Licensing Exam Difficulty and Entry Salaries in the US Market for Lawyers

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Abstract

This paper provides evidence of a correlation between licensing exam difficulty and salaries in a regulated profession. Exam difficulty is positively correlated with salaries across states and over time, both at the aggregate and individual state levels. The magnitude of this correlation is substantial: a one percent increase in exam difficulty implies a 1.7 percent increase in median entry-level salaries.

JEL: L4, L5, J4, K2.

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1 Introduction

Entry into many professions requires that applicants obtain approval from state licensing boards and demonstrate a certain level of competence. Such professions include lawyers, accountants, auditors, teachers, nurses, engineers, psychologists, barbers and hairdressers. According to Kleiner (2000), more than 800 occupations are licensed in at least one US state. Professional licensing directly affects 29 percent of US workers, more than those affected by either minimum wage or unionization. The main requirement to enter a regulated profession is usually that of passing a licensing examination.

This paper explores the link between licensing exam difficulty and entry-level salaries. While the existence of such a relationship is generally accepted in the literature, there is no direct evidence as to whether greater licensing exam difficulty affects entry salaries. Establishing such an effect is not an easy task. While licensing boards can and do adjust exam difficulty, their behavior is not generally observable to the researcher. The bar exam, instead, lends itself particularly well to the task. Therefore, the focus chosen for the present study was the US market for lawyers. Detailed analysis of the grading procedures and structure of the bar exam reveals that, while its structure went unchanged in the states and over the years considered, the difficulty of the exam varied considerably. In fact, accurate data is available on exam difficulty and reveals large discrepancies in exam difficulty across states and over time. Just to cite one example: if Alabama were to adopt the standard required in California, the pass rate would drop from 79% to 39%, even if candidate ability were held constant.¹

Several empirical observations suggest a correlation between exam difficulty and entry salaries in the legal profession. First, states with more difficult exams tend to have higher salaries. Second, the average exam difficulty significantly increased during the 1990s, as did salaries. Third, within states, increases in exam difficulty correlate significantly with increases in salaries, and the data suggest that the impact of increases in exam difficulty

¹I use for comparison a normal distribution, with a mean equal to the mean MBE score and the variance equal to the mean variance in the US over the period 1981-2003. The grading procedures for the exam are described in Section 2.

on salaries can be sizeable. A one percent increase in difficulty implies an increase in salaries of around 1.7 percent. I also study how changes in exam difficulty affect the 25th and the 75th percentiles of the salary distribution. While there is some weak evidence that difficulty has a positive impact on the tails of salary distribution, the median salary seems to be more responsive to changes in difficulty than the two quartiles, suggesting a possible compression of salary distribution for relatively high salaries. I find no evidence that increases in difficulty reduce the interquartile difference of salary distribution.

Related literature

Although the stringency of entry requirements is the key variable determined by licensing boards, there is surprisingly little empirical research on the impact of variations in exam difficulty. In one of the early contributions to the literature on licensing, Maurizi (1974) used pass rates as a measure of licensing requirements, but did not take into consideration that pass rates depend on candidate ability as well as on exam difficulty. Leffler (1978) attempts to overcome this problem by developing a proxy for licensing difficulty in the market for physicians, although he does not relate it to salaries in the profession. Since candidates can take either a state or a national examination, the percent of candidates choosing the state exam is used to develop a proxy for state exam difficulty. While this is a significant step forward in measuring the stringency of entry requirements, the indirect procedure makes the proxy very imprecise.

A related stream of literature has focused on the impact of licensing on wages and on the quality of professional services (Shepard 1978, HaasWilson 1986, Kleiner and Kudrle 2000, Kugler and Sauer 2005), but there is no direct evidence concerning the impact of exam difficulty on salaries. Existing studies compare licensed and non-licensed professions, or a single profession before and after a change in licensing regulation, or across states with different types of regulation. This paper takes a different tack, describing the impact of changes in exam difficulty on salaries while holding the overall regulatory framework constant.

2 Brief overview of the bar exam and the data

The structure of the bar exam is the same in almost all states and has remained stable over the past two decades. The exam is administered twice a year, in February and July.² The bar exam consists of the Multistate Bar Examination (henceforth MBE), a standardized test, and essay and case questions. Since 1981, all but two states (Louisiana and Washington) have used the MBE as part of the bar examination. The MBE contains 200 multiple choice questions developed by the National Conference of Bar Examiners, who are also responsible for correcting this component of the exam. Using the results of a small sample of questions, which are repeated in different examinations over time and across states, scores are scaled so that any single MBE score represents a standard level of performance, no matter when or where the exam is taken. MBE mean scores are a cardinal measure of the quality of bar exam candidates, and results can therefore be compared across states and years.³

Essay and case questions are set by state boards and graded at the state level, according to criteria set by each board.⁴ In this case, a particular score does not necessarily correspond to a standard level of performance across states and years. However, most states have also introduced essay score scaling. The most common scaling procedure is mean and variance scaling. Mean and variance scaling requires that each essay score be transformed so that the mean and variance of the distribution of scaled essay scores is equal to the mean and variance of the standardized test scores. Consequently, the scaled essay scores are not affected by exam-specific unobserved differences in exam difficulty or in the severity of grading procedures (Crocker and Algina 1986, Linn 1993).⁵ The

²Exceptions are Delaware, Nevada and North Dakota, where the bar exam is held just once a year.

³A more detailed description of the MBE can be found at <http://www.ncbex.org>. A similar standardized test is the Graduate Record Examination (GRE), often used in the admission process for graduate courses.

⁴Some states have recently started to use essay and case questions developed by the National Conference of Bar Examiners (known as the Multistate Essay Examination and Multistate Professional Test). When this is the case, the Conference provides state boards with possible exam questions and some analysis of the issues involved in each question in order to facilitate grading. Even when using this service, state boards grade the answers independently, using locally-set standards.

⁵An alternative scaling procedure is quantile by quantile equating. The results of the two techniques are not necessarily identical, but differences are empirically small (see Lenel 1992).

overall scores (the weighted average of the standardized test and essay test score) thus share the same metric across states and years, and can be compared. Since the pass-fail decision is based on overall scores, the observed minimum quality standards for each state share a common metric and provide a simple measure for exam difficulty. (In the rest of the paper, I will refer to the overall minimum quality standard as exam difficulty, or the minimum standard).⁶

Data on minimum standards is available from either 1984 or from the introduction of comparable standards (reported in Table 1, Column 1), whichever is later, to 2005. Table 1, Column 2 reports any changes in the minimum quality standards, while Column 3 reports the corresponding date of each change. Column 4 reports the minimum quality standard in the last year of the sample. With this information, the table has all of the data necessary for reconstructing the time series of the minimum standard in each state. Standards differ significantly across both states and years.⁷ Minimum quality standard data is matched with data on entry-level salaries in law firms. The National Association for Law Placement surveys law school graduates yearly and collects data on the quartiles of the distribution of entry salaries.⁸

3 Empirical results

Figure 1 reports the exam difficulty and entry salary for observations in the sample. The slope of the fitted line is 1.1, corresponding to a \$1,100 increase in salary for an increase

⁶The weights given to the two exam components may vary across states. Empirically, the weight given to the standardized test varies between 50 percent and 65 percent. For realistic distribution of scores and standards, however, these differences do not affect the comparability of minimum standards.

⁷The main source of standard and grading procedure data is The Comprehensive Guide to Bar Admission Requirements, published annually by the American Bar Association and the National Conference of Bar Examiners. This source is complemented by information from various issues of The Bar Examiner, published by the National Conference of Bar Examiners (NCBEX). When standards are comparable, but not expressed on a 0-200 point basis, the standards have been converted to a 0-200 basis to increase the consistency of Table 1. In the Comprehensive Guide there is some uncertainty as to when some standards changed. Wherever possible, additional sources have been used to pinpoint the exact date of change. In the few cases where no such data was available, the earliest date compatible with the information in the Comprehensive Guide was used.

⁸The data is published annually in Jobs & J.D.'s: Employment and Salaries of New Law Graduates, National Association for Law Placement. Data for the classes from 2000 to 2003 show that virtually all jobs in law firms require passing the bar examination.

of one in bar exam difficulty (measured on the MBE scale). Figure 1 also reports the average exam difficulty and salary by state. States with more difficult exams tend to have higher salaries. California and Delaware, for example, have relatively high salaries and difficult exams, while Alabama and South Dakota, at the other extreme, have relatively low salaries and easy examinations. The evidence presented in Figure 1 is consistent with a positive impact of exam difficulty on salaries, but could also be explained by the existence of state specific characteristics affecting both exam difficulty and average salary. This motivates the regression approach used in the next section.

The second half of the 1990s saw a general increase in both exam difficulty and entry salaries (Figure 2). This apparent correlation may be spurious because of the existence of an underlying trend in entry-level salaries, which happen to rise along with the exam difficulty. The next section controls for unobserved heterogeneity at the state level and for possible state-specific time trends.

3.1 Regression analysis

I estimate regressions of the general form

$$W_{i,t} = \beta D_{i,t} + g_i(t) + u_{i,t} \quad (1)$$

where $W_{i,t}$ is the median entry salary in state i and year t ; $D_{i,t}$ is the exam difficulty; $g_i(t)$ is a continuous state-specific function of time t , measured in years; $u_{i,t}$ is the idiosyncratic error term, which is allowed to be heteroscedastic and autocorrelated across observations within a state. The identification strategy is based on the assumption that any unobserved variable correlated with both exam difficulty and entry salaries varies smoothly over time, so that it is captured by the continuous function $g_i(t)$. For example, changes in demand for legal services, or the stock of licensed lawyers within a state, are likely to follow long-term trends, and may thus be reasonably captured by $g_i(t)$. Changes in exam difficulty are discrete, and the exact dates of the changes in standard are known. So the parameter β is identified because of the discontinuities in exam difficulty (the regression discontinuity

approach goes back to Thistlethwaite and Campbell 1960, and Campbell 1969). Since the determinants of the difficulty of the bar examination are not well understood, it is difficult to judge whether this assumption holds in practice. However, changes in standards are infrequent, so the relevant omitted variables are more likely to be long-term trends in demographics or market characteristics than short-term shocks. In any case, the estimated parameter β is still pertinent as a descriptive result of the correlation between exam difficulty and entry salaries.

Table 3 reports OLS estimates of model (1) with alternative specifications for $g_i(t)$. In column 1, the function $g_i(t)$ is a constant, so the coefficient β captures the overall correlation between exam difficulty and salaries in the sample. The impact of exam difficulty in column 1 is simply the slope of the fitted line in Figure 1. In column 2, $g_i(t) = k_i$, so that the coefficient β captures the within-state correlation between exam difficulty and salaries.⁹ In column 3, $g_i(t) = k_{1i} + k_{2i}t$, so that the coefficient β captures the within-state correlation between exam difficulty and salaries, after controlling for a linear, state-specific trend. Finally, in column 4, $g_i(t) = k_{1i} + k_{2i}t + k_{3i}t^2$, so that salaries are allowed to follow a quadratic, state-specific trend.

The impact of exam difficulty is positive and significantly different from zero at conventional levels in all specifications (the standard errors are clustered by state). In spite of the significant heterogeneity across states, there are no statistical differences between the pooled estimator in column 1 and the other estimates in columns 2-4. The magnitude of the impact of exam difficulty is sizeable. An increase of one on the MBE scale implies a \$1,000 increase in entry salaries. In relative terms, a one percent increase in difficulty implies an increase in salaries of around 1.7 percent.¹⁰

⁹The number of observations is smaller because I use only data for states in which at least one change in standards occur within the sample period.

¹⁰The results are not significantly affected if lags of exam difficulty are also included to capture possible lagged effects.

4 The impact of exam difficulty on the variability of salaries

I estimate model (1) replacing the median salary with the 25th and 75th percentiles of the entry-level salary distribution. The results are reported in Tables 4 and 5. The specification used in each column is the same as that used in the corresponding column in Table 3. In Tables 4 and 5, columns 1 and 2, the impact of exam difficulty is positive and significant, suggesting a positive correlation both in the pooled sample and within-states. The magnitude of the impact on the 75th percentile is similar to that on the median, while the impact on the 25th percentile is significantly lower. After controlling for linear and quadratic trends in columns 3 and 4, the impact of difficulty is still positive but substantially smaller, significantly different from zero for the 25th percentile, but not for the 75th. Overall, there is some weak evidence of a positive impact of difficulty on the tails of the salary distribution.

In Table 5, the dependent variable is the interquartile difference in salaries. There is no sign of a decrease in interquartile variability in salaries as exam difficulty increases. If anything, the results in column 2 suggest a possible slight increase in the interquartile difference. The results in Tables 3 and 5, however, suggest that the median and 75th percentile get closer as a result of increased exam difficulty.

What leads to the positive impact of exam difficulty on salaries?

Bar exam difficulty can affect salaries in the legal market in two ways. First, if the pool of exam candidates is held constant, higher standards imply that the number of successful candidates will decrease, because fewer candidates will meet the higher standard. Assuming that there is a downward sloping demand for entry-level lawyers, this implies that entry salaries will increase (this is the quantity effect of higher standards). Second, higher standards imply that the minimum -and the median- bar exam score of successful candidates is higher. If bar exam scores are correlated with the quality of entry-level lawyers as perceived by the market, then higher scores imply higher salaries (this is the quality effect of higher standards). These two mechanisms promote salary increases, so the observed impact of exam difficulty on salaries is not informative of the

potential underlying mechanism causing exam difficulty to affect salaries.

However, the quality mechanism has another implication. Since candidates with the highest bar exam performances are not affected by increases in difficulty (they pass no matter what the minimum score is), increases in exam difficulty imply decreases in the variability of successful candidates' bar exam scores. If bar exam scores are correlated with the quality of entry-level lawyers as perceived by the market, then relatively low salaries should increase more than relatively high salaries. The evidence in Table 5 casts some doubts on the empirical relevance of the quality effect. The impact on the 25th percentile is lower than the impact on the median, and is not significantly different from that on the 75th percentile. Increases in difficulty may be associated with some compression of the salary distribution, but this does not seem to be driven by increases in relatively low salaries. It may simply be that exam scores are weakly correlated with quality, as perceived by employers. In fact, whether the bar exam actually increases the quality of lawyers is a topic of debate (see, for example, the Society of American Law Teachers 2002).

5 Conclusions

Professional licensing is one of the most important labor market institutions today, yet the actual behavior of licensing boards is rarely taken into exam owing to the lack of data and the complexity of the licensing requirements. This paper is the first attempt to study the link between exam difficulty and salaries in a regulated profession. The existence of such a relationship has a number of potentially important implications. First, even if the overall regulation of the profession is unchanged, licensing boards may significantly affect labor market outcomes by changing exam difficulty. Second, from a policy perspective, this paper suggests that the available data may be used to provide an estimate of the impact of proposed changes in exam difficulty on salaries. It is somewhat surprising that public discussion of this important issue rarely takes place before changes are made in licensing exam difficulty.

One issue that is not addressed in this paper is the possible impact of exam difficulty on the number and quality of bar exam candidates. In principle, higher standards may cause students to study more, thus increasing the quality of exam candidates. Second, higher standards may cause some candidates to migrate towards other states with easier exams, thus leading to a further reduction in the number of successful candidates. These two effects may reinforce the positive impact of exam difficulty on salaries, and may partly explain the estimated impact of exam difficulty on salaries.

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Figure 1. Exam Difficulty and Entry Salaries.

Figure 2. Changes in Average Exam Difficulty and Entry Salary

Note: the figure reports the simple average of bar exam difficulty, and median entry salary for each year, for states in which at least one change in standards is observed.

Table 1. Bar exam difficulty

State	Starting Date of Comparable Standards	Observed Changes in bar exam difficulty	Date of Change	Bar exam difficulty in 2005 (0-200)
	(1)	(2)	(3)	(4)
Alabama	1990	-	-	128
Minnesota	1984	-	-	130
Missouri	1984	5, -3	1996, 2005	130
Montana	1999	-	-	130
New Mexico	1984	3, -3	1990, 96	130
North Dakota	1986	-	-	130
South Dakota	1989	-	-	130
Utah	1991	-	-	130
Connecticut	1984	-	-	132
Illinois	2000	-	-	132
Indiana	2001	-	-	132
Mississippi	1995	-	-	132
District of Columbia	1984	-	-	133
Kansas	2000	-	-	133
New Jersey	1992	-2	1993	133
New York	1984	1	July 2005	133
Hawaii	1993	-	-	134
Arkansas	2002	-	-	135
Georgia	1984	5	1997	135
Massachusetts	1984	-	-	135
Nebraska	1996	-	-	135
Ohio	1984	-10, 3.33, 6.67	1992, 96, 97	135
Oklahoma	1984	2, 1, 4, 1	1991, 92, 95, July 97	135
Texas	1994	-	-	135
West Virginia	1994	-	-	135
Maryland	Jul-00	-	-	135.33
Florida	1984	2, 3	July 2003, July 04	136
Pennsylvania	Jul-01	-	-	136
Arizona	1991	-	-	136.67
Colorado	1987	-	-	138
Maine	1984	1, 2, 2, -2	1990, 92, 95, 2003	138
North Carolina	1984	-2.8, 0.8, 0.8, 0.8, 0.8, 1.6	1988, 90, 92, 94, 95, 96	138.4
Alaska	1992	-	-	140
New Hampshire	1984	-	-	140
Virginia	1998	-	-	140
California	1984	4	1990	144
Delaware	2000	-	-	145

NOTE: Bar exam difficulty is the minimum overall score (mean of the MBE score and essay scaled score) required to pass the bar exam (minimum scores are measured on a 0-200 scale) in each state. Data on difficulty is available since either 1984 or the introduction of comparable standards (reported in Column 1), whichever is later, to 2005. Column 2 reports changes in difficulty, while Column 3 reports the corresponding date of each change. Column 4 reports difficulty in 2005. The information in Table 1 allows reconstruction the time series of exam difficulty in each state.

Table 2. Summary statistics

	mean	sd	p10	p50	p90
Median Salary (1996 \$, /1,000)	55.3	19.3	35.8	49.8	85.3
Exam Difficulty	134.1	4.1	130	134	140

Table 3. The impact of exam difficulty on median entry salaries

	(1)	(2)	(3)	(4)
Exam Difficulty	1.093* (0.636)	1.679*** (0.501)	0.757** (0.310)	0.800*** (0.191)
State f.e.?		Yes	Yes	Yes
State specific trend?			Yes	Yes
State specific quadratic trend?				Yes
Observations	431	149	149	149
R-squared	0.05	0.82	0.92	0.93

Note: The dependent variable is the median entry salary in law firms (/1,000, 1996\$). OLS estimates. A constant is included in all specifications. Robust standard errors in parentheses, clustered by state. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 4. The impact of exam difficulty on the 25th percentile of the distribution of entry salaries

	(1)	(2)	(3)	(4)
Exam Difficulty	0.742* (0.425)	0.745*** (0.194)	0.148 (0.208)	0.332** (0.149)
State f.e.?		Yes	Yes	Yes
State specific trend?			Yes	Yes
State specific quadratic trend?				Yes
Observations	431	149	149	149
R-squared	0.06	0.83	0.91	0.92

Note: The dependent variable is the 25th percentile of the entry salary distribution in law firms (/1,000, 1996\$). OLS estimates. A constant is included in all specifications. Robust standard errors in parentheses, clustered by state. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 5. The impact of exam difficulty on the 75th percentile of the distribution of entry salaries

	(1)	(2)	(3)	(4)
Exam Difficulty	1.125* (0.615)	1.513*** (0.420)	0.053 (0.352)	0.382 (0.270)
State f.e.?		Yes	Yes	Yes
State specific trend?			Yes	Yes
State specific quadratic trend?				Yes
Observations	431	149	149	149
R-squared	0.06	0.79	0.92	0.93

Note: The dependent variable is the 75th percentile of the entry salary distribution in law firms (/1,000, 1996\$). OLS estimates. A constant is included in all specifications. Robust standard errors in parentheses, clustered by state. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 6. The impact of exam difficulty on the interquartile difference of the distribution of entry salaries

	(1)	(2)	(3)	(4)
Exam Difficulty	0.383 (0.389)	0.768*** (0.270)	-0.095 (0.208)	0.050 (0.239)
State f.e.?		Yes	Yes	Yes
State specific trend?			Yes	Yes
State specific quadratic trend?				Yes
Observations	431	149	149	149
R-squared	0.01	0.79	0.90	0.92

Note: The dependent variable is the interquartile difference of the entry salary distribution in law firms (/1,000, 1996\$). OLS estimates. A constant is included in all specifications. Robust standard errors in parentheses, clustered by state. * significant at 10%; ** significant at 5%; *** significant at 1%