

The Impact of Potential Labor Supply on Licensing Exam Difficulty in the US Market for Lawyers

Mario Pagliero
Università di Torino and Collegio Carlo Alberto

Amsterdam, 16 March 2007

Professional Licensing

- Entry in a large number of professions requires permission of state licensing boards. It is illegal for anyone without a license to perform the task.
- To different degrees, lawyers, accountants, auditors, teachers, nurses, engineers, psychologists, physicians, barbers, hairdressers are licensed professions in the US.
- More than 800 occupations are licensed in at least one state;
- More than 18% of US workers directly affected (Kleiner 2000).
- State licensing boards select candidates mainly through examinations (e.g. the **bar exam**).

There are two main views of licensing

1. Classic view: the objective of licensing requirements is
 - “to restrain the competition to a much smaller number than might otherwise be disposed to enter into the trade”, Adam Smith (1776, I.x.c.5).
 - allow practitioners to capture monopoly rents (Friedman and Kuznets 1945, Friedman 1962, Stigler’s capture theory 1971).
2. Public interest view: In the presence of asymmetric information, licensing may be socially beneficial (Leland 1979, Akerlof 1970).
 - Regardless of the approach, licensing boards should **adjust entry requirements** in response to changes in **the number and quality of individuals attempting to enter the profession (potential labor supply)**.
 - This paper **measures the impact of potential labor supply on the difficulty** of the bar exam and **discusses some implications**

Why a link between potential labor supply and licensing stringency?

- **Classic view:**

1. the optimal number of lawyers is a function of the demand for professional services.
2. Holding entry requirements constant, exogenous increases in the number and quality of candidates (potential supply) would result in more entrants than desired.
3. Therefore, licensing boards raise entry requirements to offset such increase.

- **Public interest view:**

1. consumers do not observe the quality of professionals (but licensing boards do) and infer the quality of professionals from the minimum standard.
2. boards set standards by weighting the marginal benefit from higher minimum standards and the loss from the decreased number of professionals admitted. Licensing boards face a trade-off between admitting more candidates and admitting better candidates.
3. The number of candidates and their quality distribution (potential supply) determine this trade-off.
4. Exogenous changes in potential supply modify this trade-off and therefore affect the boards' decisions.

Why the US market for lawyers?

- Accurate data is available on exam difficulty, average candidate ability, number of candidates and pass rates for each exam.

Bar Exam score = MBE score (standardized test) + essay test (scaled) score.

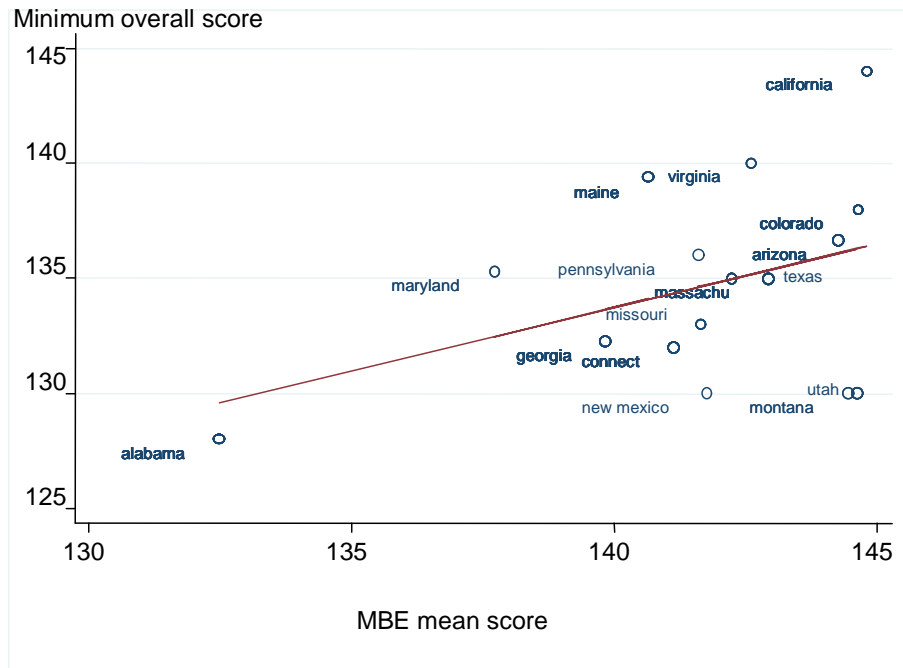
1. Difficulty: state licensing boards set (observable) minimum bar exam scores.
2. Ability: Average MBE scores.
3. The structure of the bar examination is the same for the states and years in my sample, but the exam difficulty, number and quality of candidates vary significantly.
4. There are instruments that can be used to isolate the impact of changes in the quality and number of candidates.

Minimum quality standards

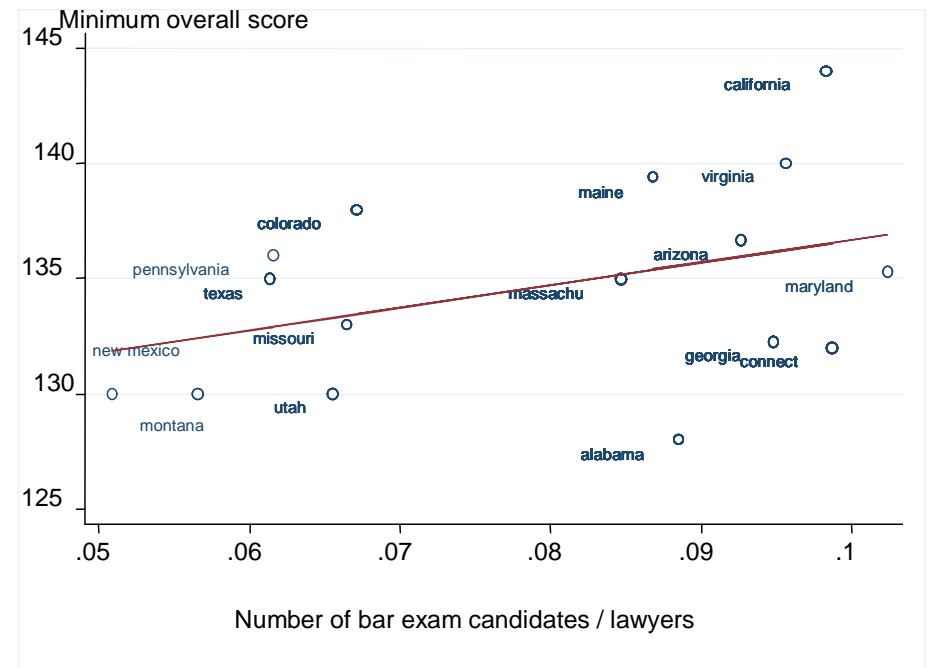
State	Starting Date of Comparable Standards	Observed Changes	Date of Change	Minimum Quality Standard in 2003
	(1)	(2)	(3)	(4)
Alabama	1990	-	-	128
Montana	1999	-	-	130
New Mexico	1984	3, -3	1990, 1996	130
...
Virginia	1998	-	-	140
California	1984	4	1990	144
Delaware	2000	-	-	145

Anecdotal Evidence

Bar exam difficulty and candidate quality

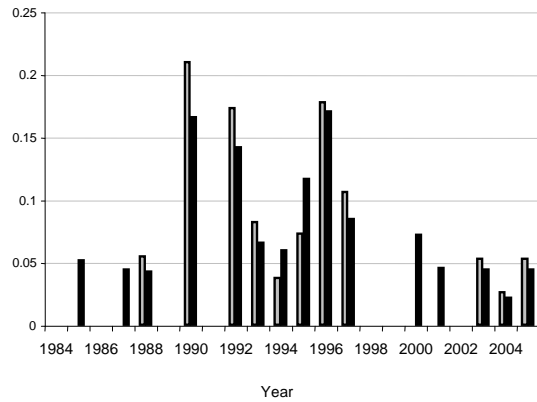


Bar exam difficulty and number of candidates

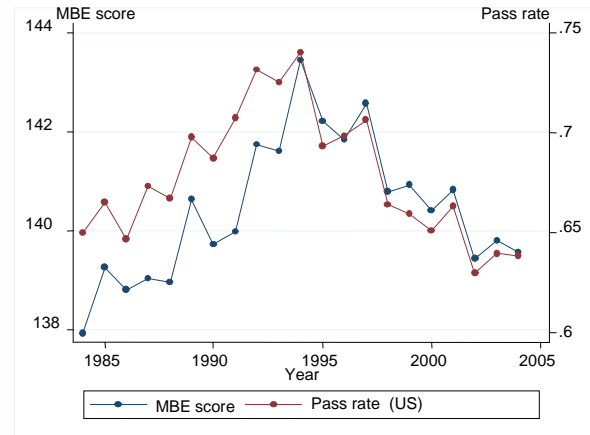


Anecdotal Evidence II

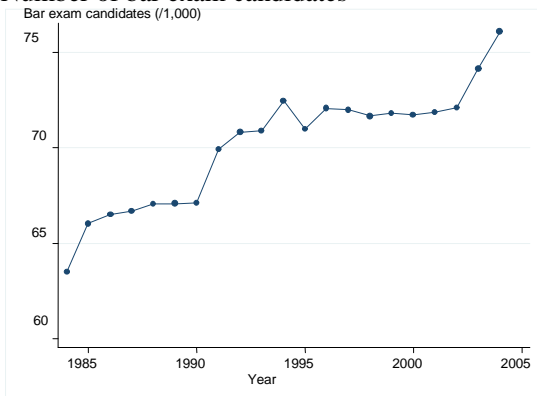
Frequency of standard changes



Average MBE score and average pass rate



Number of bar exam candidates



Note: The figure reports the total number of candidates (/1,000) taking the bar examination in the US by year.

Empirical Specification

I estimate regressions of the general form

$$D_{i,t} = b_0 + q_{i,t-1}b_1 + N_{i,t-1}b_2 + X_{i,t-1}b_3 + \lambda_t + \delta_i + u_{i,t} \quad (1)$$

where $D_{i,t}$ is the exam difficulty in state i and year t ;

$q_{i,t}$ is the average quality of candidates, as measured by the average MBE score;

$N_{i,t}$ is the number of candidates divided by the number of lawyers in the state;

$X_{i,t}$ is a matrix of exogenous variables affecting demand for legal services;

λ_t and δ_i are state and year fixed effects, and $u_{i,t}$ is the idiosyncratic error term.

Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
Minimum standard (<i>D</i>)	135.3	4.4	128.0	144.0
Bar exam candidates per lawyer, %, (<i>N</i>)	8	2	4	15
MBE mean score (<i>q</i>)	141.5	3.7	128.9	147.0
Bar exam candidates	2308	2902	136	12131
Bar exam successful candidates	1487	1525	94.0	6877
Bar exam pass rate	0.7	0.09	0.47	0.92
Population (state mean =1)	1.03	0.06	0.87	1.23
Real gross state product per capita (/1,000)	29.6	5.4	20.5	44.6
Educational attainment	24.6	5.8	10.1	38.7
Fraction of migrant population	3.6	1.4	1.5	6.8

The impact of number and quality of candidates on exam difficulty

(Ordinary Least Squares)

	(1)	(2)	(3)
MBE mean score ($q_{i,t-1}$)	0.780 (0.189)***	0.855 (0.201)***	0.353 (0.097)***
Bar exam candidates per lawyer ($N_{i,t-1}$)	0.460 (0.485)	0.583 (0.413)	-0.070 (0.069)
Population		-11.687 (11.374)	1.853 (1.519)
Real gross state product per capita		-0.103 (0.173)	-0.071 (0.049)
Year fixed effects?	Yes	Yes	Yes
State fixed effects?	No	No	Yes
Observations	122	122	122
R-squared	0.42	0.44	0.38

Endogeneity

- Higher exam difficulty may provide incentives to students to study more \Rightarrow higher quality.
- Higher difficulty may induce low quality students not to apply for admission or to apply in a different state \Rightarrow higher quality and less candidates.

Instrumental Variables

- SAT verbal and math scores (lagged 8 years): measure of the quality of the cohort of students leaving high school and applying to college.
- The number of SAT candidates (lagged 8 years): measure of the size of the cohort.

The impact of number and quality of candidates on exam difficulty (IV)

	(1) IV	(2) IV	(3) IV
MBE mean score ($q_{i,t-1}$)	1.470 (0.760)*	1.198 (0.525)**	1.011 (0.352)***
Bar exam candidates per lawyer ($N_{i,t-1}$)	0.874 (0.393)**	0.877 (0.371)**	0.903 (0.345)***
Population	-13.198 (7.893)*	-11.916 (6.795)*	-11.499 (6.274)*
Real gross state product per capita	0.227 (0.148)	0.256 (0.170)	0.052 (0.160)
Educational attainment			0.131 (0.081)
Fraction of migrant population			0.338 (0.654)
Year fixed effects?	Yes	Yes	Yes
State fixed effects?	No	Yes	Yes
Observations	122	122	122

Testing the alternative views of licensing

- **According to the classic theory:**

1. *Prediction 1:* An increase in number and/or quality of candidates leads to an increase in exam difficulty: $\frac{dD}{dq} > 0$ and $\frac{dD}{dN} > 0$.

2. *Prediction 2:* The magnitude of the impact of changes in potential supply is such that the number of successful candidates is unaffected: $\frac{dD}{dq} = 1$ and $\frac{dD}{dN} = \frac{1-F(D-q)}{Nf(D-q)} = \frac{0.7}{7 \times 0.03} = 3$.

Prediction 2 requires testing whether dD/dN is equal to the ratio of the pass rate and the number of marginal candidates.

- **Public interest view:**

1. *Prediction 1* may also hold.

2. *Prediction 2* does not: changes in exam difficulty cannot exactly offset changes in quality and number of candidates. The regulator values both higher standards and higher availability of legal services (Leland, Leffler).

Derivation of Prediction 2

- N bar exam candidates; the exam score is s , with mean q ; the minimum threshold is $D(q, N)$.
- $F(s - q)$ is the score distribution, continuous and scale invariant ($dF/ds = -dF/dq$, which holds in the data).
- The number of candidates passing the exam is P , $P = [1 - F(D - q)]N$.
- Prediction 2 (part 1) states that $dP/dq = 0 \Rightarrow dD/dq = 1$.
- Prediction 2 (part 2) states that $dP/dN = 0 \Rightarrow$

$$\Rightarrow \frac{dP}{dN} = [1 - F(D - q)] - Nf(D - q)\frac{dD}{dN} = 0 \text{ and therefore } \frac{dD}{dN} = \frac{1 - F(D - q)}{Nf(D - q)}.$$

Empirical evidence (main results)

- *Prediction 1*: cannot be rejected by the data.
- *Prediction 2*:
 - *Part 1*: The restriction $b_1 = 1$ is not rejected by the data. Changes in quality are matched one to one by increases in difficulty.

Public interest view of licensing cannot explain this result, as the marginal social gain from higher minimum standards decreases as standards increase (Leffler 1978; Appendix 1).
 - *Part 2*: $b_2 = 0.9$, with a 95% confidence interval (0.2, 1.5).

Approximately 35% of the increase in the number of successful candidates due to an increase in the number of candidates is canceled by the increase in exam difficulty.

The effect of licensing on diversity

Licensing affects how **groups with different average ability** are represented within the legal profession.

- If the number of candidates increases at the same rate in two groups (e.g. more school availability), the group with lower average performance will become less represented among the successful candidates.

Example: Texas Bar Exam, July 2004.

	Black	White	Ratio
Average MBE score	134	143.4	
Pass rate	0.45	0.81	56%

A $\Delta N = 5\%$ implies $\Delta D = 4.5$ on the MBE scale.

	Black	White	Ratio
New pass rate	0.26	0.66	39%

(assuming normal score distributions consistent with observed exam difficulty, mean MBE score and pass rate)

Other implications

- If the quality of all candidates increases (e.g. **increase in quality of education**) diversity within the profession will not increase.
- If the number of candidates from a low quality group increases (e.g. **affirmative action**) the effect on minimum standards and diversity is ambiguous. Diversity will not necessarily increase.
- Candidates applying for admission generate a **negative externality** on other candidates. The same applies to candidates taking a review course to increase exam performance
- There may be inefficient overinvestment in exam specific skills (bar review courses).

Conclusions

- Professional licensing is one of the most important labor market institutions today, yet the actual behavior of licensing boards is rarely examined.
- According to the existing literature, licensing boards should respond to changes in potential labor supply.
- This paper provides the first systematic evidence on this link.
- Increases in quality and number of candidates significantly increase exam difficulty. The magnitude is large.
- The evidence is largely (but not fully) consistent with the classic theory of licensing. The complete off setting of changes in quality is difficult to reconcile with public interest theory.
- The results suggest that professional markets are largely sheltered from the impact of policies increasing potential supply. Licensing regulation affects diversity within the profession.