

FREE TRADE EXCEPTIONS:
DOES OCCUPATIONAL LICENSING ERECT NON-TARIFF BARRIERS TO THE
INTERSTATE TRADE OF SERVICES?

by
BRYCE A. WARD

A THESIS

Presented to the Department of Economics
and the Honors College of the University of Oregon
in partial fulfillment of the requirements
for the degree of
Bachelor of Arts

June 1999

APPROVED: _____

Dr. Bruce Blonigen

An Abstract of the Thesis of
Bryce A. Ward for the degree of Bachelor of Arts
in the Department of Economics to be taken June 1999

Title: FREE TRADE EXCEPTIONS: DOES OCCUPATIONAL LICENSING ERECT
NON-TARRIF BARRIERS TO THE INTERSTATE TRADE IN SERVICES?

Approved: _____

Dr. Bruce Blonigen

In the United States it is generally assumed that there is free trade amongst the states. While a variety of Supreme Court decisions have ensured that this is true in regard to the trade of goods, it does not necessarily hold in regard to the trade of services. States have managed to maintain some of their economic sovereignty by requiring certain professionals (doctors, lawyers, contractors, *et cetera*) to obtain state licenses. In this paper, through a review of the economic literature and an econometric analysis of the electrical contracting industry, I show that occupational licensing, as it is currently practiced by the states (each state with its own regulations and little reciprocity granted to out-of-state practitioners), erects non-tariff barriers to the interstate trade of some services.

TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION: ISSUES AND QUESTIONS	1
II. THE PRICE OF FREE TRADE: SOVEREIGNTY LOSS	5
III. OVERCOMING THE SOVEREIGNTY HURDLE: THE U.S. ...	10
IV. THE FREE TRADE EXEMPTION: OCCUPATIONAL REGULATION	14
V. AN ECONOMETRIC EXAMINATION OF THE INTERSTATE TRADE OF ELECTRICAL CONTRACTING SERVICES	27
VI. SUMMARY	43
Appendix	
A. THE DEVELOPMENT OF INDEX VARIABLES	44
Bibliography	46

LIST OF TABLES

Table	Page
1. Percentage of Total Electrical Contracting Firms Coming From Out-of-State	30
2. Income per Electrical Contracting Firm	31
3. Income Per Employee (Electrician).	32
4. Results of Model 1 – Out-of-State Electrical Contracting Firms. .	37
5. Results of Model 2 – Firm (Contractor) Income.	39
6. Results of Model 3 – Employee (Electrician) Income	40
7. Index Variables	45

CHAPTER 1

INTRODUCTION: ISSUES & QUESTIONS

Still one more thing, fellow citizens – a wise and frugal government, which shall restrain men from injuring one another, which shall leave them otherwise free to regulate their own pursuits of industry and improvement, and shall not take from the mouth of labor the bread it has earned. This is the sum of good government, and this is necessary to close the circle of our felicities.

- Thomas Jefferson

The interaction of governments and markets has been a source of constant debate not just among modern economists, but throughout recorded history. Questions regarding the role of government in things like trade, taxes, and occupational choice are prevalent throughout history in the city-states of Greece, the empires of Rome, the dynasties of China, and beyond. The United States is no exception to this. With its multi-tiered system of governance distributing power amongst local, state, and federal governments, the U.S. has a long history of overlapping and often contradictory governmental policies affecting markets. In this paper I examine the interaction between two ways governments have traditionally exerted control over their economic situations - occupational licensing and trade policy -- in order to determine the effects of differing state licensing restrictions on trade flows and overall economic welfare.

Since the time of Adam Smith and David Ricardo, economists have sought to advance the cause of free trade. Their textbooks, their models, and their articles all consistently argue that unfettered trade provides the greatest benefit to society. Yet in

spite of this, governments have been slow to embrace the “nirvana” economists argue can be reached through the pursuit of free trade policies. While the individual reasons for such policies are infinite, at the core, opposition to free trade stems from the sovereignty costs associated with it.

Governments, as is to be expected, tend to resist measures which dilute their power over that which transpires in their domain. Evidence of such sentiments is apparent in the common arguments for protection. Dating back to the mercantilist era, protectionists have argued that it is the government’s responsibility to protect its workers and industries from competition that might force unpleasant changes for some sectors of the economy. The thought of relinquishing control of their economies to an “invisible hand,” and thus putting both the welfare of their people and the security of their government beyond their control has proved to be a significant stumbling block for free trade.

This is not to say that governmental sovereignty desires have completely prevented economic integration through trade. This is obviously not the case. One example of a large integrated economy is the United States with its long history of free interstate trade. Through the commerce clause in the Constitution and number of Supreme Court rulings, the federal government has been successful at subverting state claims of economic sovereignty. This suppression of local economic majorities’ powers has allowed the U.S. to essentially establish free trade in goods and some services among its states.

It is important to note, however, that states’ economic sovereignty losses have not been complete. States still wield an enormous amount of power over their economies in

the form of occupational licensing. These restrictions allow states exclusive control over some parts of their economy, and ultimately permit certain local economic bodies to protect themselves from external competitors. The economic effects of this clash between the sovereignty losses required to establish free trade and states' continuing sovereignty claims in regards to "protecting" its citizens through licensing restrictions is the primary focus of this paper.

On the surface, the effect of licensing restrictions on markets is fairly straightforward. By forcing people to jump through a series of regulatory hoops in order to participate in various sectors of the economy, states effectively erect entry barriers in those markets. Such entry barriers limit competition and allow suppliers in these markets to raise their prices. Since most licenses cannot be transferred across state lines, occupational licensing also breeds market inefficiencies by limiting interstate migration and competition within these fields. Couple these two points with the fact that most regulatory agencies are staffed by or sympathetic to the industry they regulate, and the potential welfare losses to the economy are quite significant.

Yet this is not a one-sided argument. This simple analysis becomes a little murkier when one adds in the welfare gains some argue stem from the increased quality of and confidence in the services provided by strictly licensed professionals.

Ultimately though, the fact that the states have used these restrictions to preserve some of their sovereignty, and the fact that they serve to protect local economic sectors from outside competition indicates that occupational licenses basically function as non-tariff barriers to trade. As such, the questions must be asked: how, in a supposedly free trading economy, have states and professional organizations managed to protect

themselves from external competition; why has the federal government not intervened in regard to trade in the service sector the way it has in the goods sector; and what are the costs associated with this obviously paradoxical relationship? These are the fundamental questions and issues of this paper.

CHAPTER 2

THE PRICE OF FREE TRADE: SOVEREIGNTY LOSS

Sov-er-eign-ty (sov'rin te), n. 3. supreme and independent power or authority in a state.

- *Webster's College Dictionary*

It is a basic principle in life, as well as in economics, that there are few gains to be made by those unwilling to sacrifice some of their security. The same holds for free trade. In order to reap the benefits of trade, governments must first be willing to relinquish some control of their economies to the uncertainties of the market. The loss of each state's ability to pursue independent policies is a cost of free trade. A cost that is perceived to be very high due to the fact governments tend to be conservative, especially when it comes to protecting their power. The result of these perceived costs is that sovereignty issues form one of the most significant obstacles to the establishment of free trade.

History books are filled with the stories of sovereignty struggles. Anyone vaguely familiar with history can attest to the fact that governments typically strive to increase, or at the very least maintain, their power; they seldom, if ever, will consciously act to diminish it. Certainly one can find more than a few counterexamples to this Machiavellian generalization, but for the most part as long as there have been governments, governments have sought to solidify and expand their positions. Thus, the

difficult position advocates of free trade find themselves in is obvious. With six thousand years of recorded history pointing toward a recurring theme of fierce governmental self-preservation, convincing leaders to willingly secede control of their economies to an “invisible hand” has proved difficult to say the least.

At the heart of the opposition to free trade lie fears over losing the economic game. Since the dawning of capitalist economies and the original trade theory mercantilism, governments have typically struggled with the concept of trade as a positive sum game. Mercantilists and many protectionists have always felt that trade is a zero sum game (meaning it has winners and losers), and that government intervention and protectionism are the best ways to ensure “victory” in the form of full employment and economic strength.

Such arguments make some sense on the surface. Free trade is something akin to the old trust building exercise where a person blindly falls backwards trusting that their partner will catch them before they crack their head on the ground. Natural instincts for self-preservation make such an act extremely stressful. Running through every free trade argument is a similar anxiety. Discussions of free trade center around a fear of the “giant sucking sound” of companies and jobs fleeing to “better” conditions in other countries that Ross Perot discussed at length in regard to NAFTA. The readjustments that result from expansion of the region over which the laws of comparative advantage are allowed to operate tend to heighten fears that there will be no one there to catch us as certain “basic” industries are forced to undergo changes. Governments and special interests, like people, tend to have difficulty trusting that an invisible hand will be there to catch and elevate them. As a result they tend to remain skeptical and erect barriers in order to

protect their health. Not only do they remain erect; they tend to take very defensive positions because such threats to their health (i.e. sovereignty) are typically perceived as analogous to the other traditional threat to government's "health" – war.

Once again dating back to mercantilism trade has often been viewed as an economic war. As such governments have sought to minimize their vulnerability by limiting their involvement in trade, for engaging in the economic war means more than just becoming vulnerable to a weakened economy; it means a loss of sovereignty. To have something as vital as the economy dependent on external factors over which they have little to no control is not a natural government instinct. Thus, the loss of control is a major problem with free trade.

Ronald Ehrenberg argues that the modern world-system system "assumes that a nation's residents are free to follow their own values and to select their own political arrangements without interference from others."¹ Yet economic integration leads to difficulties preserving this arrangement as market forces affected by other government's decisions have large impacts within other countries. Gone are the days where domestic policies (i.e. competition rules, labor regulations, tax policy, etc.) and international policies (tariffs, quotas, etc.) are easily distinguishable. With free trade, the policy decisions in country A have enormous potential consequences for country B. These impacts occur through a three pronged process consisting of cross-border spillovers, diminished autonomy, and challenges to political sovereignty.²

¹ Ehrenberg, Ronald G. *Labor Markets and Integrating National Economies*. (Washington D.C.: The Brookings Institution, 1994) xxii.

² Ehrenberg xviii-xxiii.

Allowing economic boundaries to exceed political ones creates a number of problems for local governments. These problems all are somewhat related to what Ehrenberg calls “cross-border spillovers.” Spillovers are the effects on country A due to policy choices in country B. The conceivable number of policies and effects are innumerable. Within an integrated economy choices affecting anything from banking laws to pollution standards to labor policies can trigger migrations of money, jobs, workers, *et cetera* to competitor countries. While such migrations typically reflect economic entities acting to maximize their comparative advantages, they are seen as undesirable by most governments attempting to maintain certain policy standards.

Thus spillovers are closely related to arguments over the concept of diminished autonomy resulting from unfair trade. Countries taking advantage of lower environmental or labor standards in order to grow their economies have always been accused of trading unfairly. Many, especially those in countries with high standards, dislike the downward pressure on expected levels of social standards the market exerts when there is an imbalance in the social standards of trading partners. In their article “Free Trade and Social Dumping” Bruce Elmslie and William Milberg argue that inequitable social standards force countries to lower their health, safety, wage, and environmental standards to the level of the lowest common denominator in order to compete.³ Such arguments are typically built around the hypothetical situation in which two regions are competing for a factory. One region has no minimum wage, no unions, and very loose environmental standards. The other region has none. Which region is the

³ Elmslie, Bruce and William Milberg. “Free Trade and Social Dumping: Lessons from the Regulation of U.S. Interstate Commerce.” *Challenge* (May-June 1996) 47.

factory more likely to choose? Many believe that companies will choose the second country, and as such they believe the market ultimately “punishes” countries that choose to act independently.

This diminished autonomy ultimately leads to limits on political sovereignty. Elmslie and Milberg argue, “the loss of each state’s ability to pursue independent policies is the price of free trade.”⁴ In the face of increased economic integration countries are no longer allowed to make decisions and then protect their economy accordingly. Countries are forced into a situation where they can choose to pass laws like the United States did requiring domestic fisherman to, at an extra expense, provide dolphin safe tuna, and erect tariffs in order to keep out non-dolphin safe foreign tuna – thus no longer engaging in free trade, they can give up trying to pass potentially economically “harmful” social legislation, or they can attempt to start an international movement to force countries to meet their countries’ social standards. All of these options require the loss of sovereign decision making on someone’s part.

Thus free trade requires that countries sacrifice some of their sovereignty. This is never easy. While many economists point out that the costs outlined above are insignificant when compared with the overall gains from trade, the conflict between economic integration and political sovereignty is an enormous hurdle that must be overcome if free trade is going to be successfully achieved.

⁴ Elmslie 45.

CHAPTER 3

OVERCOMING THE SOVEREIGNTY HURDLE: THE UNITED STATES

The Congress shall have the power . . . to regulate commerce with foreign nations, and among the several states . . .

-The Constitution of the United States, Article 1, Section 8, Clause 3

One example of a “successfully” integrated economy is the United States with its long history of free interstate trade. Julia Johnson articulates the perception most Americans have of their economy in her book *Interstate Trade Barriers*; she states, “It has been the proud conviction of most Americans that the United States throughout its national existence has been one giant free trade arena, its unity unmarred by state walls of tariff or other restrictions.”⁵ While this paper is largely concerned with pointing out some exceptions to this myth, it is important to understand where this perception came from in order to appreciate fully the paradox created by differing occupational licenses amongst the states.

In spite of the sovereignty costs, the United States has been, as the above quote indicates, somewhat successful in establishing free trade within its borders. One of the central tenants of the American economy is that people and goods are allowed to move uninhibited across state lines. This state of affairs is largely the result of the

⁵ Johnson, Julia. *Interstate Trade Barriers* (New York: The H.W. Wilson Co., 1940), 16.

subordination of state power established in the Constitution and upheld by the Supreme Court.

Immediately following the Revolutionary War, the American national economy was nonexistent. Under the Articles of Confederation the power to regulate commerce was retained by the states. As a result, “States used their powers to erect barriers to interstate trade, so as to protect the establishments operating within their borders.”⁶ The multitude of “beggar-thy-neighbor” policies pursued fervently by the various states bred economic hostility within the U.S.. The number of tonnage and tariff acts and retaliatory tariff and tonnage acts passed by the states was so large that historian Frederick Melder argues the states had declared “commercial war on each other.”⁷ This “war” led to economic hardship for many sectors of the economy, so in 1787, partially in order to end these economic hostilities, Virginia called for the meeting that ultimately became the Constitutional Convention. As a result, some, through a stretch of logic, have argued that “the original intent of the framers was to restrict state sovereignty by seceding the power to regulate interstate trade to the federal government.”⁸

While certainly over the course of the Constitutional Convention and the subsequent ratification conventions the issue of free trade among the states diminished in significance, the Constitution still established free trade between the states.

The parallels between the federalist/anti-federalist debates and modern discussions of free trade are striking. James Madison’s Federalist No. 10 offers an

⁶ Elmslie 49.

⁷ Melder, Frederick Eugene. “State and Local Barriers to Interstate Commerce in the United States: A Study in Economic Sectionalism.” *The Maine Bulletin* (Nov. 1937), 4.

outstanding example of this. Without going into too much detail, Federalist No. 10 postulates that a federal system of governance tends to “break and control the violence of faction.”⁹ Madison argues that by increasing the size of the body politic one can limit the power of various special interests and prevent a tyrannical local majority from infringing on the rights of others. This same philosophy applies to free trade. Success with free trade requires a governing body dominant and willing enough to dilute the power of influential local economic interests, and thus prevent them from successfully demanding protectionist policies which diminish overall economic welfare.

The United States has created such an environment in the form of a federal government with a strong enforcement body. Beginning with the case of *McCullough versus Maryland* in 1817 the Supreme Court has upheld the supremacy of the federal government over state governments. The first real watershed case in terms of free trade and the Commerce Clause was the 1824 case of *Gibbons versus Ogden*. In this case the Supreme Court struck down New York State’s Hudson River steamboat monopoly. In the process Chief Justice James Marshall “excluded from national power only that commerce that was completely internal to one state and that did not affect the other states.” In so doing Marshall established a strong precedent of federal control over the economy.

This precedent has been drawn upon time and again by the Supreme Court in continuing to promote a free economy. The position consistently taken by the Supreme

⁸ Elmslie 49.

⁹ Madison, James. *The Federalist Papers*. (New York: Mentor Books, 1961), 77.

Court is effectively summed up in the decision rendered by Justice Jackson in the case of *H.P. Hood & Son v. DuMond* (1948):

The Commerce Clause is one of the most prolific sources of national power and an equally prolific source of conflict with legislation of the state . . . This Court has advanced the solidarity and prosperity of this nation by the meaning it has given to these great silences of the Constitution. [The] principle that our economic unit is the Nation, which alone has the gamut of powers necessary to control of the economy, . . . has as its corollary that the states are not separable economic units. . . . [The] distinction between the power of the State to shelter its people from menaces to their health or safety and from fraud, even when these dangers emanate from interstate commerce, and its lack of power to retard, burden or constrict the flow of such commerce for their economic advantage, is one deeply rooted in both our history and our law.

Justice Jackson's argument highlights the principle way in which the United States has overcome the sovereignty hurdle –through granting the Nation sole authority to control the economy. Of course the fact that this point is being articulated in a Supreme Court ruling indicates that maintaining free trade in the U.S. has not been easy.

Ultimately, the United States example shows that one route to free trade is the through the establishment of an accepted central authority with the power to limit state sovereignty. Through the development of a strong federal government the United States has created a workable social contract with its people where individuals, regions, and states accept limits on their own sovereignty in order to reap the benefits of collectivity. Yet as the remainder of this paper will show certain sectors of the economy have been able to avoid participation in this arrangement. Through the power to license occupations individual states have found a way to preserve some of their economic and political sovereignty.

CHAPTER 4

THE FREE TRADE EXEMPTION: OCCUPATIONAL REGULATION

(4) "License" includes the whole or part of any agency permit, certificate, approval, registration, or similar form of permission required by law to pursue any commercial activity, trade, occupation, or profession.

-- Oregon Revised Statutes 183.310

That states regulate various professions is common knowledge. Walk in to the office of any doctor, lawyer, accountant, or even any barber and you see some sort of state certification displayed prominently. What is not as well known, however, is how pervasive such regulation is in the service economy. In some states, professions as obscure as ice cream buyers, fortune-tellers, bee keepers, lightning rod salesmen, falconers, ferret breeders, and tree surgeons are subject to some form of regulation.¹⁰ In fact, almost 1,000 occupations are regulated by some or all of the 50 states.¹¹

State regulation of occupations is done in three ways: registration, certification, and licensure. Registration is by far the simplest. Anyone willing to sign his or her name to a register (and possibly pay a fee) is allowed to engage in a registered occupation. Certification is a bit more complicated. While the state does not bar anyone from practicing certified occupations, only those who meet certain standards (in terms of

¹⁰ Gellhorn, Walter. "The Abuse of Occupational Licensing," *University of Chicago Law Review*, (Fall 1976), p. 6.; S. David Young, *The Rule of Experts: Occupational Licensure in America*. Washington D.C.: The CATO Institute, 1987, p. 4.

¹¹ Greene, Karen. "Number of States Regulating Selected Occupations by Form of Regulation." Typescript, 1983.

educational background, citizenship, training, exam scores, *et cetera*) are allowed to use the certain titles which accompany certification. By far the most extensive and intrusive form of regulation is licensure, which *requires* individuals to obtain a license from the state in order to engage in that profession. Licensing criteria are similar to those for certification and typically involve some combination of residency, character, education, and examination.

This paper focuses primarily on the act of licensure (and certification that acts like licensure). Yet before examining how such regulation affects interstate trade in services, it is important to understand why states engage in such regulation? While the official answer – to protect consumers – is quite simple, in reality there are a number of reasons, some quite dubious, that states regulate occupations.

No matter the profession being regulated the justifications are always the same – licensure is seen as a way of protecting the public’s health, safety, and morals. As Benjamin Shimberg points out, proponents of licensing “maintain that certain occupations are so closely associated with public health and safety that without a form of regulation the public would have no protection against incompetent practitioners who might do serious harm.”¹² Advocates argue that since most consumers are unqualified to judge the competency of certain service providers, the state must step in to ensure that professionals in these fields know what they are doing and are held accountable for their actions. Over the years, fear of contaminated water, electrical shorts, medical and legal

¹² Shimberg, Benjamin, Barbara Essler, & Daniel Kruger. *Occupational Licensing: Practices and Policies*. Washington D.C.:Public Affairs Press, 1973, p. 11.

malpractice, *et cetera*, has led to a general acceptance of the licensing of occupations like plumbers, contractors, doctors, and lawyers.

Originally, proponents of licensing intended to restrict the practice to fields that had fairly direct impacts on public health and safety.¹³ Yet during the 20th Century, licensing mushroomed dramatically to include a number of fields (i.e. massage technicians and ice cream salesmen) in which the safety risks to consumers as the result of malpractice are more hypothetical than real. It is natural to question, then, the reasoning for much of the new regulation.

While the public's welfare continues to be the primary justification for all forms of licensure, no longer is this welfare simply measured in terms of health and safety. Instead, licensing is advocated as a way to alleviate the harm to consumers that stems from the market failures associated with information deficits. Many argue that since consumers know little about seller quality there is great potential for unscrupulous manipulation. In most service industries the client is seeking an expert to diagnose a problem, figure out a solution, and, if possible, provide this solution. Such discretion creates a conflict of interest in which the expert may be financially motivated to provide unnecessary services. In some instances, some argue, this abuse leads to a deterioration of quality throughout the market. This service version of the "lemon dilemma" occurs because consumer ignorance leads to the perception that all sellers are identical, and if consumers' experiences lead them to question the honesty or quality of their service providers the price they are willing to pay will fall. Since it can be argued that it costs more to provide and ensure high quality services, if the market price falls too low the

highest quality producers may drop out. Some argue that occupational regulation is an effective way to prevent such a degeneration of quality.¹⁴

Many economists argue that such public welfare arguments are, at best, flawed, at worst, dishonest. For the most part, economists' view licensing as rent seeking by the states and professions. Numerous studies have shown that licensing raises incomes,¹⁵ while its effects on quality are ambiguous.¹⁶ That professions pursue the rents that accompany regulation is further evidenced by the lack of consumer demand for licensure. As Simon Rottenberg asks, "If the purpose of licensing were to improve the quality of service, one would expect the licensing campaigns to be mounted by consumers, who might be the beneficiaries."¹⁷ Yet this is not the case, nearly all pushes for licensing are initiated by the profession seeking regulation. As a result, the methods through which occupations are regulated are very favorable to the practitioners.

Perhaps the most effective way professions use licensing to advance their own economic cause is through control of the licensing boards. Almost all licensing boards and regulatory agencies are composed of members of the profession. The argument for this practice is that it is the practitioners who are most knowledgeable about the

¹³ Shimberg, p. 11.

¹⁴ For a more in depth explanation see Leland, H. E. "Quacks, Lemons, and Licensing: A Theory of Minimum Quality Standards." *Journal of Political Economy* 87 (December 1979): 1328-46; Leland, H.E. "Minimum Quality Standards and Licensing in Markets with Asymmetric Information." in *Occupational Licensure and Regulation*, ed. Simon Rottenberg, Washington DC: American Enterprise Institute for Public Policy Research, 1980, pp. 264-84.

¹⁵ A partial list includes Friedman, Milton and S. Kuznets. *Income from Independent Professional Practice*. New York: National Bureau of Economic Research, 1945, Rottenberg, Simon. *Occupational Licensure and Regulation*, Washington DC: American Enterprise Institute for Public Policy Research, 1980, Shepherd, L. "Licensing Restrictions and the Cost of Dental Care." *Journal of Law and Economics* 21 (April 1978): 187-201, and most any microeconomics text.

¹⁶ Good summaries can be found in Rottenberg p. 8 and Young, pp. 53-57.

profession. Yet most economists who have written on the topic are keen to point out that this situation is ripe for abuse. Many argue that control of the regulatory apparatus simply gives professional groups the power to restrict competition.¹⁸ One former Virginia state official agrees, “The great truth that is never spoken directly, but anybody in the field with two bourbons in them will tell you, is that these boards work primarily to protect the practitioners and have little or nothing to do with protecting the public.”¹⁹ Thus, through industry control of entry standards, members are allowed to protect themselves from the anxieties of competition and provide themselves with greater job security and higher incomes.²⁰

How is this security and wealth achieved? Primarily, this is done through the manipulation and elevation of entry standards. In order to be admitted to most licensed professions one must jump through a number of regulatory hoops. In general, licensees must meet four types of requirements: 1) education; 2) experience, such as internships, apprenticeships, or supervised practice; 3) personal requirements, like good moral character, residency, and citizenship; and 4) successful completion of a licensing exam.²¹ Each of these things increases the cost of entering the profession, and thus reduces supply and raises prices.

¹⁷ Rottenberg, p. 6

¹⁸ See Friedman, Milton. *Capitalism and Freedom*. Chicago: University of Chicago Press, 1962., Stigler, G. “The Theory of Economic Regulation.” *Bell Journal of Economics and Management Science* 2 (Spring 1971): 3-21., Ogus, Anthony. *Regulation: Legal Form and Economic Theory*. Oxford: Clarendon Press, 1994, p. 219.

¹⁹ Isikoff, Michael, “Mustering the Political Will to Deregulate Virginia Professions.” *Washington Post*, Feb. 7, 1983.

²⁰ See Rottenberg (1980), Young (1987), Shimberg (1963), Ogus (1994), Stigler (1971)

²¹ Young, p. 29

In the specifics of licensing legislation, critics of the practice find more ammunition. Many argue that the standards are arbitrary and are manipulated in some fairly dubious ways. Shimberg notes that out of ignorance legislators rarely question the specific requirements proposed by professional groups.²² As a result, S. David Young argues, “Seldom are requirements based on careful analysis of what minimum levels of knowledge, skill, ability, and other traits are necessary to ensure adequate service.”²³ The arbitrary, and thus questionable, nature of minimum requirements is well evidenced by the vast differences in licensing between states. As will be examined later, some states regulate electrical contractors heavily, while others do not do it at all. The field of nursing offers a more specific example. Andrew Dolan notes that while graduates of two, three, and four-year programs may qualify to take state exams, the data do not indicate unacceptable performance among any of these groups.²⁴ Creating a cohesive explanation, other than rent seeking, for the vast differences in requirements and minimal differences in quality is difficult to do.

Perhaps the best evidence that licensing boards manipulate standards for the benefit of current practitioners can be found in the most arbitrary of the entry barriers – the exam requirement. Alex Maurizi performed two tests examining changes (declines) in the pass rate of 18 professions during periods of excess demand (measured both by large increases in income and the number of applicants), and concludes:

²² Young, p. 30

²³ Young, p. 30

²⁴ Dolan, Andrew. “The Potential of Institutional Licensing and Brand-Name Advertising in the Medical Care System.” *Journal of Contemporary Business* 9 (1980): 35-44.

[The] evidence tends to confirm the notion that the power of licensing boards is often used to prolong the period of higher incomes resulting from increases in excess demand for the services of the occupation in question and the instrument then used to accomplish this purpose is alteration of the pass rate on the licensing examination.²⁵

Thus the lack of uniformity and the arbitrary manipulation of standards by industry controlled regulatory agencies coupled with Maurizi (1980), McChesney & Muris (1979), and Carroll & Gaston (1981)'s studies showing that regulation does not necessarily improve quality casts some doubt on the public welfare explanations for occupational licensing. Instead, it is obvious that, at least in part, occupational licensing is used by various industries to erect large entry barriers in order to create higher incomes and greater security for current practitioners.

Based on this, it is not a difficult leap to see that occupational licensing acts as a non-tariff barrier to the interstate trade of services. States seeking to exercise their sovereignty by controlling market standards empower boards (made up of industry professionals) to establish professional standards. As discussed above, there is little uniformity in entry requirements across states. This coupled with the fact that very few professions in very few states grant reciprocity to practitioners from other states indicates that the states and the professions are attempting to keep out other seemingly qualified service professionals in order to protect their own.²⁶

²⁵ Maurizi, Alex. "Occupational Licensing and the Public Interest." *Journal of Political Economy* 82 (March/April 1974): 399-413.

²⁶ As an example of this protectionism consider the U.S. bar. Unlike most licensed professions the basic requirements to practice law are fairly similar across states. One must graduate from a certified law school, pass a character evaluation, pay some fees, and pass the bar and professional exams. Yet in spite of the obvious similarities in preparation, cross-state mobility is difficult. In all but two states lawyers with less than five years of experience who wish to move their practice to another state must start from scratch – take the state bar, pass the character test, and retake the professional exam, and in 26 states *all* lawyers wishing to relocate, no matter their experience, must start over. While some argue that differences in state

The evidence for the occupational licensing as a form of protectionism hypothesis can be grouped into two major categories: migration and income. The general theory of trade restrictions argues that if occupational regulations are restricting competition from out of state practitioners (and thus acting as a trade barrier largely by preventing migration), one should see evidence of this in the form of fewer practitioners and higher incomes in states with more severe entry barriers and reciprocity arrangements. Many studies have found such evidence indicating that occupational licensing limits migration and competition.

A number of studies have examined the migration patterns of licensed professionals.²⁷ The findings of these studies are well summarized by Bruce Pashigan. His study concludes that "... the most pronounced effect of licensing is the reduced interstate mobility of members in licensed occupations ... While licensed occupations have about the same within state mobility as unlicensed occupations, they have significantly lower interstate migration rates. The evidence suggests that licensing is the primary reason for this difference."²⁸ The lower interstate mobility rates, caused by licensing, prevent markets from clearing. Higher prices in one state should induce professionals to move to that state eventually eliminating the price disparity through

laws justify such discrimination, the slight differences in state laws hardly justifies the severity of the barriers states erect to keep out other, seemingly, qualified lawyers. (see Brennen, Phil Jr. "Protectionism is alive and well in U.S. Bar." *The National Law Journal* (Jan. 8, 1996) p. A19.)

²⁷ Holen, Arlene. "Effects of Professional Licensing Arrangements on Interstate Labor Mobility and Resource Allocation." *Journal of Political Economy* 73 (October 1965): pp. 492-98., Boulrier, Bryan. "An Empirical Examination of the Influence of Licensure and Licensure Reform on Geographical Distribution of Dentists." In Rottenberg (1980), pp. 73-97., Pratt, Leila. "Occupational Licensing and Interstate Mobility." *Business Economics* 15 (May 1980), pp. 78-80., Kleiner, Moris, Robert Gay, & Karen Greene. "Barriers to Labor Migration: the Case of Occupational Licensing." *Industrial Relations* 21 (Fall 1982), pp. 383-91., Pashigan, B. Peter. "Has Occupational Licensing Reduced Geographical Mobility and Raised Earnings?" in Rottenberg (1980), pp. 299-333.

competition. Yet a number of studies examining the effects of competition from out of state practitioners on incomes and fees have found that licensing does in fact reduce competition and creates welfare losses to consumers. Shepherd compared incomes and fees of dentists in states which granted reciprocity to out of state practitioners with those in nonreciprocity states and found incomes and fees in reciprocity states to be significantly (12 to 15 percent) lower. He concludes that market restrictions cost consumers \$700 million in 1970, over half of which was directly attributable to interstate variation in licensing restrictions.²⁹ Similarly, Benham and Benham found that legal controls over optometrists in some states caused eyeglasses to be 25 to 40 percent more expensive than they were in states with fewer restrictions.³⁰

Thus it is apparent that differences in licensing restrictions reduce mobility, competition and produce rents for service professionals. This evidence combined with the discussion above on the protectionist motives for regulation shows that licensing is not simply used to keep out new entrants in to the professions, but it is also used to prevent competition across states. Hence occupational licensing seems to have made the interstate trade of services the great exception to the free trade zone supposedly established by the United States Constitution.

The next obvious question is why has the Supreme Court not intervened in the interstate service trade the way they have in the interstate goods trade? Primarily, licensing has yet to be ruled a violation of the Commerce Clause due to its ambiguous

²⁸ Rottenberg, p. 327

²⁹ Shepherd, pp 187-201

³⁰ Benham, Lee, and Ann Benham, "Regulation Through the Professions: A Perspective on Information Control." *Journal of Law and Economics* 18 (October 1975), pp 421-47.

motivations. In order to overturn state laws, the Court must decide whether the policy actually is designed to limit interstate commerce or is legitimately designed to protect the health and welfare of the residents of the state. Licensing survives due to the fact that, in general, the Court will allow almost any barrier as long as it does not appear to be explicitly aimed at an out-of-state producer.³¹ So licensing persists as a barrier to trade.

Yet in order to fully appreciate the magnitude of licensing's non-tariff effects, how services are traded across states must be examined. This is difficult, since our general notions of trade, on the political level, involve physical goods that are produced in one state, transported across borders, and sold to consumers in another state. While some trade in services operates similar to this, in other cases the flow of services is much more one-sided. This is due to the fact that, in order to offer their services to consumers in other states, many service professionals must set up their practices in that state. The question begs to be asked, then, is this type of relocation really trade, or is it simply migration?

This question is difficult to answer. As discussed above, inhibiting of the migration of service professionals is a form of protectionism. States use occupational licensing to prevent the in-migration of other professionals (foreign goods) in order to protect the jobs and incomes of their service professionals. Yet does the fact that licensing acts like protectionism mean that what it is guarding against is trade? While it is definitely related, permanent migration of service professionals does not constitute trade in the classic sense. However, due to the similarities in the impacts resulting from

³¹ Craig, Steven and Joel Sailors, "Interstate Trade Barriers and the Constitution." *CATO Journal* 6 (Winter 1987) pp. 819-35.

barriers to migration and trade, it is difficult to distinguish between the effects of each. As a result, barriers to migration cannot be completely ignored in a study of this nature.

In order to better distinguish how licensing effects trade as opposed to migration, a categorization system for licensed service professions is developed. It is important to note that this system is extremely rudimentary and does not represent rigorous study of the requirements and characteristics of all of the regulated service industries. Primarily, it is included in order to aid in clarifying how services are traded across states, and thus facilitate the presentation of more detailed hypotheses.

The categories of licensed service professionals are simply defined as follows:

- Category 1 -- industries in which employees primarily travel to a particular location in order to provide their service. (i.e. construction, repair)
- Category 2 -- industries in which clients travel to a location in order to obtain services (Medical, barbers).
- Category 3 -- industries in which neither the client, nor the providers are required to travel extensively in order to conduct transactions. (Lawyers, CPAs)
- Category 4 (not really industries) – this is the employees category, and consists of people who are licensed but do not directly trade in services because they are tied to some other service provider. (teachers, nurses)

While within all of the categories the basic effects of occupational licensing continue to be felt (particularly the limitations on relocation), the impact of these effects on actual cross-state trade flows depends upon the characteristics of the licensed industries.

Impacts on Category 1

For the most part the effects of occupational licensing on industries in category one are small. Typically, the market area of these firms is limited to reasonable commuting distance for its employees. As a result, most firms in category one are unconcerned with the licensing restrictions in other states because only very large firms or firms located near a border compete in neighboring states. Considering the numerous

states without population centers near borders it becomes clear that if most firms are not competing across state lines then there is little trade being inhibited by licensing.

The relatively small entry barriers faced by category one industries compounds the negligible effect of occupational licensing on the trade of their services. Typically the only stringent requirement is experience. Other than that for a few hundred bucks, a few hours of study, and a Saturday morning many operators or employees who want to work in a different state can. This likely further diminishes the effects of licenses on interstate trade in these industries.

Impacts on Category 2

Actual cross-state trade by firms in category two industries is probably the least affected by differences in occupational licensing between states. Since it is the client, not the server that is mobile, the standard market area or Hotelling theories apply.³² While the market areas of category two industries can vary from neighborhood barber to internationally renowned surgeon, the category two firms who are likely to be affected by licensure are only those few whose market area crosses borders. If licensing is very stringent in say Portland, OR, then one could hypothesize that there would be a proliferation of firms in the adjacent Vancouver, WA who could offer their services cheaply enough to attract a large percentage of the Portland customers. Even then, substantial effects would only occur if there is are large enough discrepancies between the licensing restrictions of the neighboring states which would allow firms to substantially undercut their neighboring competitors.

³² These are models are shaped like a martini glass. The stem represents the base price of the good. The slope of the glass is the opportunity cost of transportation. A firms market area, then is the circle (the rim of the glass) over which it under prices its competitors.

Impacts on Category 3

By far, firms in category three feel the greatest impacts of occupational licensing on the interstate trade of their services. Firms in these industries are capable of offering their services over vast market areas, and these areas continue to grow as the internet, overnight delivery, and teleconferencing make it possible for them to compete almost anywhere. The primary things preventing such interstate competition are licensing restrictions. The barriers to entry for many of these industries are very high and consist of substantial education, residency, experience, and examination requirements and there is little reciprocity granted. Thus practitioners are largely prevented from competing for business in other states greatly limiting the amount of trade of these services.

Impacts on Category 4

Category four is not so much a category, as a remainder, and it may actually be a sub-section of the other categories. I separate these professions simply because of the need to distinguish employees from proprietors. The members of category four are typically tied to institutions or other business and as such they have no specific market areas for their services, so licensing probably only effects migration. While this can have substantial effects on markets, as discussed previously, licensing of this nature has little effect on interstate trade.

Throughout the rest of this paper, I discuss my own attempts to further confirm that occupational licensing acts as a non tariff barrier through my examination of the effects of licensing on the interstate trade of electrical contracting services.

CHAPTER 5

AN ECONOMETRIC EXAMINATION OF THE INTERSTATE TRADE OF ELECTRICAL CONTRACTING SERVICES

In this chapter, I examine the economic effects of occupational licensing in the U.S. electrical contractors industry (SIC 1731). Given available data, I specifically examine whether occupational licensing requirements explain 1) the number of out-of-state firms working in a state, and 2) the income per firm or employee across states. My hypotheses are that states with looser restrictions should have more out-of-state firms and lower incomes than states with more substantial regulations.

As discussed above, occupational licensing erects entry barriers to professions. While such entry barriers primarily are designed to limit entry in to the overall profession, they ultimately effect trade in services by preventing competition from new entrants within a state and practitioners from other states. This latter effect is considered to be a non-tariff barrier.

Background

For this experiment a category one industry is chosen – electrical contractors. Category one and electrical contractors are chosen for a number of reasons. First, this is an industry that has received relatively little attention compared with the more prominently licensed (and studied) fields like law or medicine. Second, the lack of uniformity in the regulation of the industry allows for more natural experimentation

comparing states with licensing to those who lack it. Third, I believe that finding substantial impacts on consumer welfare in a more obscure, category one industry will allow me to assert with greater confidence that occupational licensing indeed forms non-tariff barriers. Lastly, the information available on electrical contractors meets certain information and data requirements. In order to easily conduct this type of study, a service profession is required that is not regulated by all the states and for which data on firms, employees, and incomes was readily available. Electrical contractors meet these criteria. Fairly specific information on all of the states' requirements is available in the *National Directory of State Business Licensing and Regulation*, and data on the number of firms, employees, work done by out of state firms, and firm and employee incomes are available in the *Census of Construction*.

Before offering a preliminary look at the data a brief word on how states license electrical contractors is necessary. Licensing in SIC 1731 can be broken into two categories: business (or contractor) licensing and employee licensing. Forty-two states license contractors. A contractor is generally defined as someone who is entitled to do business in the electrical field.³³ Usually, in order to become a contractor one must register with the state, show some degree of competence, and possibly post a bond or provide proof of a certain amount of insurance. However, these requirements vary a great deal from state to state. Perhaps the biggest difference between states is in how a contractor ensures competence. In some states contractors are the only part of the field regulated, and thus they are required to be practitioners and meet certain experience and examination requirements. In other states, though, contractor competence is ensured

³³ By doing business I mean is able to obtain permits and contract for work.

through employee licensing. Thirty states have some form of electrician (employee) licensing. While in some states employee licensing is very specific (i.e. in Minnesota, in addition to two kinds of business licensing, there are six classifications of electrician licensing -- master, journeyman, special, class A & B installers, and maintenance), in general where employee licensing exists there are only two categories: journeymen and masters.³⁴ Licensing of these (and other) electricians, like most licensing, involves some combination of education, experience, character, and examination requirements. Like contractors, though, these requirements vary a great deal from state to state.

The Data

Tables 1,2, and 3 offer a preliminary look at some of the data. Table 1 compares the percentage of total firms from out-of-state working in the listed state based upon whether or not the state licenses firms. These data show that there is almost no difference (a statistically insignificant one percent) in the average percentage of firms from out-of-state in non-licensed states versus licensed states. This is not surprising, however, given both the great variation in the level of variation in licensing and that this is a category one industry where such percentages are easily skewed by the geographic characteristics of the state.

³⁴ A journeyman electrician is someone who has completed a certain amount of training (and possibly an examination) and is considered competent to carryout routine functions of the trade with minimal supervision. A master, then, is usually defined as someone with a greater amount of work experience, and has passed an examination. In most states only masters (or – in states which don't use the term -- their contractor equivalents) are allowed to contract for work and file for building permits.

**Table 1 – Percentage of Total Electrical Contracting Firms
Coming From Out-of-State³⁵**

States with firm licensing		States without firm licensing	
Alabama	25	Illinois	11
Alaska	10	Indiana	24
Arizona	9	Kansas	29
Arkansas	21	Missouri	15
California	3	New Hampshire	36
Colorado	8	New York	8
Connecticut	13	Pennsylvania	16
Delaware	41	Texas	7
Dist. Of Columbia	91	Wisconsin	15
Florida	6		
Georgia	19	Average	18
Hawaii	11	Standard Deviation	10
Idaho	23		
Iowa	19		
Kentucky	33		
Louisiana	13		
Maine	19		
Maryland	18		
Massachusetts	10		
Michigan	9		
Minnesota	12		
Mississippi	28		
Montana	10		
Nebraska	11		
Nevada	23		
New Jersey	10		
New Mexico	11		
North Carolina	11		
North Dakota	16		
Ohio	15		
Oklahoma	14		
Oregon	13		
Rhode Island	23		
South Carolina	26		
South Dakota	37		
Tennessee	20		
Utah	8		
Vermont	26		
Virginia	23		
Washington	11		
West Virginia	30		
Wyoming	17		

³⁵ Data from *NDSBLR and 1992 Census of Construction, Industry Series – Electrical Work, Table 10*.

Average	19
Standard Deviation	14

Table 2 compares the income per firm in licensed versus non-licensed states. Here there is a substantial difference (20 percent – significant at the 20% level), but in this case the difference has the wrong sign. Firms in states without licensing should earn less than firms in states with licensing. Here we see the opposite occurring.

Table 2 -- Income per Electrical Contracting Firm³⁶

States with firm licensing		States without firm licensing	
Alabama	157350	Illinois	273155
Alaska	217653	Indiana	228815
Arizona	140896	Kansas	154647
Arkansas	126781	Missouri	203147
California	183512	New Hampshire	77614
Colorado	206068	New York	239507
Connecticut	135188	Pennsylvania	199503
Delaware	181912	Texas	195731
Dist. of Columbia	232433	Wisconsin	220283
Florida	135764		
Georgia	175131	Average	199156
Hawaii	255000	Standard Deviation	56137
Idaho	117205		
Iowa	165469		
Kentucky	196127		
Louisiana	224742		
Maine	73036		
Maryland	199230		
Massachusetts	159232		
Michigan	201533		
Minnesota	194978		
Mississippi	112091		
Montana	102345		
Nebraska	118710		
Nevada	240898		
New Jersey	174569		
New Mexico	128801		
North Carolina	122082		
North Dakota	94532		
Ohio	211129		
Oklahoma	129021		
Oregon	220060		

³⁶ Data from NDSBLR and 1992 Census of Construction, Industry Series – Electrical Work, Table 1.

Rhode Island	81115
South Carolina	205778
South Dakota	104482
Tennessee	212309
Utah	188531
Vermont	69639
Virginia	166877
Washington	254703
West Virginia	176433
Wyoming	133369
Average	164922
Standard Deviation	50151

Lastly, Table 3 compares incomes per employee based on whether or not the state has employee licensing. While the sign on the difference between the averages is correct (licensed employees earn more), the difference is a miniscule \$75 (0.3%, an insignificant difference).

Table 3 -- Income per Employee (Electrician)³⁷

States with employee licensing		States without employee licensing	
Alabama	19015	Arizona	19340
Alaska	37965	California	29451
Arkansas	19581	Florida	19769
Colorado	25239	Georgia	22767
Connecticut	29661	Illinois	34698
Delaware	27530	Indiana	26158
Dist. of Columbia	27238	Iowa	24961
Hawaii	29124	Kansas	23763
Idaho	24670	Kentucky	23090
Maine	22242	Louisiana	22941
Maryland	24566	Mississippi	18755
Massachusetts	28818	Missouri	26991
Michigan	29919	Nevada	26420
Minnesota	30789	New Jersey	33634
Montana	25762	New York	33307
Nebraska	23563	North Carolina	18617
New Hampshire	23065	Ohio	27739
New Mexico	21330	Pennsylvania	28574
North Dakota	22927	Tennessee	21926
Oklahoma	21566	Texas	21662
Oregon	32676	Wisconsin	29594
Rhode Island	26849		

³⁷ Data from NDSBLR and 1992 Census of Construction, Industry Series – Electrical Work, Table 1.

South Carolina	21565	Average	25436
South Dakota	19982	Standard Deviation	4880
Utah	25659		
Vermont	20748		
Virginia	22118		
Washington	30140		
West Virginia	25870		
Wyoming	25147		
Average	25511		
Standard Deviation	4336		

The Model

In order to provide more definitive evidence about the effects of licensing restrictions on the prevalence of out-of-state firms, income per firm, and income per employee, three econometric models are specified. As discussed above, I believe that the variation in these three variables can be explained by variation in occupational licensing across states. I hypothesize that if licensing acts as an entry barrier and an NTB there should be higher incomes and fewer out of state firms working in states with more stringent regulations.

In each of the following models the important entry barrier variable has four different specifications. A variety of specifications are tried in order to better account for how licensing affects these variables. This is necessary because, as discussed above, the licensing of electrical contractors is not very uniform across states. In some of the states that have licensing, the requirements for contractors and employees are extremely minimal (consisting of little more than registration and possibly an exam). In other states though, the process is more complex (every different type of electrical work requires a different license) and more prohibitive to entry (higher fees, lengthier experience requirements, *et cetera*). The fact that some state's licensing restrictions are miniscule

(i.e. in Alabama one must simply pass an exam, something most any “foreign” practitioner could pass with ease) makes capturing the effect of licensing through the use of a dummy variable based simply on the existence of firm or employee licensing suspect. While each of the following models are specified using dummy variables, they are also specified using index variables. (The dummy variables are still used in order to combat some of the arbitrariness of the index variables which is discussed in greater detail later). Using the information available, the level of licensing in each state, for both contractors and employees, is assigned a number from zero to five. Where zero represents no statewide licensing, and five means there is substantial licensing (for a more detailed summary see appendix A). Ultimately, I expect that the use of an index variable will allow me to more accurately observe the effects of the different levels of licensing, and allow me to comment not simply on how the existence of licensing erects NTBs, but also on how more stringent requirements create more significant effects.

The effects of licensing on each of the dependent variables is derived from the following structural equations simultaneously determining each state’s supply of and demand for electrical contractors:

$$Q^D_i = f(\text{price}, X_1, \dots, X_m)$$

$$Q^S_i = f(\text{price}, \text{entry barriers}, Y_1, \dots, Y_n).$$

where $X_1, \dots, X_m$ and $Y_1, \dots, Y_n$ are additional factors influencing demand and supply. Given available data, I define the other variables determining demand to be the number of housing starts (HP) and the housing stock (HS)³⁸. It is expected that an increase in

³⁸ Data for these variables comes from U.S. Census Bureau’s website (www.census.gov). Data on housing stock is rounded to the one-hundred thousands, Data on housing starts is rounded to the thousands.

either of these variables will increase Q^D_i . On the supply side, an additional proximity (PX)³⁹ variable is included. The fact that this is a category one industry implies that the close proximity of large sections of a state's markets to the markets in other states will increase Q^S_i . Ultimately, the two equations can be simplified into one reduced-form equation⁴⁰:

$$Q^S_i = Q^D_i = f(\text{housing production, housing stock, entry barriers, proximity}). \quad (1)$$

This is the fundamental equation for each of the three models.

Model 1 – out-of-state firms

This model attempts to explain variation in the prevalence of out-of-state firms. I feel that this should be the strongest experiment, since it examines what I hypothesize to be a direct impact of occupational licensing acting as an NTB – namely limiting out-of-state firms from working in the protected state -- instead of looking for secondary evidence of NTBs (higher incomes stemming from both reduced migration and protection from out of state competition). This model requires little respecification of equation (1) above. The number of “foreign” firms working in a state should vary positively with demand characteristics (housing starts and stock) and proximity, and negatively with entry barriers.

Four specifications of this model are examined. The specifications differ only in the variable used to account for the entry barriers. In specification 1, a dummy variable for the presence of any form of licensing is used. The variable takes the value of one in

³⁹ This variable is defined as hundreds of thousands of people living in MSA counties within approximately 20 miles of adjacent state boundaries. Data comes from MSA population estimates available on the U.S. Census Bureau's website (www.census.gov).

states with any form of licensing, be it contractor or employee, it takes a zero otherwise. Specification 2 also uses a dummy variable. Only this time, the value of one is assigned in the presence of contractor licensing only. The third and fourth specifications involve the index variables. Specification 3 uses only the firm index, while specification 4 includes both the firm and the employee indices.

The relationships were estimated using least-squares regressions, and the results are presented below in Table 4. All of the coefficients except housing stock carry the expected signs, and the moderately high R-squared statistics indicate that a high degree of the variance in the variables is explained by this model. Coefficients on all of the variables except the two dummy variables and the housing stock variable are statistically significant at at least the 90% level, and in all the specifications the coefficients are significantly different from one another and zero at the 99% level.

This cross-sectional analysis reveals that, with all else equal, out-of-state firms are more prevalent in states with looser or no licensing restrictions, with greater housing starts, and with greater concentrations of population near borders. For the most part these effects are small. At the margin, a 1,000 unit increase in housing starts (which is a substantial number – there were only 999 in all Wyoming in 1992) only increases the number of out-of-state firms by about two-and-a-half. Likewise, a 100,000-person increase in the border population attracts just two-and-a-half out-of-state firms. The effects of licensing, though, are more substantial. The presence of firm licensing decreases the number of out-of-state firms by approximately 42, and a one-unit increase in the level of firm licensing keeps out an additional 15 firms.

⁴⁰

This is done by inverting one of the equations, solving for price, substituting this new function for

Table 4: Results of Model 1 -- Out-of-State Electrical Contracting Firms				
<i>Regressors</i>	<i>Spec. 1</i>	<i>Spec. 2</i>	<i>Spec. 3</i>	<i>Spec. 4</i>
<i>Intercept</i>	122.630 (38.954)*	129.194 (35.136)*	129.612 (27.733)*	153.859 (31.159)*
<i>Licensing Dummy</i>	-33.479 (35.349)			
<i>Firm Dummy</i>		-41.620 (32.380)		
<i>Firm Index</i>			-14.640 (8.192)***	-11.290 (8.320)****
<i>Employee Index</i>				-12.595 (7.834)****
<i>Housing Stock</i>	-1.150 (1.223)	-1.214 (1.211)	-1.386 (1.200)	-1.436 (1.180)
<i>Housing Starts</i>	2.502 (1.935)***	2.566 (1.087)***	2.786 (1.084)**	2.427 (1.089)***
<i>Proximity</i>	2.664 (0.659)*	2.628 (0.645)*	2.636 (0.622)*	2.481 (0.619)*
F-Test	11.851**	12.227**	12.993**	11.269**
R²	0.508	0.515	0.53	0.556
Adjusted R²	0.465	0.473	0.49	0.507
Observations	51	51	51	51

*significant at the 0.5% level; **significant at the 1% level; ***significant at the 5% level; ****significant at the 10% level. Standard errors are reported in parentheses.

Thus, the presence and level of licensing do have an adverse effect on the number of electrical contractors engaging in interstate trade. The remaining two models examine whether or not these reductions coupled with reductions in entry and migration affect firm and employee incomes.

Models 2 & 3 – Firm and Employee Incomes

Both of these models require minor modifications to the base model described in equation (1) above. Since income is derived in large part from demand, it is expected that its variation across states is explained by the same exogenous variables (housing stock, housing starts, entry barriers, and proximity). In these models, though, I examine income per firm and income per worker.⁴¹ Thus it becomes necessary to include an

the price variable in the other function, and canceling redundant endogenous variables.

additional variable (n) in each on these models.⁴² Where n is the number of firms (model 2) or construction workers (model 3) in each state. This variable is expected to have a negative relationship on both income variables. Only the signs on the supply variables are expected to change from model 1. The signs on the demand variables should remain positive (greater demand = greater income), the sign on the entry barrier variable should now also be positive (higher barriers = higher income), and the expected sign on the proximity variable is difficult to hypothesize. On the one hand being nearer to potential competitors should lower incomes, but on the other hand entry barrier's distortions of markets may actually afford those nearest borders greater protection allowing them to earn more. Thus, I will offer no hypothesis for the proximity variable.

As with model one, four specifications of each of model 2 and 3 are examined. The specifications are the same for model 2 and follow the same pattern in model three (employee dummy and index variables are substituted for firm ones in spec. 2 and 3).

The results of models 2 and 3 are presented in tables 5 and 6 below. In model 2, all of the coefficients have the expected signs except the overall licensing dummy variable (specification 1). The fairly low R-squared measures of fit indicate that the model is explaining some, but not a great deal of the variation in the variables. Also of concern is the lack of statistical significance on any of the entry barrier variables. The lack of statistical significance means that I cannot say with certainty that the indicated signs on the entry barriers are indeed correct. The others variables, though, are all

⁴¹ This examination is based on the likely heroic assumption that demand is uniformly distributed across firms and workers.

⁴² Data comes from the *1992 Census of Construction Industry Series – SIC 1731, Table 1.*

significant at at least the 90% level, and in the model as a whole all but specification 4 pass the F-test of overall significance.

Table 5: Results of Model 2 -- Firm (Contractor) Income				
<i>Regressors</i>	<i>Spec. 1</i>	<i>Spec. 2</i>	<i>Spec. 3</i>	<i>Spec. 4</i>
<i>Intercept</i>	151129* (26425)	134919* (23116)	136714* (19120)	128761* (22784)
<i>Licensing Dummy</i>	-6191 (24059)			
<i>Firm Dummy</i>		10069 (21356)		
<i>Firm Index</i>			2833 (5763)	2491 (5824)
<i>Employee Index</i>				3274 (5021)
<i>Housing Stock</i>	2778**** (1794)	3392*** (1725)	3503*** (1821)	3815*** (1894)
<i>Housing Starts</i>	1148*** (667)	1150*** (665)	1128*** (667)	1244*** (694)
<i>Proximity</i>	121* (45)	135* (43)	134* (42)	142* (44)
<i>In-state Firms</i>	-72*** (36)	-84** (34)	-86*** (36)	-92** (38)
F-Test	3.821**	3.865**	3.871**	3.255
R²	0.298	0.300	0.301	0.307
Adjusted R²	0.220	0.223	0.223	0.213
Observations	51	51	51	51

*significant at the 0.5% level, **significant at the 1% level, ***significant at the 5% level, ****significant at the 10% level. Standard errors reported in parentheses.

The results of model 3 have some of the same problems. The overall licensing dummy variable in spec. 1, the firm index variable in spec. 4, and all of the housing start coefficients have the wrong sign. In addition only the employee dummy, the employee index, and the proximity variables are statistically significant. The R-squared measures of fit are similar to those for model 2, and all of the specifications pass the F-test of overall significance.

Table 6: Results of Model 3 -- Employee (Electrician) Income				
Regressors	Spec. 1	Spec. 2	Spec. 3	Spec. 4
Intercept	24836* (2103)	22573* (1644)	21313* (1388)	21362* (1682)
Licensing Dummy	-341 (1882)			
Employee Dummy		2035**** (1462)		
Firm Index				-23 (428)
Employee Index			1137* (395)	1142* (411)
Housing Stock	3 (191)	74 (192)	121 (179)	120 (182)
Housing Starts	-94 (76)	-64 (78)	-43 (72)	-42 (74)
Proximity	7**** (4)	9*** (4)	10** (4)	10** (4)
employees	24 (66)	1 (67)	-14 (62)	-13 (63)
F-Test	2.804**	3.303**	4.969**	4.050**
R ²	0.238	0.268	0.356	0.356
Adjusted R ²	0.153	0.187	0.284	0.268
Observations	51	51	51	51

*significant at the 0.5% level, **significant at the 1% level, ***significant at the 5% level, ****significant at the 10% level. Standard errors presented in parentheses.

The mediocre measures of fit and the insignificance of many of the coefficients make thorough interpretation of these results difficult. Like model 1 the coefficients on most of the variables represent small impacts especially considering the magnitude of the marginal units in which they are measured (100,000 units of housing stock, 1000 housing starts, or 100,000 border residents). The coefficients on the entry barrier variables, however, do indicate that licensing increases incomes. This is especially true of employee licensing where significant coefficients in specifications 2 and 3 indicate that the presence of licensing raises incomes by over \$2000 per employee, and increasing the level of licensing raises incomes by \$1100. While these statistics are consistent with the notion that licensing erects barriers to trade, it is important to note that it is difficult to discern how much of these increases in income actually stem from barriers to trade as opposed to entry barriers and barriers to migration.

Qualifications

There are a number of things, however, which, if rectified, could have produced better results. At the core of most of this study's problems is the limited information readily available on how states license the industry. While the *National Directory of State Business Licensing and Regulation* provides general information, it lacks many details. The lack of specific information makes the index variables a little suspect. Of particular concern is the fact that the NDSBLR only casually refers to the existence of local and municipal restrictions which could have large impacts on the actions of firms and employees (especially if widespread in states which otherwise lack licensing). It is both unfortunate and problematic that such information could not be factored into the model. In addition to the lack of details, the NDSBLR was first published in 1997. This causes two problems. First, it meant that the entry barrier variables do not chronologically coincide with the variables defined using the most recent information on the number of firms and employees, earnings, and value of work done by electrical contractors in the *1992 Census of Construction*. While I believe this to be problematic, I do not think it is fatal due to my belief (hope) that it is unlikely that any state substantially changed its regulations over this period of time. Second, the lack of historical information on licensing restrictions prevents the addition of a time-series element to the model which would have allowed me to increase the number of observations and observe the effects of changes in licensing over time. Improvements in all of these areas would likely have made it possible to obtain more definitive results.

Conclusions

Thus interstate trade in this category one industry conforms to that which was hypothesized above – namely, licensing of electrical contractors has some, but not an enormous negative impact on trade. Empirical evidence examined in this sections shows that licensing both reduces the prevalence of out-of-state firms and contributes to higher incomes (although it is difficult to say how much of this increase is the result of barriers to trade as opposed to entry and migration).

CHAPTER 6

SUMMARY

In spite of popular notions to the contrary, interstate trade in the United States is not completely free. States have managed to preserve some of their economic and political sovereignty via occupational licensing. While typically advocated as a means of protecting the public's health and ensuring market quality, differences in licensing restrictions across states serve to impede some trade in services. The amount of trade affected depends largely upon the market characteristics of the profession being licensed.

In this paper a system of categorizing the various licensed professions was developed and a category one industry – electrical contractors – was examined. While the magnitude of the effects of licensing on this profession are small, this study confirmed that licensing does act as a barrier to the trade in this industry. Unfortunately, the results were unable to provide strong evidence of the magnitude of these barriers effects on consumer welfare.

Thus, there is much remaining to be studied. Particularly, further testing of the existence of trade barriers faced by the other categories and the effect of all of these barriers of market welfare is necessary.

APPENDIX A

THE DEVELOPMENT OF INDEX VARIABLES

By far one of the most difficult parts of this project was defining the index variables. As discussed in the text, licensing restrictions for both contractors and employees are extremely complex. This complexity made normalizing the states requirements into index variables challenging. In this appendix I briefly discuss how the variables were defined.

Initially, I tried to separate the text descriptions of the licensing requirements in the *National Directory of State Business Licensing and Regulation* into a chart in order to more easily compare requirements across states, but the lack of uniformity in both the titles used for contractors and employees and the types of requirements sent this process spiraling out of control. Ultimately, I was forced to make judgement calls based my impression of the overall difficulty of each states requirements.

Obviously, zeroes were assigned to states without any real statewide regulations. Ones were assigned to states like Alabama where the state requirements are minimal (the statewide exam is required only if a contractor wishes to work in multiple cities which have licensing requirements, otherwise only local licensing requirements need be met). States with what amount to “standard” requirements for either contractors or electricians were assigned a three. States who require that one either be or employ a master electrician (or, in states that lack such titles, that have similar experience, exam, etc.,

requirements for the title of contractor) were assigned a contractor index of three. States with standard licensing of masters (approx. six years of experience, an exam, some fees) and journeymen (two years of experience, an exam, some fees) were assigned a three in the employee index. Twos and fours were assigned to slightly less or more rigorous states. Lastly, fives were reserved for extremely stringent states like Maine and Minnesota who have multiple categories with more restrictions within the sub-categories of contractor or employee licensing (Maine for instance has five types of employee licensing including helper electricians who rate below apprentices).

I have included a table of the index variables below.

Table 7 -- Index Variables

	Contractor	Electrician		Contractor	Electrician
Alabama	1	0	Missouri	0	0
Alaska	3	3	Montana	2	4
Arizona	4	0	Nebraska	4	4
Arkansas	3	1	Nevada	5	0
California	3	0	New Hampshire	0	2
Colorado	4	4	New Jersey	4	0
Connecticut	4	2	New Mexico	3	1
Delaware	3	3	New York	0	0
Dist. of Columbia	3	4	North Carolina	3	0
Florida	4	0	North Dakota	4	2
Georgia	5	0	Ohio	2	0
Hawaii	4	3	Oklahoma	3	2
Idaho	3	3	Oregon	3	4
Illinois	0	0	Pennsylvania	0	0
Indiana	0	0	Rhode Island	3	3
Iowa	1	0	South Carolina	3	2
Kansas	0	0	South Dakota	3	3
Kentucky	3	0	Tennessee	2	0
Louisiana	3	0	Texas	0	0
Maine	5	5	Utah	2	4
Maryland	1	2	Vermont	3	3
Massachusetts	4	3	Virginia	3	1
Michigan	4	2	Washington	3	3
Minnesota	3	5	West Virginia	2	3
Mississippi	2	0	Wisconsin	0	0
			Wyoming	3	4

BIBLIOGRAPHY

- Benham, Lee, and Ann Benham, "Regulation Through the Professions: A Perspective on Information Control." *Journal of Law and Economics* 18 (October 1975), pp 421-47.
- Boulier, Bryan. "An Empirical Examination of the Influence of Licensure and Licensure Reform on Geographical Distribution of Dentists." In *Occupational Licensure and Regulation*, ed. Simon Rottenberg, Washington DC: American Enterprise Institute for Public Policy Research, 1980, pp. 73-97.
- Brennen, Phil Jr. "Protectionism is alive and well in U.S. Bar." *The National Law Journal* (Jan. 8, 1996) p. A19.
- Craig, Steven and Joel Sailors, "Interstate Trade Barriers and the Constitution." *CATO Journal* 6 (Winter 1987) pp. 819-35.
- Dolan, Andrew. "The Potential of Institutional Licensing and Brand-Name Advertising in the Medical Care System." *Journal of Contemporary Business* 9 (1980), pp. 35-44.
- Ehrenberg, Ronald G. *Labor Markets and Integrating National Economies*. Washington D.C.: The Brookings Institution, 1994.
- Elmslie, Bruce and William Milberg. "Free Trade and Social Dumping: Lessons from the Regulation of U.S. Interstate Commerce." *Challenge* 39 (May-June 1996), pp. 46-53.
- Friedman, Milton. *Capitalism and Freedom*. Chicago: University of Chicago Press, 1962.
- Friedman, Milton and S. Kuznets. *Income from Independent Professional Practice*. New York: National Bureau of Economic Research, 1945.
- Gellhorn, Walter. "The Abuse of Occupational Licensing," *University of Chicago Law Review*, (Fall 1976), pp. 5-13.
- Greene, Karen. "Number of States Regulating Selected Occupations by Form of Regulation." Typescript, 1983.
- Holen, Arlene. "Effects of Professional Licensing Arrangements on Interstate Labor Mobility and Resource Allocation." *Journal of Political Economy* 73 (October

- 1965): pp. 492-98.
- Isikoff, Michael, "Mustering the Political Will to Deregulate Virginia Professions." *Washington Post*, Feb. 7, 1983.
- Johnson, Julia. *Interstate Trade Barriers*. New York: The H.W. Wilson Co., 1940.
- Kleiner, Moris, Robert Gay, & Karen Greene. "Barriers to Labor Migration: the Case of Occupational Licensing." *Industrial Relations* 21 (Fall 1982), pp. 383-91.
- Leland, H. E. "Quacks, Lemons, and Licensing: A Theory of Minimum Quality Standards." *Journal of Political Economy* 87 (December 1979), pp. 1328-1346.
- Leland, H.E. "Minimum Quality Standards and Licensing in Markets with Asymmetric Information." in *Occupational Licensure and Regulation*, ed. Simon Rottenberg, Washington DC: American Enterprise Institute for Public Policy Research, 1980, pp. 264-284.
- Madison, James. *The Federalist Papers*. New York: Mentor Books, 1961.
- Maurizi, Alex. "Occupational Licensing and the Public Interest." *Journal of Political Economy* 82 (March/April 1974), pp. 399-413.
- Melder, Frederick Eugene. "State and Local Barriers to Interstate Commerce in the United States: A Study in Economic Sectionalism." *The Maine Bulletin* (Nov. 1937).
- National Directory of State Business Licensing and Regulation*. Detroit: Gale Research Inc., 1997.
- Ogus, Anthony. *Regulation: Legal Form and Economic Theory*. Oxford: Clarendon Press, 1994.
- Pashigan, B. Peter. "Has Occupational Licensing Reduced Geographical Mobility and Raised Earnings?" in *Occupational Licensure and Regulation*, ed. Simon Rottenberg, Washington DC: American Enterprise Institute for Public Policy Research, 1980, pp. 299-333.
- Pratt, Leila. "Occupational Licensing and Interstate Mobility." *Business Economics* 15 (May 1980), pp. 78-80.
- Rottenberg, Simon. *Occupational Licensure and Regulation*, Washington DC: American Enterprise Institute for Public Policy Research, 1980.
- Shepherd, L. "Licensing Restrictions and the Cost of Dental Care." *Journal of Law and Economics* 21 (April 1978), pp. 187-201.

- Shimberg, Benjamin, Barbara Essler, & Daniel Kruger. *Occupational Licensing: Practices and Policies*. Washington D.C.:Public Affairs Press, 1973.
- Stigler, G. "The Theory of Economic Regulation." *Bell Journal of Economics and Management Science* 2 (Spring 1971), pp. 3-21.
- United States Bureau of the Census, *Census of Construction Industries (1992). Industry Series*. Washington D.C.: U.S. Dept. of Commerce, Economics and Statistics Administration, Bureau of the Census, 1996.
- Young, S. David. *The Rule of Experts: Occupational Licensing in America*. Washington D.C.: The CATO Institute, 1987.