Entry barriers and medical board funding autonomy

SHIRLEY SVORNY[1] & EUGENIA FROEDGE TOMA[2]
[1]*Department of Economics, California State University, Northridge, CA 91330–8245 and Milken Institute for Job & Capital Formation Santa Monica, CA, U.S.A.;* [2]*Department of Economics, University of Kentucky, Lexington, KY 40506, U.S.A.*

Abstract. In this paper we develop and test the hypothesis that institutional funding arrangments affect the extent to which public agencies are influenced by special interests. We test this hypothesis using data on state medical boards. In 1989, medical boards in twenty-one states received budget appropriations from their legislatures. The remaining boards operated independent of legislative control, financing their activities from fees and other revenues. We find that budgetary autonomy does influence agency decisions. The ability of physicians to restrict entry is enhanced where licensing boards are self-financed.

1. Introduction

Recent work in modern political economy emphasizes the importance of the institutional design of oversight agencies or boards (Moe, 1984, 1987). Several researchers have examined the effect of budgetary control. Weingast and Moran (1983) investigate the relationship between budgetary appropriations and the choice of cases by the Federal Trade Commission. Weingast (1984) looks for budgetary influences on the behavior of the Securities and Exchange Commission. Toma (1991) studies the role of the budget in affecting decisions of the Supreme Court. In each case, budgetary control appears to influence outcomes.

In this paper, we develop the hypothesis that freedom from legislative budgetary oversight (budgetary autonomy) facilitates special interest dominance. We test this hypothesis using data on state medical board funding arrangements. In 1989, medical boards in twenty-one states received budget appropriations from their state legislatures. The remaining boards operated independent of legislative control, financing their activities from fees and other revenues. This cross-state variation permits an empirical examination of the consequences of agency budgetary autonomy.

In the case of state medical boards, we expect budgetary autonomy to increase the extent to which physician interests are reflected in board policies. Specifically, because medical boards have the power to restrict entry

to the market for physician services, and because existing physicians benefit from such restrictions, we expect to find lower physician-population ratios in states where medical boards are funded autonomously.

2. State medical boards

Of the fifty state medical boards in the United States in 1989, twenty-one received a budget appropriation from the state legislature (see Table 1). Included in this group are the few states in which medical boards have only advisory power and decisions are made by state departments of health or other related agencies. The remaining twenty-nine boards operated independent of legislative budgetary control, financing their activities through fees and other revenues.[1]

The licensing of physicians by state medical boards has been used to restrict entry, with the stated goal of insuring physician quality. Although the diversity in licensing requirements across states appears to have diminished in the 1980s with the adoption of the standardized Federation Licensing Examination (FLEX) and certification of new American medical graduates through the National Board of Medical Examiners, a review of state regulations shows that state medical boards maintained a variety of exclusionary rules at the turn of the decade (see Bidese, 1990, and Federation of State Medical Boards, 1991).

The conditions for the endorsement of out-of-state licenses varied substantially across states in 1988. In sixteen states, physicians licensed in other states were required to appear for a personal interview. Four states required only Foreign Medical Graduates to appear for an interview. Five states required an oral examination of out-of-state physicians seeking licensure, eight states required it of some candidates.

With respect to the FLEX exam, in 1988, six states required applicants to pass FLEX Components I & II in one sitting. The number of times a candidate could repeat each component without penalty ranged from twice (in ten states) to "no limit" (in seven states). To be valid, both components of the FLEX examination had to have been passed within three to seven years in most states, but many states had "no limit". Several states required an additional year of training before retaking the exam. Half of the states required character references of applicants to sit for the FLEX exam.

According to the Federation of State Medical Boards 1991 publication, thirteen states required a specially outlined or approved *pre*medical curriculum in order to sit for the FLEX exam, twenty-eight required a specially outlined or approved medical curriculum. The amount of post-graduate training required to take the FLEX exam varied across states as did the amount of

Table 1. Medical board funding autonomy by state, 1989

State	Funding	State	Funding
Alabama	Yes	Montana	Yes
Alaska	No	Nebraska	No
Arizona	Yes	Nevada	Yes
Arkansas	Yes	New Hampshire	No
California	Yes	New Jersey	Yes
Colorado	Yes	New Mexico	Yes
Connecticut	No	New York	No
Delaware	No	North Carolina	Yes
Florida	Yes	North Dakota	Yes
Georgia	No	Ohio	No
Hawaii	No	Oklahoma	Yes
Idaho	Yes	Oregon	Yes
Illinois	No	Pennsylvania	Yes
Indiana	No	Rhode Island	Yes
Iowa	Yes	South Carolina	No
Kansas	Yes	South Dakota	Yes
Kentucky	Yes	Tennessee	No
Louisiana	Yes	Texas	Yes
Maine	Yes	Utah	No
Maryland	No	Vermont	No
Massachusetts	No	Virginia	Yes
Michigan	No	Washington	Yes
Minnesota	Yes	West Virginia	Yes
Mississippi	Yes	Wisconsin	No
Missouri	Yes	Wyoming	Yes

Source: Federation of State Medical Boards, *Exchange*

post-graduate training required beyond FLEX for licensure (summing from one to three years for all states). Maine chooses to consider post-graduate training outside the U.S. and Canada, where other states do not. New Hampshire includes British training on their list, and, at the other extreme, Oklahoma considers only post-graduate training in the United States.

A few states required personal demonstration of English skills of foreign-trained physicians, while others require no English test at all. In many states a Licentiate of the Medical Council of Canada fulfills primary exam requirements for issuance of an unrestricted medical license, but in ten states Canadian certification is not sufficient.

Although far from a complete list, these examples suggest significant discretion across states in licensing physicians. In addition to the variation in

regulations, there are likely to be variations in enforcement and implementation that affect the extent to which initial entry is restricted.

3. Choice and consequences of funding mechanisms

To provide insights into the determination of the choice of state medical board funding arrangements and to analyze the effects these arrangements might have on policy outcomes, we begin with a general discussion of political processes. We assume that elected officials are motivated to maximize votes. Early works in modern political economy assumed that vote-maximization served as a binding external constraint; i.e., internal or institutional structures of agencies would not differentially influence policy outcomes. Under this view, representatives respond to political pressures as a way to maximize their probability of re-election, and in so doing, perfectly represent voter preferences in policy decisions.[2]

More recent work in political economy argues that the vote-maximization constraint provides an incomplete picture of policy determination. Because of agency costs, internal constraints (defined by institutional structures) play an important role in influencing the policy outcomes of government agencies.[3] The new institutionalists argue that the political process has agency costs both between voters and representatives and between representatives and agencies. This means that voter preferences will not be perfectly represented in policy outcomes. In particular, the manner in which agencies are structured can influence the decisions made by the agencies and their relative responsiveness to special interest groups.

Consider the institutionalist theory within the context of financing medical licensing boards. The source of funding for a medical board helps define the level of independence of the board from legislative oversight. As a result, financing arrangements will determine the degree to which policy outcomes reflect the preferences of various special interest groups.

When boards are funded by legislative appropriation, incentives increase for the legislature to pay attention to what the board is doing. Every dollar allocated to the board has a political opportunity cost – fewer dollars are available for other boards or programs. The legislature can use its power of the purse to punish board actions it views as undesirable, reducing the autonomy of the board.

Why should legislative oversight lead to an outcome that differs from that which would result if the board operated autonomously? Although both the legislature and state medical boards have an incentive to balance the interests of competing constituencies – physicians, patients, and others – state legislatures are subject to influence from a broader array of interests than are inde-

pendent professional boards. This difference is primarily a result of competition for funds among special interests. In contrast, medical board decisions will be made with fewer groups voicing their opinions. For these reasons, legislative funding is likely to limit the ability of physician lobbies to affect medical board policies in ways that benefit physicians.

To restate this point, if medical board budgets come out of a common pool of state funds, competition for funds will create incentives for other interest groups to monitor medical board actions. In its attempts to control the medical regulatory process, the medical lobby will come under scrutiny from other, organized special interest groups seeking to enhance their share of the state's funds.

Because self-funded boards operate at no direct expense to the state government, there is less of an incentive for legislators and other interest groups to monitor their performance. In states where boards are self-funded, the physicians' lobby will face less opposition in promoting its own agenda to the medical board members.

This discussion suggests that different policies would be expected from boards that are linked to the legislature through the budget than those that operate independently of legislative appropriations. All else constant, financially autonomous boards are more likely to regulate in a manner consistent with physician interests than are boards with budgetary links to their state legislatures.

Generally, the regulation literature has argued that professional groups share an incentive to support laws or policies that restrict entry into their field, decreasing the supply of providers and, thereby, increasing their wages or incomes.[4] If financially autonomous boards are most influenced by physician lobbies, we would expect to find relatively strict entry requirements in states with institutional arrangements that allow medical boards financial autonomy. As described in Section 2 above, boards restrict entry in ways that are observable as well as in subtle ways that are costly to observe. If the policies are designed, implemented and monitored effectively, however, there should be differences in real outcomes that are discernable across the states. We focus on the most obvious measure of the strength of barriers to entry – the number of physicians (per capita) in a state.

4. Empirical tests

4.1. *Basic test*

Clearly, the physician/population ratio in any state will be influenced primarily by the demographics of the state. To examine the effect of medical

98

Table 2. Dependent variable: Physician-population ratio (significance levels in parentheses)

Independent variable	Equation 1	Equation 2	Equation 3
Constant	–.47	–.52E–01	.23E–01
	(.83)	(.81)	(.91)
Board funding dummy (predicted value in Eq. 3)		–.24E–01	–.10
(autonomous board = 1, zero otherwise)		(0.3)**	(.12)
Metropolitan population/total population	.60E–03	.64E–03	.64E–03
	(.04)**	(.02)**	(.03)**
Population over 65 years of age/total population	.51E–02	.82E–02	.88E–02
	(.15)	(.03)**	(.04)**
Median household income	.22E–05	.20E–05	.12E–05
	(.50)	(.53)	(.71)
Percent of population living in poverty	–.20E–03	.11E–02	.11E–02
	(.93)	(.62)	(.63)
Percent of population with four or more years of college	.65E–02	.65E–02	.67E–02
	(.00)***	(.00)***	(.00)***
Percent of population employed	–.11E–02	–.33E–03	–.64E–03
	(.62)	(.87)	(.76)
State medical society membership as a percent of total	–.66E–03	–.53E–03	–.46E–03
physicians in the state	(.17)	(.25)	(.34)
Western state dummy (equal to 1 for western states,	–.30E–02	.14E–01	–.18E–01
zero otherwise)	(.85)	(.41)	(.38)
Southern state dummy (equal to 1 for southern states,	.12E–01	.18E–01	.18E–01
zero otherwise)	(.45)	(.23)	(.25)
Northeastern state dummy (equal to 1 for states in the	.29E–01	.35E–01	.34E–01
northeast, zero otherwise)	(.17)	(.09)*	(.11)
Adjusted R-squared	.70	.73	.71

Fifty observations. Significance levels in parentheses; ***significant at the one percent level, **significant at the five percent level, *significant at the ten percent level.
Equation 3 uses a predicted value of the board funding variable (see Table 3).

board funding autonomy, we first attempt to identify a set of control variables. Using standard demographic variables, we are able to explain seventy percent of the variation in the physician/population ratio across states (Table 2, Equation 1). All equations are run using the ordinary least squares estimation technique.

The set of control variables in Equation 1 includes the percent of the population living in metropolitan areas. This variable is included as one measure of the costs of obtaining and providing care. Short driving distances to physicians' offices in metropolitan areas will reduce the cost of care. The concentration of individuals that characterizes metropolitan areas will reduce the cost of care further if there are economies of scale in treatment. Lower

costs should increase consumption of physician services. We also include the percent of the population over sixty-five years of age. This group is likely to consume a greater amount of physician services for two reasons. First, the elderly suffer more physical ailments and, second, the federal government subsidizes health care for seniors through its Medicare program. Two measures of wealth are included in Equation 1, the percent of the population living in poverty and median household income.

Other measures that reflect the demographics of the population include the percent of the population that is employed and the percent of the population with four or more years of college. Both groups can be expected to be relatively healthy, compared to the rest of the population, but employed individuals can be expected to go to the doctor less often, educated individuals more often, all else constant. Given the differences across regions in medical care, we also include dummy variables for the south, west, northeast regions (the midwest is the fourth region).

The percent of physicians belonging to a state's medical society is included to capture the influence of special interests in state licensure policy. We would expect fewer physicians per capita in states where the physician lobby is strong.

We chose the specification of Equation 1 because it explains more variation in the physician-population ratio across states than any other reasonable specification, given the data available to us at this time. The percent of the population with four or more years of college is the most powerful explanatory variable. Forty-five percent of the variation in the physician-population ratio across states is explained by a regression that includes the education variable and an intercept term (the intercept term is not significant).

Our hypothesis is that at least some of the unexplained variation in the physician-population ratio across states may be explained by institutional differences across states, such as the method of board funding. Equation 2 includes a board funding variable (a dummy variable equal to 1 if the board is autonomously funded and zero otherwise). The coefficient is negative and significant at the three percent level. In states where boards are free of legislative budgetary oversight, physician interests appear to prevail, there are fewer physicians per capita. The evidence supports the hypothesis that board funding arrangements contribute to explaining the cross-sectional variation in the physician-population ratio in the United States.

This result is robust to the inclusion of a variety of control variables.[5] Deleting the regional dummy variables reduces the adjusted R^2 slightly in the physician-population equations in Table 2. Also, without the regional dummy variables, the coefficient of the percent of physicians that belong to the state medical society becomes significant at the seven percent level (Equation

1) and the eight percent level (Equation 2). Deleting the state medical society variable (which may be endogenous) does not change the results, except that the employment-population ratio becomes significant in the equations in Table 2.

4.2. *Treating board funding as endogenous*

One possibility is that the board funding variable is endogenous. To deal with this possibility, we estimate a board funding equation (Table 3). We then re-estimate Equation 2, using the predicted value of the board funding variable in place of its actual value (Table 2, Equation 3).

The basic premise for the choice of variables to estimate the board funding equation in Table 3 is that, as described in Section III above, board funding autonomy has implications for outcomes in the physician services market (specifically the physician-population ratio). Consumer groups have an incentive to lobby for legislative budgetary control. Physician groups have an incentive to lobby for budgetary autonomy. A state's choice between budgetary control or autonomy will reflect physicians' versus consumers' comparative advantage in organizing and lobbying political decision makers (Stigler, 1971). For this reason, we include variables in the estimation of the board funding equation (Table 3) that affect the costs and benefits to groups participating in the political process.

The first is the size of the state population. Where population size is relatively large, free rider effects discourage consumers from organizing to oppose special interests. All else constant, physician interests should prevail in the most populous states, resulting in the establishment of autonomously funded medical boards. Also, median household income will affect consumers' costs of organizing. Where consumers are wealthy, we would expect them to use their resources to lobby against board budgetary autonomy.

The extent to which physicians are organized in a state may suggest the costs of organizing to promote physician interests. Where physicians are organized, we would expect them to use their resources to lobby for board budgetary autonomy. State medical society membership as a percent of total physicians should be positively associated with board funding autonomy.

Finally, an active state government is likely to be associated with legislative oversight of medical board budgets. We use two measures of the level of state government activity – state government expenditures as a percent of personal income and a dichotomous variable for whether or not the legislature meets full-time, (= 1 for full-time, = 0 for part-time). Greater state government spending – a larger public sector – implies a more active role for government in all areas. We would expect state government spending to be negatively associated with board funding autonomy. Similarly, a full-time

Table 3. Dependent variable – board funding dummy equal to 1 if board is self-funded, zero otherwise. (Significance levels in parentheses.)

Independent variable	Coefficient (significance level)
Constant	–.24 (.84)
State government size: state government expenditures as a percent of state personal income	2.06 (.33)
Full-time legislature dummy (equal to one if legislature meets full-time, zero otherwise)	–.65 (.01)***
Population	.73E–07 (.13)
State medical society membership as a percent of total physicians in the state	.30E–02 (.62)
Median household income	.–.54E–04 (.22)
Population living in poverty as a percent of total state population	–.13E–04 (.50)
Population over sixty-five years of age as a percent of total state population	.10 (.02)**
Population with four or more years of college education as a percent of total state population	–.52E–02 (.82)
Population living in metropolitan areas as a percent of total state population	–.77E–03 (.86)
Western states dummy (= 1 if state is a western state, 0 otherwise)	.44 (.04)**
Southern states dummy (= 1 if state is a southern state, 0 otherwise)	–.05 (.81)
Northeastern states dummy (= 1 if state is a northeastern state, 0 otherwise)	.38E–01 (.87)
Adjusted R-squared	.33

Fifty observations. Significance levels in parentheses; ***significant at the one percent level, **significant at the five percent level, *significant at the ten percent level.

legislature would be expected to be more actively involved and, therefore, more likely to retain power over the appropriations to an agency than would a part-time legislature.

The board funding equation in Table 3 is estimated using a linear probability model rather than Probit (and includes all exogenous variables in Equation 3). This assures that the estimated value of the board funding variable will be orthogonal to the disturbance terms in Equation 3.

As is shown in Table 3, boards are most likely to operate without legislative budgetary oversight in states where the legislature meets part-time, in large states, where many senior citizens live (per capita), where poverty is relatively high, and in the western states. This equation explains thirty-seven

102

percent of the cross-state variation in board funding arrangments. The predicted value of the board funding variable is significant at the twelve percent level when included in the physician-population equation (Table 2, Equation 3). The instrumented measure of board funding continues to suggest that there are fewer physicians per capita in states where boards operate independent of legislative budget oversight. Again, this may reflect an association between board funding autonomy and the ability of physicians to influence the medical regulatory outcome.[6]

5. Concluding comments

This paper provides a test of the hypothesis that agency funding autonomy increases the extent to which special interests shape regulatory policy. Comparing the outcome in states with autonomously structured medical boards to that where boards operate under legislative budgetary authority, we find that legislative oversight does matter. In particular, the ability of physicians to restrict entry is enhanced where licensing boards are self-financed rather than tied to legislative appropriations.

The findings of this paper are particularly important given the current public policy debate over the institutional design for the provision of health care. Board funding arrangements were mentioned explicitly in recent testimony before the House Ways and Means Committee Subcommittee on Health by James Winn, Executive Vice President of the Federation of State Medical Boards of the United States (Winn 1994). Dr. Winn expressed the concern that some state medical boards are hampered in their ability to use the funds they generate because the money is rolled into the general budget of the state. In his statement, Dr. Winn calls for federal legislation to make it difficult for state legislatures to limit board funding. Our findings suggest that federal legislation to increase state board autonomy could affect regulatory outcomes in unintended ways.

Appendix

Data sources

Board funding dummy (1 = self funded, 0 = legislative appropriation):
The Exchange: Section 3, Physician Licensing Boards and Physician Discipline, published by the Federation of State Medical Boards of the United States, 1989–90 edition, 1989 data.

Total physicians/population:
Physician Characteristics and Distribution in the United States, 1992, published by the American Medical Association, Department of Physician Data Services, January 1, 1990 data.
Population below

Median income of households:
"Money Income of Household, Families, and Persons in the United States." in U.S. Bureau of Census, Current Population Reports, Series P–60, No. 174, U.S. Government Printing Office, 1991, 1990 data.

Population over sixty-five years of age:
U.S. Bureau of the Census, U.S. Department of Commerce, "General Population Characteristics" Series 1990 (P–1–1), 1990 data.

Population:
Statistical Abstract of the United States, U.S. Bureau of the Census, 1993, p. 34, 1990 data.

State medical society membership market share:
American Medical Association, Division of Membership, Department of Membership Information Services, Chicago, Illinois, 1990 data.

Full-time legislature dummy (1 = full-time legislature, = 0 part-time legislature):
The Book of the States 1990–91, Vol. 28, Lexington, KY, pp. 108–192 in "The State Legislature" by Rich Jones, 1989 data.

Total state government expenditures/personal income:
Total state government expenditures: *Book of the States*, The Council of State Governments, 1992–93 Edition, p. 373, 1990 data. Personal income: *Statistical Abstract of the United States, 1992*, 1990 data.

104

Percent of population completing at least four years of college:
Digest of Education Statistics, 1992, U.S. Department of Education, National Center for Education Statistics, p. 21, March 1990 data.

Metropolitan area population/total population:
Statistical Abstract of the United States, U.S. Bureau of the Census, 1993, p. 29, 1990 data.

Percent of population living in poverty:
Current Population Reports, Series P–60, No. 175, U.S. Bureau of the Census, 1991, 1990 data.

Employment-population ratio:
Statistical Abstract of the United States, U.S. Bureau of the Census, 1992, p. xviii, 1992 data.

Regional dummy variables:
Statistical Abstract of the United States, U.S. Bureau of the Census, 1993.

Appendix Table 1. Mean values and standard deviations of variables

Variable	Mean	Standard deviation
Physician-population ratio	.22	.052
Board fund dummy	.62	.49
Population	4,962,100	5,459,800
Median household income	16,580	2,492
Percent of population living in poverty	13.1	4.2
State government expenditures as a percent of personal income	13.8	4.6
Full-time legislature dummy	.16	.37
State medical society membership as a percent of total physicians in state	53.9	12.7
Percent of population with four or more years of college	20.7	4.1
Percent of population living in metropolitan areas	64.1	21.9
Percent of population over sixty-five years of age	12.4	2.1
Percent of population employed	62.7	4.2

Notes

1. For sources of data on funding arrangements and other variables to be discussed later, see the appendix.
2. The notion of vote-maximization as a constraint on elected officials stems from early works in political economy by Stigler (1971), Peltzman (1976), and Becker (1983). These works implicitly assumed that the institutional arrangements were relatively unimportant to policy outcomes; i.e., the vote-maximization constraint was viewed as sufficiently binding to override institutional considerations.
3. Works by Moe (1984, 1987) exemplify the new institutional approach.
4. This is a classic regulatory argument tested first by Stigler (1971). With respect to the market for physician services, see Kessel (1958, 1970) and Svorny (1987).
5. The board funding variable remains significant when other variables are added to the equations. (We added state birthrates, population density, the change in the population from 1980 to 1990, the infant mortality rate, the percent of the population that recently emigrated to the United States, the percent of families with a single parent, the percent of the population employed in manufacturing, the percent of the population receiving social security, and measures of HMO presence – the percent of group practice revenues from HMOs or the percent of the population enrolled in HMOs). Other measures of the institutional setting (length of term of board members and the composition of the board - public vs. physician) appear to be unimportant.
6. Without the regional dummy variables, the adjusted R^2 in the board funding equation (Table 3) falls by approximately twenty-five percent and the predicted board fund variable is significant in Equation 3 at the eighteen percent level. With the regional dummies, but excluding the measure of median household income, the predicted board fund variable is significant in Equation 3 at the nine percent level.

References

Bidese, C.M. (1990). *U.S. Medical Licensure Statistics and Current Licensure Requirements*. Chicago: American Medical Association.

The Federation of State Medical Boards of the United States (1989). *The Exchange: Section 3, Physician Licensing Boards and Physician Discipline, 1989–90*. Fort Worth, Texas.

The Federation of State Medical Boards of the United States (1991). *The Exchange: Section 1, FLEX and M.D. Licensing Requirements, 1992–93*. Fort Worth, Texas.

Kessel, R.A. (1958). Price discrimination in medicine. *Journal of Law and Economics* October: 20–53.

Kessel, R.A. (1970). The A.M.A. and the supply of physicians. *Law and Contemporary Problems* Spring: 267–83.

Long, E. (1975). *The Geographic Distribution of Physicians in the United States*. Minneapolis: InterStudy.

Moe, T.M. (1987). An assessment of the positive theory of 'congressional dominance'. *Legislative Studies Quarterly* November: 475–520.

Moe, T.M. (1984). The new economics of organization. *American Journal of Political Science* 28(4): 739–777.

Stigler, G.J. (1971). The theory of economic regulation. *The Bell Journal of Economics* Spring: 3–21.

Svorny, S. (1987). Physician licensure: A new approach to examining the role of professional interests. *Economic Inquiry* 25 July: 497–509.

Toma, E. Froedge. (1983). Institutional structures, regulation, and producer gains in the education industry. *Journal of Law and Economics* 27(1): 103–116.

Toma, E. Froedge. (1991). Congressional influence and the supreme court: The budget as a signaling device. *The Journal of Legal Studies* 20(1): 131–146.

Weingast, B.R. (1984). The congressional-bureaucratic system: A principal-agent perspective. *Public Choice* 44(1): 147–192.

Weingast, B.R. and Moran, M.J. (1983). Bureaucratic discretion or congressional control? Regulatory policymaking by the Federal Trade Commission. *Journal of Political Economy* 91(5): 765–800.

Winn, J.R. (1994). Statement of the Federation of State Medical Boards of the United States, Inc. to The Subcommittee on Health, Committee on Ways and Means, United States House of Representatives. February 1.