

# PHYSICIAN LICENSURE: A NEW APPROACH TO EXAMINING THE ROLE OF PROFESSIONAL INTERESTS

SHIRLEY V. SVORNY\*

*For years, economists have debated the extent to which organized medicine has benefited from medical licensing restrictions. This debate has been hampered by the lack of a viable alternative hypothesis. This paper provides an alternative hypothesis and suggests an empirical test which focuses on the relationship between licensure restrictions and the level of consumption of physician services across states. The evidence suggests that in the mid-1960s the interests of organized medicine dominated those of consumers in influencing the medical regulatory supply process.*

## I. INTRODUCTION

There has been a lot of discussion in the economics literature over whether medical licensure benefits physicians at the expense of consumers. One of the strongest criticisms of medical licensure is in Kessel [1958; 1970]. Kessel argues that the influence of the American Medical Association in the medical regulatory supply process has resulted in a cartelized market with all the trappings: medical training requirements that restrain entry, prohibitions on advertising, and constraints on hospital accreditation that facilitate discriminatory pricing tactics.<sup>1</sup>

On the other hand, supporters of the existing consumer interest hypothesis argue that there are unique aspects of the market for physician services that justify licensure's restrictions on practice. Much of the pro-licensure literature emphasizes the informational asymmetry in the market for physician services.<sup>2</sup> The basic contention of those who support medical licensure is that licensure protects consumers by allowing only those individuals who have met certain medical training standards to practice medicine. However, the case for licensure is severely weakened by what seems to be a consensus that certification would provide an equivalent amount of information, yet increase freedom of choice in the market for physician services.

The contribution of this paper is in taking the search for evidence of the dominance of professional interests out of the context of the traditional competition versus monopoly debate. Licensure restrictions are clearly inconsistent

\* Assistant Professor, California State University, Northridge. I would like to thank Eugenia Froedge-Toma, Roy Kenney, Robert Krol, an anonymous referee and the editor of this journal for helpful comments.

1. Further discussion of the cartelization of the market for physician services can be found in Rayack [1982] and Goodman [1980].

2. See, for example, Arrow [1963], Leland [1979], and Weingast [1980].

with a free, competitive market. The appropriate question to ask is whether or not the restrictions that Kessel found so offensive benefit consumers. What has been lacking is a viable alternative hypothesis to facilitate testing for the influence of professional interests in the medical regulatory supply process.

In this paper I propose and test an alternative hypothesis that draws from the labor economics and industrial organization literature on quality incentives. In section II I explain why the existing empirical evidence is of little value in settling the debate over professional influence. Section III notes the weakness in the existing consumer interest justification for medical licensure and outlines the quality incentive argument. One result of this analysis is the prediction that, if licensure restrictions are set to benefit consumers, licensure will have a positive effect on the consumption of physician services. Section IV of this paper focuses on the relationship between medical licensure and consumption in an attempt to measure the influence of professional interests in the medical regulatory supply process.

## II. PROFESSIONAL INFLUENCE: THE EVIDENCE TO DATE

One approach to assessing the effect of professional influence on competition in the market for physician services has been to focus on the relationship between fees or earnings and physician density (the physician/population ratio). However, Sloan and Feldman [1978] point out that both monopolistic and competitive pricing models are consistent with the observed negative relationship between physician density and earnings. Newhouse's [1970] results, which show a positive relationship between density and fees, caused Newhouse to emphasize the monopolistic aspects of the market and later researchers to reject the competitive model of physician behavior in favor of one emphasizing supply-induced demand. However, commenting on Newhouse, Sloan and Feldman point out that the inability to control for differences in quality, amenities and patient time make such results of little explanatory value.

A second approach to resolving the debate over who benefits from licensure has been to calculate the rate of return to medical training. Reviewing a series of empirical studies on the return to medical training (including his own), Leffler [1978, 172] concludes that "the search for cartel returns resulting from AMA supply controls has not been particularly successful." The problem with these studies is twofold. First, rate of return studies are subject to all types of estimation problems—from the selection of an appropriate discount rate to the inability to adjust for nonpecuniary returns. Second, there *must* have been a one-time gain to practicing physicians when restrictions on the practice of medicine were imposed. As in other protected markets, entry may dissipate any rents over time. The evidence on rates of return cannot be used to refute the dominance of professional interests in the medical regulatory supply process.

Finally, evidence that aspects of the market for physician services are consistent with the standard model of a competitive industry, such as that provided by Hall and Lindsay [1980] and McCarthy [1985], cannot be used to rule out

the possibility that professional interest dominates the determination of medical licensure standards. By its very nature, licensure restricts entry and competition. The search for professional influence must focus on whether or not consumers benefit from the institution of medical licensure.

### III. CONSUMER INTEREST IN PHYSICIAN LICENSURE

As stated above, the only basis for concluding that the medical establishment is not the moving force behind medical licensure restrictions is to establish theoretically and empirically that existing restrictions benefit consumers. However, the traditional consumer interest argument, that licensure exists because it resolves an information problem, allowing consumers to discriminate between physicians and nonphysicians, is relatively weak. Economists have argued that certification would provide an equivalent amount of information, while increasing freedom of choice. This view can be found in Leland [1980], Leffler [1978], Friedman [1962], and Moore [1961].

Recent contributions to the labor economics and industrial organization literature provide the basis for a clearer explanation of how consumers benefit from medical licensure. The basic idea is that licensure increases the incentives facing physicians to behave in a manner consistent with patients' interests.

To understand how licensure benefits consumers, we must recognize that the market for physician services is characterized by high monitoring costs.<sup>3</sup> When the costs of monitoring an employee's work are relatively great, Lazear [1981] has shown that wages can be structured so as to induce employees to monitor their own behavior.<sup>4</sup> Lazear has described an implicit labor contract, consistent with competitive labor markets, that brings a worker's "... interests as agent into harmony with the employer's interests as principal" (p. 607). Initially, laborers are willingly paid less than the value of their marginal product. They are, in a sense, investing. The return is a stream of future wages above the worker's opportunity cost. When workers are paid a wage greater than their opportunity cost, the cost of shirking (opportunistic behavior) is the present value of the premium stream associated with their continued employment. Workers are discouraged from shirking by the fact that this stream would be lost if shirking behavior were observed. A worker is indifferent between this stream and a flatter wage profile as long as the present values of the two streams are equal.

The incentive described by Lazear is similar to that provided by the "quality assuring price premium" facing the firm that invests in brand name as described by Klein and Leffler [1981]. In Klein and Leffler, a consumer's confidence in the quality of a product is derived from the knowledge that the firm faces a stream of future returns on its investment in brand name, that

3. Alchian and Demsetz [1972] write that, where professional inputs are employed, monitoring costs are relatively great; simple evaluation or direction is not possible. Along the same lines, Pauley and Redisch [1973] note that "many of the decisions the physician has to make are decisions which cannot be supervised directly . . ." (p. 164).

4. A similar approach is taken by Eaton and White [1982; 1983].

this stream has a present value greater than the increment in wealth that the firm could earn by cheating on product quality, and that opportunistic behavior on the part of the firm would result in a loss of future customer patronage and the associated premium stream. In the labor example, competition among similar workers for employment makes it so that income earned above the value of the laborer's current opportunity cost is a return to an earlier period of investment. In the Klein and Leffler example, the premium on future sales is compatible with competition in that it is the return on firm specific investment such as investment in nonsalvageable capital assets or brand name. In both cases a premium stream reduces the intensity of required monitoring activities by providing an individual or a firm with an incentive for performance. A key element is that, when shirking is observed, access to the income stream is severed. In the labor market case, the employee is terminated.<sup>5</sup> In the product quality case, the brand name is tarnished.

I suggest that the institution of licensure relies on a similar mechanism to induce physician quality. The similarities are fairly easy to see. First, licensure requires an investment in medical training. Early in their careers, physicians are making a substantial career-specific investment, a major portion of which takes its value from the opportunity cost of a trainee's time. Studies suggest that entry to the medical profession adjusts until physician income rises to provide a normal return on this investment.<sup>6</sup> This can be viewed as a "quality inducing" return. When unprofessional behavior is observed, the state medical licensing board revokes the offending physician's license and access to the return is severed. I suggest that, by making a physician's claim to the return on his investment in medical training conditional on his behavior, licensure increases the set of quality-inducing incentives in the market for physician services. The ability to use the government's force to deny a physician the right to practice medicine once he or she has engaged in undesirable practices is what favors licensure over certification in the production of quality assurance.

Under these circumstances, each physician faces a stream of future returns on his investment in medical training and knows that opportunistic behavior/shirking on his part will result in a significant loss in income. Consumers benefit directly.<sup>7</sup> The piece that has been missing to tie the generation of quality assurance to medical licensure is an awareness of the incentives it provides.

From consumers' perspective, there is an optimal level of required physician investment. It is where the marginal cost of incremental requirements (the present value of the increase in the supply price of physician services) just

5. Lazear suggests that the contract that dismisses a shirker will dominate when it is cheaper to observe that shirking occurs than to determine the precise amount of shirking.

6. See Leffler [1978]. Commenting on this paper, Roy Kenney has noted that it is not necessary that the quasi-rent stream resulting from the quality assuring price premium correspond to a normal return on some nonsalvageable investment. It would work equally well if places in medical school were awarded by lottery. The equality of the present value of the premium stream and the amount of the required investment is required only for a zero profit, free entry equilibrium.

7. A unique survey by Zerbe and Urban confirms that consumers are aware that they may benefit from certain types of occupational licensure.

equals the marginal benefit (the present value of the quality assurance generated by the investment). In the United States, variations in the level of licensure requirements across states (such as whether or not a state requires a basic science certificate or U.S. citizenship) could reflect locational differences in costs and benefits which influence the optimal level of investment.

The idea that the potential for suspension or revocation of one's medical license protects consumers was mentioned briefly in Gellhorn [1956] but has been ignored in the licensure literature. For an exception, see Blair and Kaserman [1980].<sup>8</sup> Gellhorn proposed a system of licensure upon demand, with provisions for the suspension or revocation of the license of any practitioner who "... had misrepresented his skills, had demonstrated his incompetence, or had engaged in dishonorable conduct relevant to his occupation" (p. 150). In proposing a system of licensure on demand, Gellhorn hoped to eliminate the barriers to entry traditionally associated with licensure, but to preserve what he observed to be a substantial deterrent to professional misconduct.

While Gellhorn saw training requirements solely as barriers to entry, this discussion suggests value to requiring an investment in medical training of potential providers of physician services. Without the required investment in medical training, there would be few costs associated with the suspension or revocation of one's license, particularly for new entrants. Licensure would add little to the existing remedies at law, which Gellhorn perceived to be too weak.

One might ask why licensure is desirable in the market for physician services when alternative quality-inducing mechanisms exist. I suggest that the financial status of entering physicians reduces the value of alternative methods of producing quality assurance. For example, instead of licensure, entrants to the market for physician services could be required to post a bond or to pay an entrance fee that would be forfeited if the physician were found to have behaved opportunistically. The problem with this solution is that, for the average entrant whose only collateral is his own human capital, it may be very costly to borrow these funds. Furthermore, a physician who has borrowed funds to post a bond (or, alternatively, if no bonds are required, to invest in brand name) has less to lose and, therefore, less of an incentive to provide quality services than does an individual who stands to lose the return on his or her substantial investment in medical training. Similarly, individuals who have few financial assets can be expected to be much less sensitive to civil and criminal penalties for malpractice than they would be otherwise, making it very costly to obtain malpractice insurance. While physician referrals, medical school brand name, specialty board certification, and hospital accreditation are all valuable guides to physician quality, none creates incentives for quality, especially for new entrants, as strong as licensure with its potential for revocation and loss of future rents.

8. Blair and Kaserman [1980] model the relationship between the incentive to engage in quality deterioration, physician income, and economic sanctions. Of course, their model predicts that the more wealth one must forego as a result of being discovered reducing quality, the less likely it is that quality reducing behavior will be observed.

TABLE I

## Medical Disciplinary Actions Per Thousand Licensed Physicians, 1984

Licenses revoked	.59
Probation	.59
Licenses suspended	.38
Miscellaneous (includes license denials, examinations denials, reprimands, censure, stipulations or consent orders, etc.)	1.62
Total	3.18
Criminal Sentencing Per Thousand U.S. Residents Age 18 and Over, 1981	
New Prison Admissions	.96
Probation	4.53

## Source:

Medical disciplinary data: The Federation of State Medical Licensing Boards of the U.S., Inc., Fort Worth, Texas.

Criminal sentencing: Edward J. Brown, Timothy J. Flanagan, and Maureen McLeods, eds. *Sourcebook of Criminal Justice Statistics—1983*. U.S. Department of Justice, Bureau of Justice Statistics. Washington, D.C.: U.S. Government Printing Office, 1984, pp. 546, 570.

It is likely that we have not seen the use of hospital brand name to assure quality because in the past most hospitals (almost all large hospitals) have been nonproprietary. The ability of brand name investments to assure quality is attenuated in a nonproprietary setting for lack of a residual claimant. But the prevalence of nonproprietary hospitals has not been a market result. It is thought to be the result of government policies (tax advantages, construction grants) that favor nonproprietary hospitals. Perhaps it makes sense — considered in the context of the difficulty of monitoring a physician's work — that medical licensure has been teamed with legislation that favors nonproprietary hospitals. This has kept the physician the residual claimant in the provision of physician services.

There is no direct evidence on the importance of licensure revocation in deterring opportunistic behavior. However, for the first time, in 1984, the Federation of State Medical Licensing Boards of the United States made public comprehensive data on disciplinary actions. These numbers show that the likelihood of revocation is not insignificant. Table I shows that, compared to per capita criminal sentencing in the United States, medical disciplinary actions (per physician) appear to be fairly common.

An interesting implication of this consumer interest model is that medical licensure should increase the equilibrium consumption of physician services.<sup>9</sup> If licensure reduces consumers' expenditures on activities aimed at assessing physician quality, we would expect the consumption of physician services to be greater than it would be without licensure. As long as the increase in the supply price of physician services caused by medical training requirements is

9. Ornstein and Hanssens make a similar point with respect to consumption of a good and the supposed reductions in transactions costs associated with resale price maintenance.

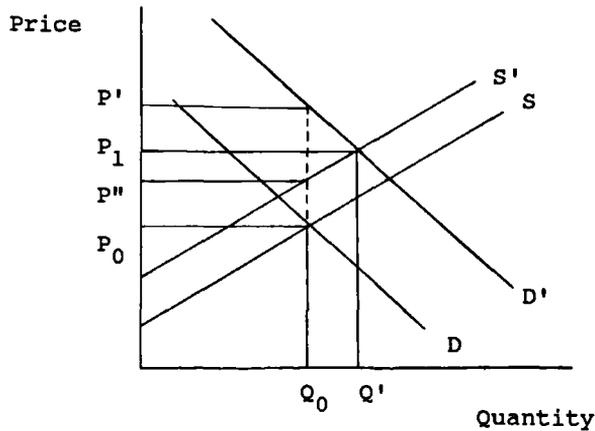


FIGURE 1

less than the value of the added assurance of performance, medical entrance requirements will benefit both consumers and physicians and the total quantity of physician services consumed will increase.

This is shown graphically in Figure 1. The increase in licensure requirements requires an investment that shifts the supply curve back. The resulting quality assurance reduces the cost associated with consuming physician services, shifting the demand curve out. Consumers pay  $P_1 - P_0$  more in exchange for assurance, the value of which is given by the vertical distance between the two demand curves,  $P' - P_0$ . Physicians earn  $P_1 - P_0$  more for something that only costs them  $P'' - P_0$  to supply. (Practicing physicians that are "grandfathered" in gain by the whole  $P_1 - P_0$  because they are not required to bear the costs associated with meeting the new standards.) As long as the outward shift in demand is relatively great, the effect will be to increase the equilibrium level of consumption in the market for physician services.<sup>10,11</sup>

So, we see that when licensure requirements are optimal from consumers' perspectives, the equilibrium price and quantity will increase. This means that what is traditionally thought to be an indication of the influence of organized

10. For completeness, it seems important to note that, despite the increase in the aggregate consumption of physician services generated by incremental licensure requirements, there is a subset of consumers who are poor and who are not covered by public medical insurance who will be worse off as licensure restrictions shift the provision of lower quality care to the black market.

11. The increase in aggregate consumption described here is consistent with Lefler's [1982] analysis that deals with the effect of quality-increasing occupational licensing laws. Following his analysis, a minimum quality standard that is binding will cause the quantity of services consumed to rise when changes in the quality standard cause an upward shift in marginal value that is greater than the upward shift in marginal cost. These are exactly the circumstances under which consumers would benefit from licensure. In terms of Lefler's model, one can think of licensure as facilitating a market adjustment to the optimal price, quantity, quality equilibrium; an equilibrium that could not be reached if it were not for the effect of licensure in expanding the set of quality options available to include the most efficient price, quantity, quality set.

medicine—a positive relationship between physician income and licensure requirements across states—could result from variations in the optimal level of licensure across states even if there were no professional influence at all. In addition, much of what Kessel found offensive in the market for physician services (for example, the specific delineation of medical training requirements, discriminatory pricing tactics, and bans on advertising) can be interpreted as beneficial to consumers. These constraints may be seen as beneficial as they may act to insure a level of investment and returns to training (even in a period of excess supply) sufficient to produce the quality-inducing incentives described above.

#### IV. CONSUMER VS. PROFESSIONAL INTERESTS

The analysis of section III suggests a new variable on which to focus an empirical test of the influence of professional interests on the medical regulatory supply process: equilibrium consumption. All else constant, licensure requirements that are optimal from consumers' points of view can be expected to increase the equilibrium consumption of physician services. Alternatively, when licensure requirements are increased to the point where the marginal benefits to consumers have fallen below the marginal supply price, physicians benefit at the expense of consumers. In terms of Figure 1, demand shifts up by less than supply and equilibrium consumption declines. We would expect licensure to be accompanied by a reduction in the consumption of physician services when professional influences dominate the medical regulatory supply process.

To test the relationship between licensure requirements and the consumption of physician services, a linear equation is estimated using ordinary least squares for a cross section of forty-eight states with per capita consumption of physician services as the dependent variable. 1965 data are used because much of the discussion of medical licensure in the literature refers to that period of time. In addition, since that time there have been unprecedented changes in the market for physician services—such as the virtually unrestricted migration of foreign-trained physicians (beginning in the late 1960s)—which pose specific problems for our test.

Data collected by the American Medical Association on the number of physicians practicing in a state are used as a measure of consumption. Of course, this measure is imperfect. If physicians work longer hours or more intensely in certain types of settings, then the number of physicians in a state is only a proxy for the units of physician services consumed.

Citizenship and basic science certification requirements for medical licensure are used to measure variations in the level of licensure requirements across states. While all states require medical school graduates to pass a written exam, basic science certificates were required by only twenty-three states and U.S. citizenship by twenty-four states. Both requirements involve some degree of "investment" of the type that alternatively could be considered evidence of restrictions to shift prices up to benefit existing physicians or valuable in

**TABLE II**  
Right-Hand-Side Variables

Variable	Ex- pected Sign	Comments
Per Capita Income	+	Physician services are a normal good.
% Population Over 65 Years of Age	?	Different age groups consume physician services at different rates.
% Population Under 5 Years of Age	?	Different age groups consume physician services at different rates.
% Population with Some Medical Insurance	+	The marginal cost of consumption for this group is relatively low.
Per Capita Public Health Care Expenditures	+	Government subsidies encourage consumption.
Per Capita Incidence of Hepatitis	+	Proxy for ease of spread of disease.
% Population with High School Education	+	Educated people consume relatively greater amounts of physician services.
Per Capita Net Migration	+	Proxy for the nonpecuniary aspects of the living environment.
% Population Living in Urban Areas	+	Proxy for the nonpecuniary aspects of the living environment.
Per Capita Annual Medical School Graduates	+	Commonly used to proxy the nonpecuniary aspects of the professional environment. (Physicians prefer to practice in hospitals affiliated with medical schools.)
Basic Science Certification	?	Equals one if state requires basic science certification. Measures investment for licensure.
Citizenship Requirement	?	Equals one if state requires citizenship. Measures investment for licensure.

establishing a future return that will act to discourage opportunistic behavior.<sup>12</sup> My theory suggests that a positive (negative) relationship between these requirements and equilibrium consumption across states is evidence that consumer (professional) influences dominate the regulatory supply process.<sup>13</sup>

The nature of the market for physician services requires that, if we want to study the relationship between licensure requirements and the consumption

12. In 1965, basic science certificates were required of M.D.s, osteopaths, chiropractors and, in certain states, naturopaths. Fields designated for testing varied from state to state as did the composition of state basic science boards. According to Robert Derbyshire [1969], "... basic science requirements are considered by many to be anachronistic stumbling blocks to medical licensure." Derbyshire describes basic science laws as an "... extra, expensive, time consuming hurdle on the way to licensure ..." (p. 128).

13. It is important to note that *both* professional and public interests are likely to be influential in establishing licensure requirements (see Stigler [1971] and Peltzman [1976]). Since both influences are likely to be present, our test cannot identify a single, influencing factor. It can only confirm or deny the dominance of professional interests over consumer interests in the market for physician services.

**TABLE III**  
 OLS Estimation of Per Capita Physician Population Across States, 1965

Variable	Coefficient (t-statistic)
Per Capita Income	$-.1613 \times 10^{-7}$ (-.126)
% Population Over 65 Years of Age	$.4182 \times 10^{-2}$ (1.675)
% Population Under 5 Years of Age	$-.9410 \times 10^{-3}$ (-.179)
% Population with Some Medical Insurance	$.7437 \times 10^{-3}$ (1.892)*
Per Capital Public Health Care Expenditures	$.7483 \times 10^{-5}$ (2.445)**
Per Capita Incidence of Hepatitis	.1294 (1.583)
% Population with High School Education	$.5427 \times 10^{-5}$ (.965)
Per Capita Net Migration	$.1154 \times 10^{-2}$ (2.397)**
% Population Living in Urban Areas	$.5289 \times 10^{-3}$ (2.870)***
Per Capita Annual Medical School Graduates	2.875 (2.511)**
Dummy for Basic Science Certification Requirement	$-.1429 \times 10^{-3}$ (-2.326)**
Dummy of Citizenship Requirement	$-.1224 \times 10^{-3}$ (-2.147)**
Intercept	$-.3727 \times 10^{-3}$ (-.481)

$\bar{R}^2 = .72$

\* Significant at the 10 percent level.

\*\* Significant at the 5 percent level.

\*\*\* Significant at the 1 percent level.

of physician services across states, it must be in the context of a more general model. The inclusion of additional variables allows us to hold constant the effect of other factors commonly thought to influence the equilibrium level of consumption in a state. After a review of previous studies of the geographic distribution of physicians, ten additional variables were chosen.<sup>14</sup> All of the right-hand-side variables and their expected signs are listed in Table II.

The results of the estimation are presented in Table III. Of the twelve explanatory variables, five are not significant (per capita income, the two age distribution variables, education and the incidence of hepatitis). It is not sur-

14. See, for example, Long [1975] or Benham [1968]. The incidence of hepatitis as a measure of the ease of the spread of disease is suggested by Leffler [1978].

prising that some of these variables are not significant as the level of aggregation (the state) is fairly great. Of the remaining seven explanatory variables, all are significant—one at the 1 percent level (urban population), five at the 5 percent level (public health care expenditures, net migration, annual medical school graduates, and the two dummies for the basic science and citizenship requirements), and one at the 10 percent level (medical insurance coverage). All of the significant variables have the expected signs as does education and the incidence of hepatitis.

The negative coefficients on the two investment variables indicate that the investments required for basic science certification and citizenship are negatively related to the equilibrium level of consumption of physicians' services. Consumption of physician services is lower in those states where the level of required investment is relatively great. We can conclude that, on the margin, the licensure restrictions in practice in 1965 increased entry costs by more than they reduced consumers' costs of generating quality assurance in the market for physician services. Licensure restrictions appear to have been more restrictive than would have been optimal from a consumer interest perspective. The implication is that professional or special interests dominated consumer interests in the setting of licensure requirements. These results provide empirical evidence of the strength of the influence of organized medicine in the medical regulatory supply process.

#### V. CONCLUSION

Attempts to measure the role of professional interests in the medical regulatory supply process have been hampered by the lack of a viable competing hypothesis. By their very nature, licensure restrictions are anticompetitive. By explaining how consumers may benefit from licensure restrictions, this paper provides both an alternative hypothesis and a new focus for a test of professional influence — the effect of licensure restrictions on equilibrium consumption. The results of a cross-sectional test suggest that, in the mid-1960s, professional interests had more influence than consumer interests in the setting of medical licensure requirements.

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