

U.S. State Occupational Licensing: Measuring its Impact on Business Establishments during the Great Recession

Thomas Snyder, Elsa Mattson, Alex Kanode

This paper investigates the relationship between state occupational licensing rules and the number of service-providing business establishments during the Great Recession. Occupational licensing regulations differ across states for many occupations. Economic reasoning suggests that areas with high costs of starting a business would have lower numbers of businesses than areas with lower start-up costs. This study takes the occupational licensing data from the Institute for Justice and uses years 2007-2010 cross-county service-providing establishments from the Bureau of Labor Statistics. Both OLS and two-stage least squares estimates reveal that counties in states with low occupational licensing burdens have greater numbers of business establishments than counties in states with high licensing burdens. Comparing the beginning of the Great Recession to the trough, this paper discovers that counties in states with more licensing rules suffered greater losses in business establishments than counties with less burdensome laws.

Keywords: Occupational Licensing, Great Recession, Business Establishments, State Regulation, Economic Recovery

Introduction

State occupational licensing laws have received more attention from researchers and legislators in recent years. This form of occupational regulation requires workers to acquire a state license to practice a trade. Data on occupational licensing has been very scarce until recent years. The increase in the availability of data and the increase in the number of studies that analyze the consequences of occupational licensing has led researchers and policymakers to recommend reform. The general sentiment by those pushing reform is that licensing rules are unnecessary burdens on new entrants, and that these burdens do more harm to the economy than good. This paper seeks to measure the harm, if any, licensing regulations had on the number of new business establishments during the Great Recession.

Occupational licensing rules have become more numerous over the decades. The percentage of the workforce requiring a license jumped from 5% in the 1950s to 29% in the 2000s (Kleiner & Krueger, 2010). A White House report during the Obama administration noted that the prevalence of licensure varies significantly between the states: from as low as 12 percent of workers in South Carolina to as high as 33 percent of the employed population in Iowa (The White House, 2015, p. 6). This report recommended that states reduce their licensing burdens. This support of reform carried over to the next president. The Trump Administration's Department of Labor funded a three-year project for state policymakers to investigate ways to reduce licensing burdens (Goodwin, 2017). These increasingly burdensome licensing rules are a bipartisan concern.

The negative consequences of restrictive licensing rules can be difficult to measure during an economic expansion filled with numerous job opportunities. People who are unwilling or unable to fulfil the licensing requirements of a desired occupation can find alternative work during those times. While this limitation of choice can cause harm to the job seeker, it may not be measurable in the overall

employment numbers. These excess employment opportunities are not as prevalent during a recession. A person who loses her job at the real estate office that wishes to start her massage therapy business may instead become unemployed. If satisfying the burdensome licensing requirements is unfeasible or time consuming for the job she seeks, this can deprive her of employment for a longer period than if there were fewer regulatory hurdles. This study attempts to see if a recession reveals the harm of occupational licensing, as a low tide can reveal a sunken ship.

The question we seek to answer is if the occupational licensing burdens resulted in a bigger loss (or smaller gain) in service-providing business establishments during the Great Recession. We use service-providing establishments because many of the licensed professions, such as massage therapists, barbers, opticians, etc., provide a service in a small-business establishment. If these professions are particularly difficult to enter in high-licensed areas, then there we expect smaller growth in these professions. We focus on the relationship between occupational licensing rules and the number of service business establishments in U.S. counties during the Great Recession. We examine cross-county variation with OLS and 2-Stage Least Squares during the peak of unemployment, and we attempt to explain the change in business establishments from the onset to the trough of the recession. Our estimates provide some evidence that counties in states with more burdensome licensing requirements had larger reductions in service-providing business establishments during the Great Recession than in states with smaller burdens.

Literature Review

Not many papers have investigated the relationship between firm location and occupational licensing. The paper that most closely resembles our study on business establishments is the work by Plemmons (2019). She analyzed individual firm data and concluded that firms are less likely to enter a state with higher occupational licensing burdens. We find a similar result by looking at county-level business establishment data. 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

Thomas Snyder, PhD, Associate Professor of Economics, University of Central Arkansas, Conway, AR.
Elsa Mattson, Economics Student, University of Central Arkansas, Conway, AR.
Alex Kanode, Policy Analyst, Arkansas Center for Research in Economics, University of Central Arkansas, Conway, AR.

number of practitioners. Instead, his evidence suggests that highly licensing requirements prevents some competition. None of these papers focus on recessionary times, where we postulate that the regulations can create a measurable binding restriction on employment opportunities.

A similar way of examining the effect of occupational licensing 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 with 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) found that having higher occupational licensing requirements in the construction trade created losses in this field in Ontario. He also argued that interstate mobility declined as a result of these rules. 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. In a similar vein, Meehan, Timmons, and Meehan (2017) claimed that increasing licensing requirements causes a reduction in upward income mobility for low-income families. Our study is similar to the labor-mobility studies, as a person looking to work in or set up a service-providing establishment may want to locate in a state that has a lower licensing burden.

Another way of estimating the relationship of licensure's impact on firm entry is to examine wage differentials. The advantage of restricting entry is the ability to charge higher prices and receive higher wages. Several studies have found higher licensing requirements to be associated with higher wages, including Timmons and Thornton (2010), Kleiner and Krueger (2013), Kleiner and Kudrle (2000), Koumenta and Pagliero (2016), Timmons and Mills (2018), Barrios (2019), Angrist and Guryan (2008), and Sauer and Kugler (2005). If higher restrictions limit entry, then fewer restrictions allow for more entry. Peterson, Pandya, and Leblang (2014) showed that reducing restrictions for migrant physician licenses can help prevent further physician shortages (Peterson et al., 2014). While we don't estimate wage differentials in our paper, these studies and ours are both contingent on restrictive nature of licensing that prevents new businesses from opening or new workers from entering the field.

These recent empirical studies are long overdue considering that the theory of licensing laws has been developed for centuries. In reference to corporation laws, Adam Smith in his 1776 work *Wealth of Nations* (Book I, Ch. X, Part II) said they serve to "prevent...the reduction of price, and consequently of wages and profit, by restraining free competition." Nobel Prize Laureate Milton Friedman had the same sentiment about occupational licensing in his famous 1962 book *Capitalism and Freedom* (2009). With the recent available data, researchers are finally testing Adam Smith's theory. Our study will provide some evidence on whether or not licensing rules are "restraining free competition."

No other study to our knowledge relates occupational licensing rules to losses in business establishments during the Great Recession. We believe focusing on the recession helps identify the cost of occupational licensing. In a vibrant and growing economy, potential workers can find alternative occupations than those that are licensed. In a recession, the licensing burdens may be a binding barrier to the profession in the short term. Our study empirically tests this hypothesis.

Method

Data

The dependent variable of interest in our study is service-providing business establishments at the county level. We focus on counties in the U.S. that had at least 20,000 people (as smaller counties didn't have available demographic data). The number of service-providing establishments is from the Bureau of Labor Statistics. The reason we chose this variable is that these types of establishments are likely more exposed to occupational licensing burdens than business establishments in other sectors. We focused on the year of the start of the Great Recession, 2007, and the year where average unemployment reached its peak, 2010.

The main independent variable of interest is occupational licensing burdens. Although data on occupational licensing rules have been more available in recent years, a complete dataset on all licensing rules by states does not exist. We chose to use the dataset compiled by the Institute for Justice (Carpenter, Knepper, Erickson, & Ross, 2012). Their report examined state occupational licensing data on 102 low-to-moderate-income occupations. The data includes whether or not the state requires a license for the profession, the number of days of education or experience required, along with exam and fee information. Other data sources either do not have as many occupations, or they do not have the license requirements for each occupation by state. The Institute for Justice data was published in 2012 and updated in 2017. We use the 2012 edition. Since the 2012 data took several years to collect and organize, it aligns well with our period of 2007-2010. We focus on the number of occupations that require a license and the average number of days of education or length of experience required to obtain one. These education/experience requirements seem to be the most impactful burden that would affect a jobseeker during a recession. A fee or exam could also be a significant barrier, but those can likely be accomplished in a relatively shorter time period than, for example, obtaining a required bachelor's degree.

Measures

We estimate the occupational licensing burden by multiplying the number of licensed occupations in the state by the average number of days of education and experience required to get a license. We then take a natural log of that product to interpret marginal changes as percentage changes of each component. We combine the two licensing measures because each one may not be a significant burden alone. For states with high average licensing requirements, such burdens may not be substantial if the state does not license many occupations. Similarly, if a state licenses many occupations, it also may not be a significant burden if the license requirements of those occupations are not onerous. Combining the two measures can provide us with a more accurate level of occupational licensing burdens in a state.

We include control variables that can have an influence on the number of business establishments. These included education, income, housing prices, demographic variables, state tax policies, minimum wage, unemployment rate, and labor-force participation. We use county-level data instead of state-level when possible to have more observations that vary across entities. We also include state dummy variables to control for the state-specific effects.

We first examine U.S. county data from 2010. Table 1 describes the 2010 data. On average, this year had the highest unemployment rate in decades. If occupational licensing effects the number of business establishments, this would be a year that it would have the most binding effect.

Results

Table 2 shows OLS estimates. Each model includes state effects. Model 1 includes no other controls other than state effects. An increase in licensing burdens of one-percent is associated with a decrease in 2

business establishments per 10,000 persons. The relationship is statistically significant at the 1% level. We find similar results in models 2 and 3 as we introduce the demographic and state policy variables.

Table 1. Key with Summary Statistics

Variables	Description	Obs	Mean	Std. Dev.	Min	Max
Overall Licensing Burden	Data obtained from the Institute for Justice License to Work report http://ij.org/report/license-work-2/ . This data is at the state level for 2012. The natural log of the number of low-to-moderate income occupations licensed multiplied by the days of required education and/or experience.	820	9.40	.53	8.46	10.55
Education	The % of the county population in the county 25 years and older that have a bachelor's degree.	807	26.53	9.84	7.9	69.9
Income	The natural log of the county median household income in inflation-adjusted dollars.	807	10.80	.24	10.2	11.69
Population	The natural log of the population of the county.	807	12.16	.88	11.05	16.10
Black	% of the county population that identifies as black	758	11.03	12.53	0	69.78
Housing Price	Natural log of county median house price.	807	12.03	.44	10.93	11.69
Male	% of the county population that identifies as male.	807	49.19	1.18	45.83	59.69
Median Age	The median age of county.	807	67.70	4.38	24.3	62.5
Minimum Wage	The minimum wage of state. https://www.dol.gov/agencies/whd/state/minimum-wage/history	820	7.40	.33	7.25	8.55
State Tax	Highest marginal income tax rate. https://users.nber.org/~taxsim/state-rates/maxrate.dat	821	5.19	3.16	0	11.18

One issue with interpreting the findings in models 1-3 is the possibility of endogeneity. We could have some other missing variable that is influencing both the dependent and independent variable simultaneously, or we could have reverse causality. One way to address this concern is through an instrumental variable and two-stage least squares. In model 3 we find that the highest state marginal tax rate has no statistical relationship with the number of business establishments in a county. However, this variable does have a positive relationship with the occupational licensing burdens (not shown in table). This makes state tax rates a candidate to be used as an instrument. The occupational licensing burden variable in model 4 is the estimate derived from instrumenting the state tax variable (with other variables). The instrumented licensing burden variable has a negative and statistically-significant relationship with the number of business establishments. All four models yield similar results. We ran a similar exercise in 2007 (not shown) and other years and find similar results.

Among the control variables, we find that higher housing prices, higher median ages, higher minimum wages, higher population levels, greater percentage that identified as black, and higher education levels

were associated with higher number of business establishments across counties. Higher median household income was associated with a lower number of business establishments across counties.

While 2010 may be an ideal year to estimate the effect of binding licensing requirements, a single year does not allow us to estimate the relationship these burdens had on the changes during the Great Recession. Table 3 provides estimates for the changes from 2007 to 2010, where the unemployment rate increased and peaked.

The dependent variable in Table 3 is the change in service establishments per 10,000 people from 2007 through 2010. We set out to investigate if counties under severe state licensing regimes had larger business establishment losses than counties under less burdensome requirements, as predicted by economic reasoning. The variables are essentially the same as in Table 2, except we took no logarithms or percentages because of the differencing. The control variables are simply the difference between 2007 and 2010 values. We control for the level of the 2007 business establishments and the state effects.

Table 2. Licensure and Business Establishments U.S. Counties in 2010

Establishments in U.S. Counties 2010 per 10,000 Persons							
Variable	Ordinary-Least Squares				2-Stage Least Squares		
	(1)	(2)	(3)	(4)			
Overall Licensing Burden	-204.7971 <i>27.4786</i>	*** -233.1924 <i>46.0075</i>	*** -209.7590 <i>64.4259</i>	*** -258.9421 <i>70.1904</i>	***		***
Education		3.6516 <i>0.3611</i>	*** 3.6539 <i>0.3615</i>	*** 3.6610 <i>0.2585</i>	***		***
ln(Income)		-127.7398 <i>20.1947</i>	*** -128.1714 <i>20.3828</i>	*** -127.7014 <i>11.2199</i>	***		***
ln(Population)		10.4571 <i>2.2586</i>	*** 10.4845 <i>2.2548</i>	*** 10.4705 <i>2.1826</i>	***		***
Black (%)		0.3114 <i>0.1828</i>	* 0.3075 <i>0.1830</i>	* 0.3182 <i>0.1824</i>	*		*
Ln (Housing Price)		50.6244 <i>20.5833</i>	*** 50.8964 <i>20.7196</i>	*** 50.2856 <i>8.0960</i>	***		***
Male (%)		0.5722 <i>2.6201</i>	0.5847 <i>2.6215</i>	0.5526 <i>1.5046</i>			
Median Age		4.0894 <i>0.7028</i>	*** 4.0819 <i>0.7040</i>	*** 4.0973 <i>0.4382</i>	***		***
Minimum Wage			75.6938 <i>33.5306</i>	** 96.5912 <i>19.0392</i>	***		***
State Tax Rate			-4.2147 <i>7.9089</i>	instrument			
Constant	2028.8310	*** 2664.9530	*** 1918.6650	*** 2200.2220	***		***
	<i>244.2607</i>	<i>457.1053</i>	<i>427.8604</i>	<i>543.2759</i>			
N	804.0000	755.0000	755.0000	755.0000			
r ²	0.3048	0.6310	0.6311	0.6308			
State effects?	yes	yes	yes	yes			

*** 1% significance level, ** 5% significance level, * 10% significance level.

Table 3. Licensure and Business Establishments during the Great Recession: County Cross-sectional Estimates

Change in Establishments U.S. Counties 2007-2010					
Variable	Business Establishments per 10,000 People				
	(1)		(2)		(3)
Overall Licensing Burden	-10.491 **		-9.98747 **		-9.92904 **
	<i>5.216599</i>		<i>5.115657</i>		<i>5.113181</i>
Education			-0.03464		-0.03509
			<i>0.189907</i>		<i>0.190039</i>
Income			0.000013		0.000011
			<i>0.000097</i>		<i>0.000097</i>
Population			0.000226 **		0.000232 ***
			<i>0.000093</i>		<i>0.000094</i>
Black			-0.00011		-0.00011
			<i>0.000094</i>		<i>0.000094</i>
Housing Price			0.000012		0.000012
			<i>0.000022</i>		<i>0.000022</i>
Male			-0.00068 ***		-0.00068 ***
			<i>0.000201</i>		<i>0.000202</i>
Median Age			0.252321		0.249474
			<i>0.294771</i>		<i>0.294483</i>
Minimum Wage					<i>1.20499</i>
					<i>1.378688</i>
State Tax					<i>-0.46246</i>
					<i>0.462616</i>
2007 Business Establishments	-0.01775		-0.01846		-0.01825
	<i>0.016444</i>		<i>0.015438</i>		<i>0.015448</i>
Constant	88.65863 *		84.98246 *		81.90638 *
	<i>48.87697</i>		<i>47.81437</i>		<i>46.46264</i>
N	777		777		777
r ²	0.42		0.5		0.5
State effects?	yes		yes		yes

Robust Standard Errors are in italics. *** 1% significance level, ** 5% significance level, * 10% significance level. Change in service establishments from 2007-2010.

All models in Table 3 demonstrate a negative and statistically significant relationship between occupational licensing burdens and the change in business establishments from 2007 to 2010. Those counties that were under more burdensome state licensing rules had greater losses in service business establishments than those counties under less burdensome state licensing rules. The models in Table 3 says that a 10% increase in licensing burdens is associated with a change of about 1 fewer service business establishment per 10,000

people in a county between 2007 and 2010. Note that the state tax is not used as an instrument here because of the very small variation

during this time. It is unlikely that another variable is simultaneously causing the level of state occupational licensing burden and the change in business establishments across counties between 2007 and 2010.

Among the control variables, an increase in population is associated with more per-capita business establishments, and an increase in the number of males is associated with a decrease in the number of business establishments.

Conclusion

Discussions and Implications

Our study is one of only a few that empirically analyzes the relationship between service business establishments and occupational licensing burdens. One of the main arguments for occupational licensing reform is that these burdens are unnecessarily blocking qualified workers from practicing their trade. A cosmetologist, massage therapist, interior designer, etc., may have the appropriate expertise but not the ability or resources to satisfy burdensome state licensure requirements. We focused on the Great Recession, where occupational licensing regulations may have a binding effect on the number of possible business establishments.

The results from our analysis identify a negative relationship between occupational licensing burdens and service business establishments. Counties under severe licensing burdens have fewer service business establishments than counties under more lenient licensing rules. Severe licensing rules are associated with worse outcomes in a recession. A booming economy may cover up some of these burdens but they can manifest in a measurable way during recessionary times.

The evidence from our study provides policymakers some guidance for licensing reform. During economic recessions, any restriction on labor can be more impactful than in a growing economy. Reducing licensing requirements can allow labor flexibility so society can be more adaptive during downturns in the economy.

Limitation and Future Research

While data availability of occupational licensing regulations have improved in recent years, researchers will still benefit from a more complete compilation of state and local rules across the United States. Our study matches the occupational licensing data from the Institute for Justice (Carpenter, et. al, 2012) to the service-providing business establishments from the Bureau of Labor Statistics. This matching is not as precise as we want it to be, which causes some noise in the estimates. Ideally, with more future data collection, researchers can match occupational licensing data with employment data at the occupation level instead of industry level. Currently, researchers can examine the costs and benefits licensing for very few occupations. Proponents of licensing contend that they are necessary for safety and quality, while others argue that licensing unnecessarily creates barriers to employment, restricts choice, and increases prices. Future researchers can further investigate those claims as data becomes more available.

References

- Angrist, J. D. & Guryan, J. (2008). Does teacher testing raise teacher quality? Evidence from state certification requirements. *Economics of Education Review*, 27(5), pp. 483-503.
- Barrios, J. M. (2019). Occupational Licensing and accountant quality: Evidence from the 150-hour rule. *Becker Friedman Institute for Research in Economics Working Paper No. 2018-32*.
- Carpenter II, D. M., Knepper, L., Erickson, A. C., & Ross, J. K. (2012). *License to work: a national study of burdens from occupational licensing*, Arlington, VA: Institute for Justice.
- Carpenter, D., Knepper, L., Sweetland, K., & McDonald, J., (2017). *License to work: A national study of burdens from occupational licensing, 2nd ed.*, Arlington, VA: Institute for Justice.
- Friedman, M. (2009). *Capitalism and freedom*, Chicago, IL: University of Chicago Press.
- Gittleman, M., Klee, M. A., & Kleiner, M. M. (2018). Analyzing the labor market outcomes of occupational licensing. *Industrial Relations*, 57(1), pp. 57–100. <https://doi.org/10.1111/irel.12200>
- Goodwin, K. (2017). *The state of occupational licensing: research, state policies, and trends*, National Conference of State Legislatures.
- Holen, A. (1965). The effects of professional licensing arrangements on interstate labor mobility and resource allocation. *Journal of Political Economy*, 73(5), pp. 492-498.
- Johnson, J. & Morris Kleiner. (2020). Is occupational licensing a barrier to interstate migration? *American Economic Journal: Economic Policy*, 12(3), pp. 347-373
- Kleiner, M. M., & Kudrle, R. T. (2000). Does regulation affect economic outcomes? The case of dentistry. *The Journal of Law and Economics*, 43(2), pp. 547-582.
- Kleiner, M., & Krueger, A. B. (2010). The prevalence and effects of occupational licensing. *British Journal of Industrial Relations*, 48(4), pp. 676-687.
- Kleiner, M., & Krueger, A. B. (2013). Analyzing the extent and influence of occupational licensing on the labor market. *Journal of Labor Economics*, 31(1), pp. 173-202.
- Kleiner, M. M., Marier, A., Kyoung Won Park, & Wing, C. (2014). Relaxing occupational licensing requirements: Analyzing wages and prices for a medical service. *NBER Working Papers*, 2.
- Kleiner, Morris & Evgeny Vorotnikov. (2017). Analyzing occupational licensing among the states. *Journal of Regulatory Economics*, 52 (2), pp. 132-158.
- Kleiner, M. & Xu, M. (2020). Occupational licensing and labor market fluidity, *NBER Working Paper 27568*.
- Koumenta, M., & Pagliero, M. (2016). *Measuring prevalence and labour market impacts of occupational regulation in the EU*, European Commission.
- Robert, S.M. & Kubler, A.D. (2005). Doctors without borders? Re-licensing requirement and negative selection in the market for physicians. *Journal of Labor Economics*, 23(3), pp. 437-466.
- Meehan, B., Timmons, E., & Meehan, A. (2017). *Barriers to mobility: Understanding the relationship between growth in occupational licensing and economic mobility*. Archbridge Institute. Available at: <https://www.archbridgeinstitute.org/2017/11/02/barriers-to-mobility/> (Accessed: 5 November 2020).
- National Conference of State Legislatures. *The National Occupational Licensing Database*. Available at: <https://www.ncsl.org/research/labor-and-employment/occupational-licensing-statute-database.aspx#Data> (Accessed: 5 November 2020).
- Pashigian, B. P. (1979). Occupational licensing and the interstate mobility of professionals. *The Journal of Law and Economics*, 22(1), pp. 1–25.
- Peterson, B., Pandya, S., & Leblang, D. (2014). Doctors with borders: occupational licensing as an implicit barrier to high skill migration. *Public Choice*, 160(1/2), pp. 45–63.
- Plemmons, A. (2018). Occupational licensing effects on firm entry and employment. Available at: <http://dx.doi.org/10.2139/ssrn.3269951> (Accessed 5 November 2020).
- Prantl, S. & Spitz-Oener, A. (2009). How does entry regulation influence entry into self-employment and occupational mobility? *Economics of Transition and Institutional Change*, 17(4), pp. 769-802.

- Smith, A. (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*, 1789 ed. Available at: <https://www.econlib.org/library/Smith/smWN.html> (Accessed: 5 November 2020).
- The White House, *Occupational Licensing: a Framework for Policymakers*, Department of the Treasury Office of Economic Policy, Council of Economic Advisers, Department of Labor (2015). Available at: https://obamawhitehouse.archives.gov/sites/default/files/docs/licensing_report_final_nonembargo.pdf (Accessed 5 November 2020).
- Timmons, E.J., & Thornton, R.J. (2010). The licensing of barbers in the USA, *British Journal of Industrial Relations*, 48(4), pp. 740-757.
- Timmons, E. & Mills, A. (2018). Bringing the effects of occupational licensing into focus: Optician licensing in the United States, *Eastern Economic Journal*, 44, pp. 69-83.
- Zapletal, M. (2017). The Effects of Occupational Licensing Evidence from Detailed Business-Level Data, Working Papers 17-20, *Center for Economic Studies*, U.S. Census Bureau.