	-22
Missouri	8	30	22	275%	39	23	-16
Montana	11	25	14	127%	17	45	28
Nebraska	13	25	12	92%	9	45	36
Nevada	11	35	24	218%	17	6	-11
New Hampshire	9	28	19	211%	30	31	1
New Jersey	9	26	17	189%	30	40	10
New Mexico	15	35	20	133%	3	6	3
New York	10	32	22	220%	23	11	-12
North Carolina	15	31	16	107%	3	16	13
North Dakota	14	28	14	100%	6	31	25
Ohio	12	31	19	158%	14	16	2
Oklahoma	11	30	19	173%	17	23	6
Oregon	8	39	31	388%	39	1	-38
Pennsylvania	9	27	18	200%	30	34	4
Rhode Island	18	31	13	72%	1	16	15
South Carolina	10	26	16	160%	23	40	17
South Dakota	10	23	13	130%	23	50	27
Tennessee	11	34	23	209%	17	8	-9
Texas	13	26	13	100%	9	40	31
Utah	8	25	17	213%	39	45	6
Vermont	8	24	16	200%	39	48	9
Virginia	6	29	23	383%	49	27	-22
Washington	14	37	23	164%	6	3	-3
West Virginia	7	32	25	357%	45	11	-34
Wisconsin	5	29	24	480%	51	27	-24
Wyoming	6	22	16	267%	49	51	2