Lowering the Bar to Raise the Bar: Licensing Difficulty and Attorney Quality in Japan

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Abstract

Under certain circumstance, a relaxation in occupational licensing standards can increase the quality of those who enter the industry. The effect turns on the opportunity costs of preparing for the licensing examination: making the test easier can increase the quality of those passing if it lowers the opportunity costs enough to increase the number of those willing to go to the trouble of taking the test. We explore the theoretical circumstances under which this can occur and the actual effect of the relaxation of the difficulty of the bar exam in Japan from 1992 to 2011.

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I. Introduction

Scholars typically give two very different accounts of occupational licensing. In some industries, they posit market failure that makes unconstrained consumer choice problematic. Perhaps consumers lack the sophistication or training necessary to identify low-quality sellers. Hospital administrators may correctly gauge the ability of a nurse, for example, but perhaps a disabled elderly patient looking to hire home healthcare cannot. If a patient cannot distinguish the trained from untrained, then perhaps the government can raise social welfare by letting nurses sell their services only if they pass a battery of tests.

In other industries, scholars attribute occupational licensing to an attempt by industry incumbents to cartelize the market and capture monopoly rents. The classic works are Friedman & Kuznets (1945), Friedman (1962), and Stigler (1971). Much fun has been had with the difference between the stated public-interest intent of licensing and the actual institutions. In a 1961 issue of the *Journal of Law & Economics*, for example, Moore sarcastically quoted legislative committee testimony to the effect that "The intent of the tree expert law was primarily to protect the public against tree quacks, shysters and inexperienced persons" (p. 93).

The economics literature understates the importance of licensing. According to Kleiner & Kruger (2010), between Kleiner's 2000 *Journal of Economic Perspectives* survey and the time their 2010 survey was written, no articles on occupational licensing appeared in the *American Economic Review, Journal of Political Economy, Quarterly Journal of Economics,* or *Econometrica*, and only one article each in the *Journal of Labor Economics* and the *Industrial and Labor Relations Review*. Yet in 2000, according to Department of Labor and 2000 Census data, over 20 percent of the labor force worked in state-licensed occupations. In 2012 the Institute of Justice put the number at 33 percent. Kleiner and Kruger write:

> The general estimates of cross-sectional studies using Census data of state licensing's influence on wages with standard labor market controls show a range from 10 to 15 percent for higher wages associated with occupational licensing. Estimates were developed from the National Longitudinal Survey of Youth (NLSY) from 1984 to 2000 and show the difference in wages between changers from unlicensed to licensed occupations and between those who move from a licensed occupation to an unregulated one. The estimates show an impact of about 17 percent of moving to a licensed occupation relative to moving from a licensed occupation to an unlicensed one. However, within-occupation wage variations both for service occupations and for individuals in jobs that repair things suggest a wide range of wage changes from zero to 40 percent of regulation within an occupation.

Over the course of the past decade or so, scholars have studied the licensing of doctors (Broscheid & Teske [2003], Kugler & Sauer [2005]), radiology technicians (Timmons & Thornton [2008]), dentists (Kleiner & Kudrle [2000]), dental hygienists (Wanchek [2010]), teachers (Larsen[2012]), electricians (Kleiner & Park [2011]), mortgage brokers (Kleiner & Todd [2007], Shi [2012]), florists (Carpenter [2012]), manicurists (Federman, Harrington & Krynski [(2006]), cremators (Harrington & Krynski [2002]), barbers (Timmons & Thorton (2010)), and lawyers in America (Pagliero [2010, 2011]) and Italy (Pellizzari & Pica [2011]). Think tanks have found licensing a perennial source of outrage and amusement: e.g., the American Enterprise Institute on tour guides and hair braiders (2011,2012), the Brookings Institution on lawyers (2012), and the Heritage Foundation on plumbers (2008).

Although the think tanks focus on the most egregious licensing laws and scholars vary in the fraction of licensing they attribute to public-interest motives and cartelization, we usually take it for granted that even cartelizing regimes raise the quality of services (Larsen [2012] and Kugler & Sauer [2005] are noteworthy exceptions). Moore's tree-expert law may not raise social welfare. It may transfer wealth from homeowners to gardeners. It may even lower the quality of services consumed, by inducing some customers to hire illegal unlicensed substitutes such as nephews, neighbors, and high-school students. But surely the tree-expert law will raise the quality of tree care sold on the legal market, one would think.

We will show that this intuition can be wrong. Licensing might actually lower the quality of services sold by licensed sellers. The reason is opportunity cost. If prospective sellers must spend substantial time studying for an exam, some will just give up. Some will give up because they know they can't pass. Others, however, will give up because they have better outside opportunities. Because the most talented people have better outside opportunities, they face higher opportunity costs to studying for the occupational license. The license will not just exclude those without the talent to pass it, but those with the talent to look elsewhere.

We will take as our example a natural experiment in turn-of-the-century Japan. Japan's bar exam was fearsome in the fifty years after World War II. For decades, the government imposed a test that only 2 to 3 percent of the test-takers passed. Since 1990 it has gradually expanded the number. The result has not been a clear fall in the quality of new lawyers. Instead, the industry has become an increasingly attractive field for the most talented college graduates.

The study perhaps closest in spirit to ours is Kugler & Sauer (2005). They investigate the large number of physicians who emigrated to Israel after the collapse of the Soviet Union. Under Israeli law, those with extensive clinical experience were exempt from a relicensing requirement, but the number of years required for the exemption changed in 1992 from 20 years to 14. They ask whether the quality of the doctors who pursued re-licensing shifted with the law, and find that it did. Although licensing generated large rents to physicians, they find that disproportionately

the weaker physicians pursued re-licensing—and the more onerous the licensing, the stronger that inverse correlation between physician quality and the tendency to re-license. The key to the phenomenon: physicians need not practice medicine. They can also obtain unlicensed jobs in scientific fields. The more talented the physician, the higher will be the return to those alternate jobs, and—necessarily—the higher the opportunity costs to pursuing relicensing as a physician.

We will start with a model to formalize the intuition that opportunity cost plays an important role in the interaction between exam difficulty and the quality of those passing. We will then explore the case of the Japanese bar, explaining the institutional features before and after the change in bar passage rates and looking at what happened to quality.

II. The Model

Let us use "lawyers" and "students" as our names for the licensed occupation and its prospective members. A population of students has ability type x uniformly distributed over $[0, 1]$. Each student has the option to take a test to become a lawyer at cost $c(x)$ with $c' > 0$ and $c(0) > 0$. He passes the test with probability $p(x)$, where $p' > 0$ and $p(0) = 0$. The value of passing is w. A student's payoff function is thus:

$$\pi(x) = p(x)w - c(x). \tag{1}$$

We will assume that the payoff function is concave: $\pi'' < 0$. This will be true if the benefit function $p(x)w$ is concave and the cost function $c(x)$ is convex.

Our question is what effect the difficulty of the test has on the types of students taking and passing the test.

Those types with $\pi(x) \geq 0$ will take the test. Denote by $\underline{x}$ and $\overline{x}$ the lowest and highest types taking the test. We will only consider cases where $\underline{x} > 0$ and $\overline{x} < 1$, so $\pi(\underline{x}) = 0$ and $\pi(\overline{x}) = 0$. Thus, we are restricting ourselves to situations where the lowest quality and the highest quality of students choose not to take the test.

We will define "the test becomes easier" as that $p(x)$ increases for every x except possibly $x = 0$, the type which originally has zero probability of passing.

We will define "the test becomes equally easier for all types" as that for $k > 0$, $p(x)$ becomes $p(x) + k$. We will also consider the alternative definition that $p(x)$ becomes $(1 + k)p(x)$.

FIGURE 1:
THE COST AND BENEFIT OF TEST TAKING FOR DIFFERENT ABILITY LEVELS

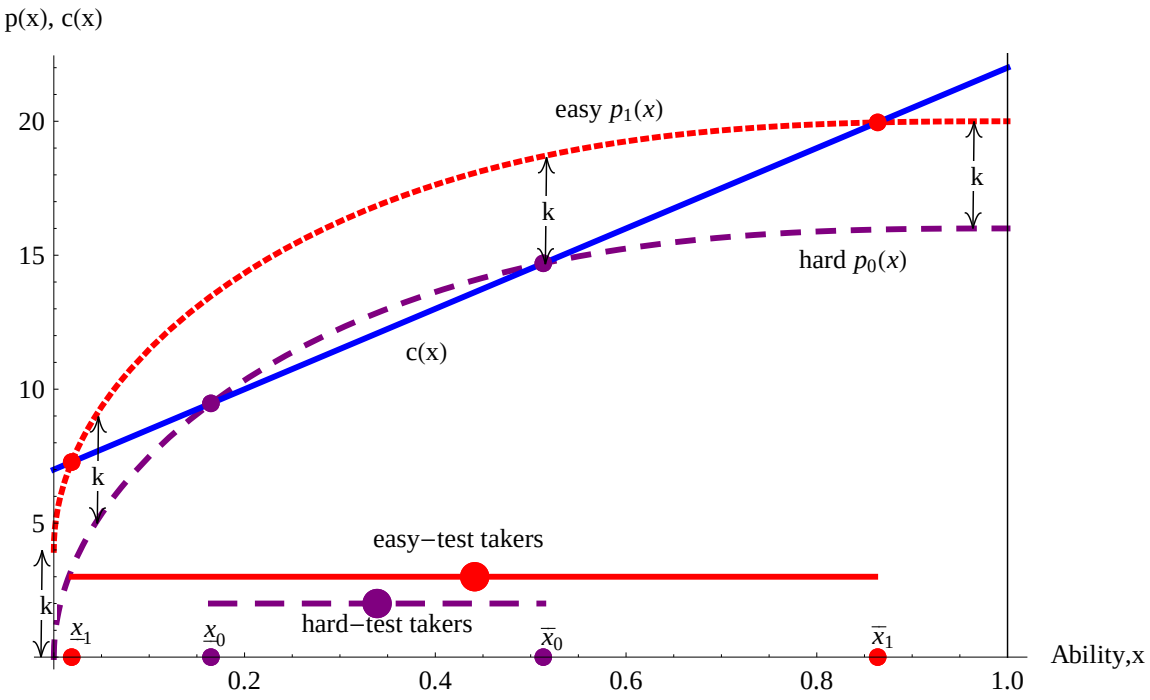
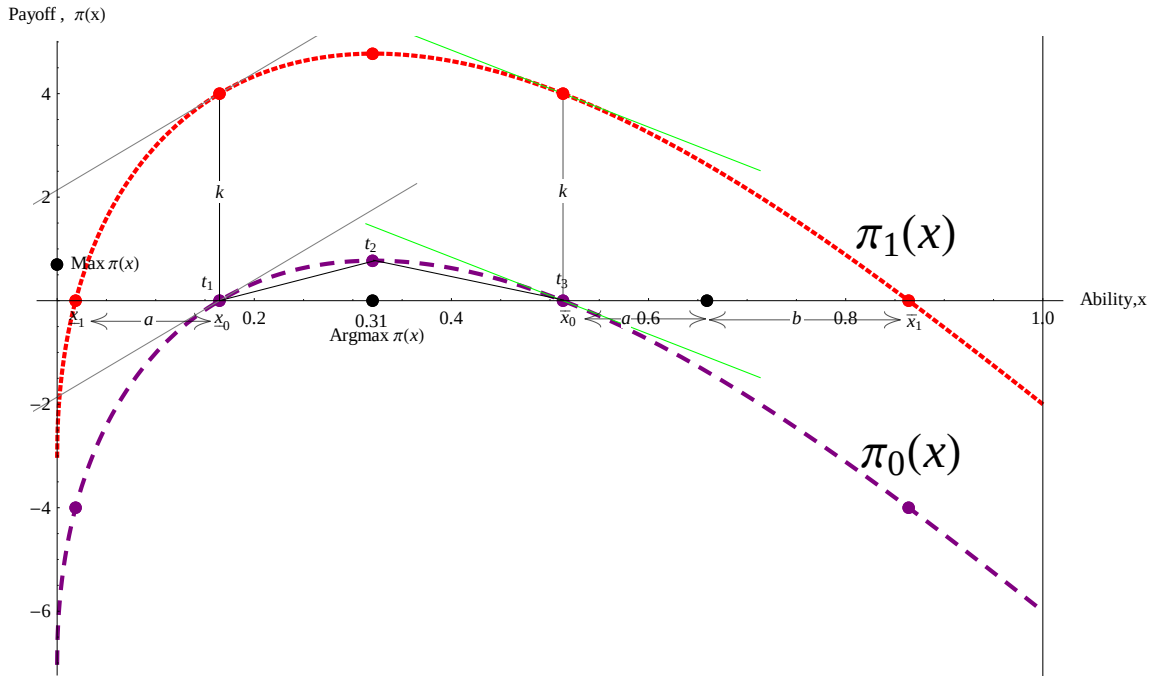


FIGURE 2:
THE PAYOFF FROM TAKING THE TEST FOR DIFFERENT TALENT LEVELS



Notes: $\pi(x) = p(x)w - c(x)$. The curves are $c(x) = 7 + 15x$ and $p_0(x) = 24\sqrt{x} - 10x^2 + 2x^4$, with $w = 1$ and $k = 4$. For $x \in (0, 1)$, $p' > 0, p'' < 0$ and $p''' > 0$, so $\pi'' < 0$ and $\pi''' > 0$.

Figure 1 shows one particular specification for $c(x)$ and $p(x)$ that satisfies our assumptions. In it, the cost of taking the test starts positive and rises convexly with talent, x. This represents there being a floor level of cost even for the untalented, but then not much more cost until talent becomes high. Most students are the same in their opportunities, but a few talented ones have much opportunities much better, not just a little better.

The initial pass rate, $p_0(x)$, gives us the initial benefit from taking the test, $p_0(x)w$. Students with talent below $\underline{x}_0$ do not take the test, because they have too little chance of passing. Students with abilities greater than $\overline{x}_0$ do not take the test because they have too high an opportunity cost.

Proposition 1. *If the test becomes easier, the quality of the top lawyers will increase.*

Proof. Initially, $\pi(\overline{x}_0) = p_0(\overline{x}_0)w - c(\overline{x}_0) = 0$. After the test becomes easier, $\pi(\overline{x}_0) = p_1(\overline{x}_0)w - c(\overline{x}_0) > 0$. Since $p(x)$ and $c(x)$ are both continuous, there will be at least a few types greater than $\overline{x}_0$ for which it is also true that $\pi(x) > 0$, even though $p'(x) > 0$ and $c'(x) > 0$. These few types will now take the test, so $\overline{x}$ will rise, and since some of them will pass the test, the quality of the top lawyers has risen too. ■

It can be similarly shown that the quality of the worst lawyers will fall when the test becomes easier. What, then, happens to the average quality of lawyers?

If the test does not become equally easier for all ability levels, then we cannot say what happens to the average quality of lawyers. It could be that the test becomes much easier for low abilities and only slightly easier for high abilities, which is consistent with our assumptions so long as $p(x)$ is still increasing—it simply would increase at a slower rate. Then, making the test easier would reduce the average quality. On the other hand, biasing the change in ease in the other direction could increase the average quality. Thus, we will look at a change that is "equal" in the senses defined earlier.

Some more notation will be useful. Let the interval of students taking the test before and after the test is made easier be denoted by $[\underline{x}_0, \overline{x}_0]$ and $[\underline{x}_1, \overline{x}_1]$, as in Figures 1 and 2.

Proposition 2. *If the test becomes equally easier for all students, the quality of the average test taker will rise if the net payoff from taking the test is concave but decreasingly curved as the student's quality increases: if $\pi' > 0, \pi'' < 0$, and $\pi''' > 0$ for $x \in (0, 1)$, then* $[\underline{x}_0 + \overline{x}_0]/2 < [\underline{x}_1 + \overline{x}_1]/2$.

Proof. Under the uniform density for x, the average quality is $\frac{\overline{x}-\underline{x}}{2}$. Average quality will rise if $\overline{x}$ rises more than $\underline{x}$ falls; that is, if

$$(\underline{x}_0 - \underline{x}_1) < (\overline{x}_1 - \overline{x}_0) \tag{2}$$

Let us define $a \equiv (\underline{x}_0 - \underline{x}_1)$ and $b \equiv (\overline{x}_1 - \overline{x}_0) - a$. Our question becomes whether it is really true that $b > 0$, as it is in Figure 2 for one particular specification.

"Equally easier" was defined as meaning that $p(x)$ becomes $p(x) + k$. The slope of a student's net payoff at x remains unchanged, so $p'(x) - c'(x)$ is the derivative of both $\pi_0(x) = \pi(x)$ and $\pi_1(x) = \pi(x) + k$.

We will next proceed to prove a lemma, that $\pi'(\underline{x}_0) - |\pi'(\overline{x}_0)| > 0$. Suppose we draw chords from point t_1 to point t_2 and from t_2 to t_3 in Figure 2. These will have slopes $\frac{Max\pi(x)}{Argmax\ \pi(x) - \underline{x}_0}$ and $\frac{Max\pi(x)}{Argmax\ \pi(x) - \overline{x}_0}$. The curves' slopes at t_1 and t_3 will each be bigger than the slope of the chord because the curve is convex. Restating this in our notation,

$$\pi'(\underline{x}_0) - \frac{Max\pi(x)}{Argmax\ \pi(x) - \underline{x}_0} > 0 \ \ and \ \ |\pi'(\overline{x}_0)| - \frac{Max\pi(x)}{Argmax\ \pi(x) - \overline{x}_0} > 0. \tag{3}$$

Since $\pi''' > 0$, the rate of change of the slope is becoming more positive—that is, tho the rate of change of the slope is making the slope more negative ($\pi'' < 0$), it is doing so at a slower and slower rate, so the convexity of the curve is declining and it is becoming more like a straight line. This means that the differences between the curve slope and the chord slope are getting smaller:

$$\pi'(\underline{x}_0) - \frac{Max\pi(x)}{Argmax\ \pi(x) - \underline{x}_0} > |\pi'(\overline{x}_0)| - \frac{Max\pi(x)}{Argmax\ \pi(x) - \overline{x}_0}. \tag{4}$$

Thus,

$$\pi'(\underline{x}_0) - |\pi'(\overline{x}_0)| > Max\{\pi(x)\left(\frac{1}{Argmax\ \pi(x) - \underline{x}_0} - \frac{1}{\overline{x}_0 - Argmax\ \pi(x)}\right)\} \tag{5}$$

Since $Argmax\ \pi(x) - \underline{x}_0 < \overline{x}_0 - Argmax\ \pi(x)$, we have shown that $\pi'(\underline{x}_0) - |\pi'(\overline{x}_0)| > 0$.

Having proved the lemma that $\pi'(\underline{x}_0) - |\pi'(\overline{x}_0)| > 0$, let us return to showing that $b > 0$. The lemma implies that $\pi(x) + k$, too, must have a bigger slope at $x = \underline{x}_0$ than at $x = \overline{x}_0$. Over the lower interval $[\underline{x}_1, \underline{x}_0]$ the slope is getting bigger as x shrinks away from $Argmax\ \pi(x)$ more rapidly than the slope is getting bigger over the upper interval $[\overline{x}_0, \overline{x}_0 + a]$ as x increases. Thus, since the slope over the lower interval starts bigger too (at $x = \underline{x}_0$, it must stay bigger, and π will change more over the lower interval. Since it changes by k over the lower interval it must change by less than k over the upper interval. Thus, we have proved that if $\pi''' > 0$, then $b > 0$ and therefore the quality of the average lawyer must rise if the test becomes easier. ■

The ultimate purpose of Proposition 2 is to show that an easier test can result in higher average ability of test passers, for a robust variety of cost and benefit functions of potential test

takers. It actually says that an easier test can result in higher average ability of test takers, and a fortiori it will then result in higher average ability of test passers, since the more able test takers will pass at a higher rate. Economists are generally unaccustomed to thinking about third derivatives, so some discussion of what it means that $\pi'''(x) > 0$ may be useful. The third derivative represents skewness, like the third moment in probability densities, so if $\pi'''(x) > 0$ then $\pi(x)$ is left-skewed, as in Figure 2. To understand why $\pi'''(x) > 0$ implies left-skewness, the concrete example of the particular equations used in Figure 2 may help:

$$\begin{array}{llllll}
\pi(x) & = p(x) - c(x) & = 24\sqrt{x} - 10x^2 + 2x^4 - (7 + 15x) & > 0 \quad \textit{over } [.16, .51], & < 0 \textit{ otherwise} \\
\pi'(x) & & = \frac{12}{\sqrt{x}} - 15 - 20x + 8x^3 & > 0 \quad \textit{over } [0, .32], & < 0 \textit{ over } [.32, 1] \\
\pi''(x) & & = -\frac{6}{(\sqrt{x})^3} - 20 + 24x^2 & < 0 \quad \textit{over } [0, 1] & \\
\pi'''(x) & & = \frac{9}{(\sqrt{x})^5} + 48x & > 0 &
\end{array} \tag{6}$$

Note first that since $\pi'' < 0$, the slope $\pi'(x)$ is first positive and then becomes negative. Put differently, if $\pi''(x) < 0$ then $\pi'(x)$ moves towards $-\infty$ as x increases: for small x , $\pi'(x)$ is positive but is becoming less positive as x rises; while for large x, $\pi'(x)$ is negative and becoming more negative as x rises. This effect of the negative *curvature* of $\pi(x)$ is true regardless of the sign of π'''.

Now suppose $\pi''' > 0$. This means that the curvature $\pi''(x)$ is becoming more positive as x rises. Since the curvature is itself negative throughout, that means the curvature is moving more towards zero as x rises—$\pi(x)$ is becomes less curved, closer to being a straight line with unchanging slope $\pi'(x)$.

Consider the slope of $\pi(x)$. It takes some value at $\underline{x}_0$, where $\pi(x) = 0$. It falls in magnitude then, reaches zero at the maximum of $\pi(x)$, and after turning negative starts to rise in magnitude again. Since the curvature is shrinking as x grows, the distance from the first crossing at $\underline{x}_0$ to $Argmax\ \pi(x)$ is less than the distance from $Argmax\ \pi(x)$ to the second crossing, at $\overline{x}_0$. The curve $\pi(x)$ is skewed to the left if $\pi''' > 0$ and $\pi'' < 0$.

Note that in the case of $\pi''' = 0$, the curve $\pi(x)$ is symmetric around its maximum; its skewness is zero. Thus, making the test easier when the payoff function is quadratic (for example, $\pi = -3 + 7x - 2x^2$) will add exactly the same size intervals of brighter students with big x and duller intervals with small x to the test-taking pool.

Proposition 1 is robust to many of the assumptions of the model. We can take it as a general

prediction. Proposition 2 is just an "it can happen" result. It requires $\pi'''(x) > 0$, which is special, though not unrealistically so.

Proposition 2's premise is that the test becomes equally easier for all types. If the probability of passing rises more for more talented types, it is even more likely that an easier test will result in a higher average ability of those passing, as the Corollary says.

Corollary. *Proposition 2 also holds true if we redefine "equally easier" as that the probability of each type of student passing rises by the same percentage, instead of the same absolute amount.*

Proof. If the test becomes equally easier for all types in a different sense, that each type's probability of passing is multiplied by the same amount so $p_1(x) = \kappa p_0(x)$ for $\kappa > 1$, the result is true a fortiori, because now the absolute increase in p is $\kappa p_0(x)$, which is bigger for bigger x. If the average quality of those taking the test rises, so does the average quality of those passing, if the absolute increase in the probability of passing is equal for all types or is greater for higher quality types. ■

Licensing and Quality in the Japanese Bar

Proposition 1 tells us that if a licensing test becomes easier, the number of high-quality lawyers will increase. Proposition 2 tells us that if the test becomes easier, the average quality of lawyers may increase too (since the average quality of test takers can increase), but only if opportunity cost rises fast enough relative to test-passing as student quality increases. Let us apply these ideas to one of the world's most important licensing changes of the past twenty years: the post-2006 expansion of the Japanese bar. Japan had earlier imposed one of the hardest bar exams in the world. It now switched to a much easier test. What did this do to attorney quality?

We start by describing the history and institutions in detail. Then, we address the problems involved in measuring quality, and discuss how the level of apparent quality changed. As we explain below, undergraduate college remains one of the most reliable indicators of cognitive ability in Japan (much more reliable than in the United States). We find that the new exam dramatically increased the number of lawyers from the top colleges.

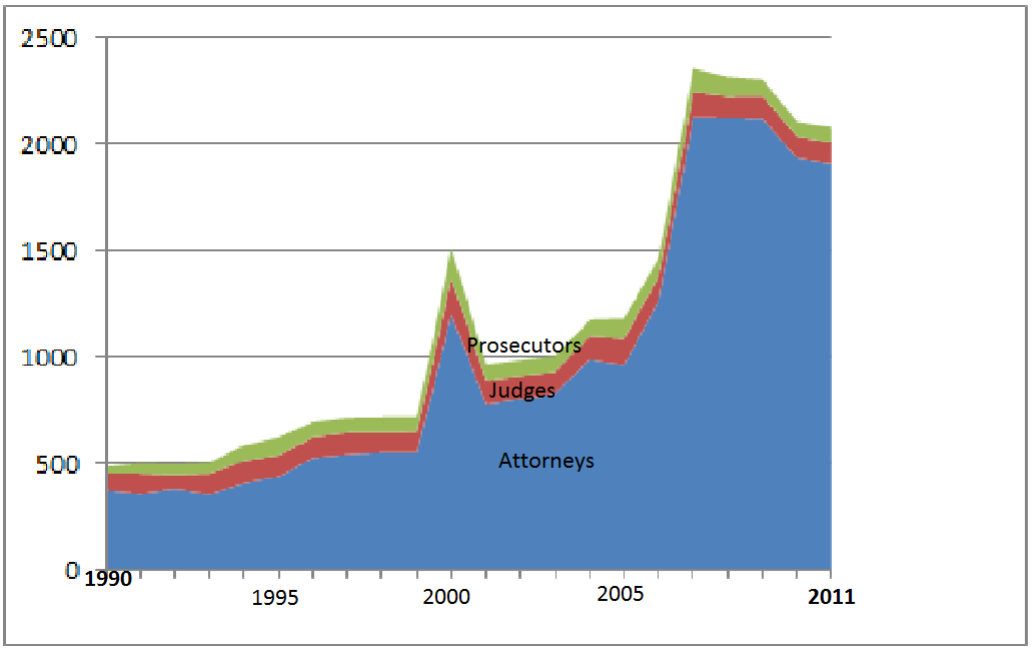
A. The LRTI Exam

1. The post-war licensing regime. After World War II, lawyers-to-be in Japan attended the two-year government-run Legal Research & Training Institute (LRTI). Graduating from the Institute was easy: virtually everyone passed the exam at the end of the program. Entering was not. To become a judge, prosecutor, or private attorney, one needed to train at the LRTI. Yet from the 1960's until 1993, the government capped LRTI capacity at 500. See Chapter 1 of

Ramseyer & Nakazato (1999) for more detail. Of the 500 who passed in any given year, about 100 became government prosecutors, another 80 to 130 became judges, and the rest became private attorneys (see Figure 3).

http://

FIGURE 3
JOBS OF NEW LAWYERS



Sources: The Japan Federation of Bar Associations and the Ministry of Justice, as found in: http://www.nichibenren.or.jp/library/ja/publication/books/data/housou4-4.pdf, http://www.moj.go.jp/content/000102262.pdf, http://www.nichibenren.or.jp/jfba_info/statistics/reform/fundamental_statistics.html. Because of the transition from the old to new testing and training regimes, the LRTI graduated two classes in 2000.

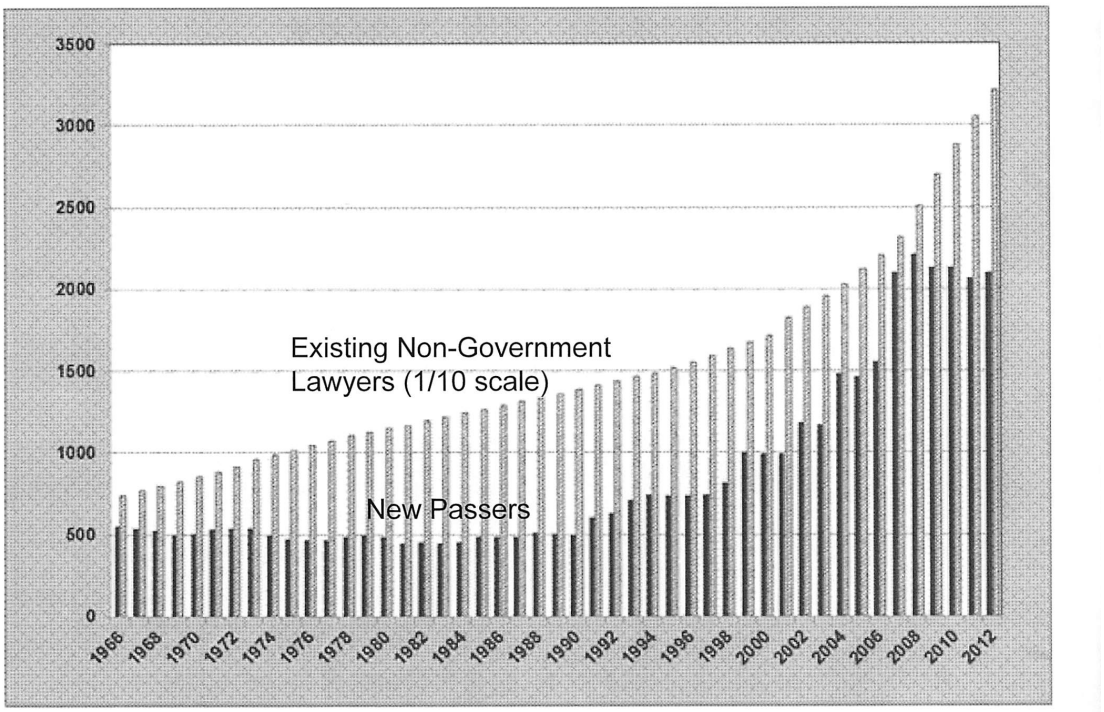
Because of the 500-student cap, the Institute's entrance exam was effectively the Japanese bar exam. Typically, a would-be lawyer majored in law as an undergraduate and then sat for the LRTI entrance exam, administered once per year.[1] Given the number of applicants, this process produced a pass rate of two to four percent. Those who eventually passed typically did so only after failing it several times first. Because the government offered but one exam a year, students devoted several years to the process. On average, they passed the exam at about age 28 or 29, implying 6 or 7 failures.[2] By 1989, the median age of the test-takers had climbed to 29. In 1965, only 65 of the 333 people who passed did so while still in college, and by 1986, of 24,000 people

[1]For sample questions, see http://www.moj.go.jp/jinji/shihoushiken/shiken_shiken00.html.

[2]Estimated by us in Nakazato, Ramseyer & Rasmusen (2010) from a random sample of 670 lawyers who passed the exam by 1990 from the Japanese bar association directory.

who took the bar exam just 1 passed on the first try and 37 more on the second (Foote, 2013, 381).

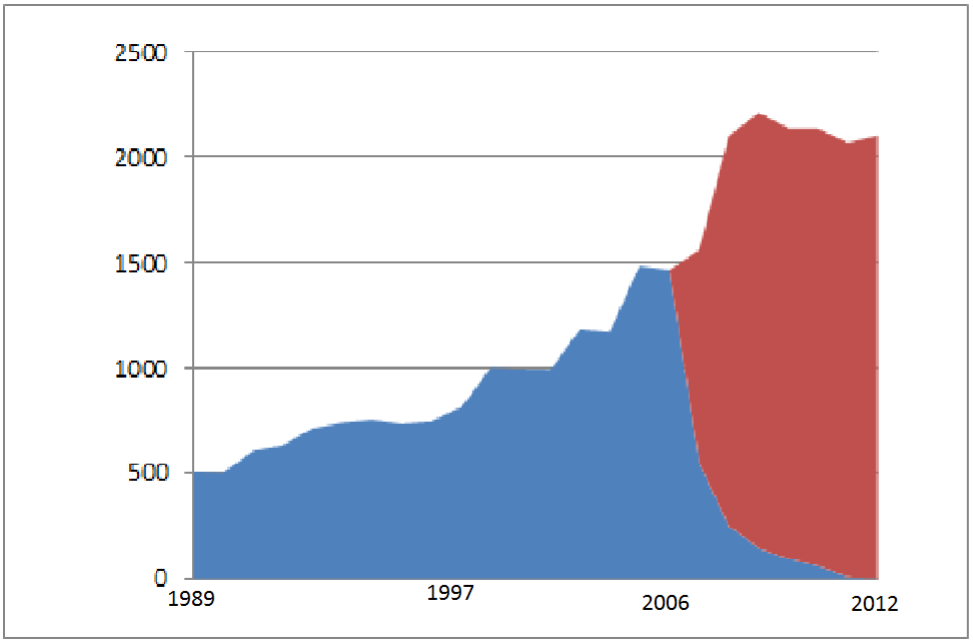
FIGURE 4
PRIVATE LAWYERS (1/10 SCALE) AND NEW EXAM PASSERS, 1966-2012



Source: Adapted from Chan (2012), p. 322 .

2. THE SCOPE OF THE INCREASE. Beginning in 1991, the Japanese government began to expand the LRTI. From 500 students in 1990, it grew to 1,500 in 2005 and to 2,000 in 2010 (see Figure 6). Concurrently, universities began to build post-graduate "law schools." Under the system as originally billed, aspiring lawyers could major in law as undergraduates before going to law school, but they could also major in other disciplines instead. After law school, the aspiring lawyer would take an entrance exam to the LRTI, but one much easier than before. The LRTI itself would now last only one year.

FIGURE 5:
NUMBERS PASSING THE OLD EXAM AND THE NEW



Source: The Ministry of Justice, at: http://www.moj.go.jp/jinji/shihoushiken/press_071108-1_19syutu-gou.html.

By 2007, the first law school cohort had graduated and new lawyers started coming from two sources: the "old exam," taken after undergraduate college (the left portion in Figure 5), and the "new exam" taken after the post-graduate law school (the right portion). From 2007 to 2011, aspiring lawyers could either enter the LRTI under the old system (the brutally hard old-style exam), or the new system (law school followed by an easier exam, as evidenced by the pass rates in Table 1).[3]

[3] A college graduate who did not go to law school could take the old exam any number of times, once per year, as before. If, instead, he attended law school, he could take the easier new exam, but only three times within five years, though pre-law-school attempts under the old exam did not count against the limit).

Table 1
Percentage Passing the Old and the New LRTI Exams

Year	Old Test	New Test
2003	2.58	
2004	3.42	
2005	3.71	
2006	1.81	48.25
2007	1.06	40.18
2008	0.79	32.98
2009	0.60	27.64
2010	0.45	25.41
2011		23.54
2012		25.06

Source: http://bar-exam.shikakuseek.com/data/index.html.

Most aspiring lawyers studied law both as undergraduates and in the postgraduate law schools. Despite the plans to welcome students from other disciplines, students who majored in law as undergraduates tended to pass the new LRTI exam at higher rates than the others (39 percent for law majors, 19 percent for others in 2009, Aronson [2012], p. 290). Because prospective students ranked law schools by LRTI pass rates, the students from non-law hurt law schools in the rankings. Law schools responded by favoring law majors.

3. University Degree and Student Quality. (a) The Admissions process. Propositions 1 and 2 ask how the difficulty of the occupational exam affects the quality of those who pass it. We therefore need a measure of the quality of lawyers. One of the best measures of cognitive ability in Japan is the quality of the college attended. College quality measures ability much more precisely in Japan than in either the United States or Europe. Traditionally, and particularly at the best schools, admission turned exclusively on a blindly graded examination. At the very best schools, it continues to turn on that exam. A few private schools do now admit some students on the basis of high-school teacher recommendations. A few reserve some spots for graduates of their feeder high schools. A few admit some athletes. But the pre-eminent national universities still rely solely on blindly graded exams.

Within the university hierarchy, the University of Tokyo stands apart. Its faculty write and grade their own entrance exams to supplement the standardized test used by a broad swath of schools, and write exams that ensure entering students bring both breadth and depth. To attend the law faculty, for example, a high school student must pass tests in both English and a second foreign language, in modern and in classical Japanese, in two social sciences, in natural science,

and in math.

The Tokyo faculty write excruciatingly hard questions. In mathematics, a high school student applying to the law faculty will face hard questions in calculus. A student applying to a math, science, or engineering department will face even harder questions in linear algebra. Other top national universities such as the University of Kyoto and Hitotsubashi also require school-specific tests. Note how the questions in Figure 6 will sort even top students. This is not like the math on the American SAT; law undergraduates must have learned some real mathematics rather than just being good at puzzle questions, and so tests study effort as well as IQ.

FIGURE 6
EXAMPLES OF STANDARDIZED (1) AND TOKYO UNIVERSITY (2)
HUMANITIES ADMISSIONS EXAM QUESTIONS

(1) 1, 1/2, 1/2, 1/4, 1/4, 1/4, 1/4,... is a sequence where $1/2^{k-1}$ appears $2k$ times successively ($k = 1, 2, 3, ...$).
(a) Then the sum of the first 1000 terms is

$$\{\underline{19}\} + \frac{\{\underline{20}\}\{\underline{21}\}\{\underline{22}\}}{2^{\{\underline{23}\}}}$$

(b) If the sum of the first n terms is 100, then because

$$n = 2^{\{\underline{24}\}\{\underline{25}\}\{\underline{26}\}} - \{\underline{27}\},$$

n is a $\{\underline{28}\}$ $\{\underline{29}\}$ digit number provided that $log_{10}2 = 0.3010$.

(2) A rectangle ABCD has side lengths 1 and a. Point E is the point of intersection of the two diagonals. Draw five circles centered at A, B, C, D, and E, each with radius r. Maximize r in such a way that the intersection of any two circles is empty. Let $S(a)$ be the total area of the five circles cut by the rectangle. Sketch the graph of $\frac{S(a)}{a}$ as a function of a.

Notes: The test is multiple choice, with 12 possible answers provided for each bracketed item.
Source:Wu (1993).

Most private universities require less breadth. To attend a top-tier school like Waseda (see Table 2), for instance, a student need pass tests only in English, Japanese, and one social science of his choosing, such as world history (see http://www.waseda.jp/nyusi/). The point is not just that the competition is easier (which it is). It is that successful students will have studied less broadly. Relevant to eventual corporate legal practice, given the nature of the self-selection involved they also will tend to be weaker in math.

(B) Determinants of University Admission. Because the best Japanese universities admit students solely through a blindly graded exam, student abilities at the various schools overlap much less than they do in the U.S. and much more closely signal intellectual ability. Athletic or musical talent, alumni ties, geographic variety, leadership, public service, race—all count for nothing. To be sure, intellectual ability in the U.S. overlaps less between colleges than it did 3 decades ago (see Hoxby [2009]). Yet give "holistic" admissions policies, they still overlap extensively. The 25th to 75th percentile SAT math scores for Cal Tech students, for example, range from 760 to 800 (98–99 percentiles nationally), at Harvard from 710 to 790 (which is 94–99), at Georgetown from 660 to 750 (87–97), and at the University of Wisconsin from 630 to 750 (82–97) (from http://media.collegeboard.com/digitalServices/pdf/SAT-Percentile_Ranks_2011.pdf). Reading scores range from 700 to 800 at Harvard (95–99), from 670 to 780 at Williams (92–99), from 690 to 770 at Vanderbilt (94–99), and from 620 to 720 at the University of Virginia (84–97) (from the College Board, http://www.collegeboard.org). In addition, because the College Board designs the SAT for all colleges, the test more accurately sorts students at the mass-market schools than the elite. In any given sitting, for example, the difference between a 770 and an 800 on the math test can be the difference between a perfect exam and one careless mistake on a simple question (and all SAT math questions are simple for anyone considering Stanford or Cal Tech). The test may accurately measure whether a student should go to Northern Illinois instead of Northwestern. It is less help in determining whether he should go to Stanford instead of Cal Tech. Because of the crudeness of the test in measuring top abilities, American universities turn to other dimensions. Because the sorting by ability is less sharp in America, top-ability students are more willing to choose their college on other dimensions too, which further obscures the sorting of ability. The tip-top student may prefer Stanford to Cal Tech, and in turn other students may choose Stanford because they know some tip-top students are there.

Given that elite Japanese universities use school-specific entrance examinations, we rank them by data collected by the exam-preparation schools. These national franchises maintain large numbers of classrooms across the country, and regularly administer a battery of practice exams. They then combine information about how their students do on these internal exams with information about how they do on the eventual entrance exams. By custom, the networks measure school difficulty by the t-score on a normal curve centered at 50 with standard deviation of 10. For reader convenience, we give the standard percentile score for each t-score in Table 2. With obvious caveats about the differences among the exams, we also give the SAT equivalent that corresponds to that percentile among the U.S. college-bound population.

TABLE 2
MAJOR UNDERGRADUATE LAW FACULTIES

	LRTI Exam			Entrance Exam		
	Pass rate (%)	Appl'ts	Passers	Mean	%ile	SAT Equiv
U Tokyo	7.0	15,278	1,077	70.75	98	2160
U Kyoto	6.6	8,683	571	68.63	97	2110
Hitotsubashi	5.5	4,062	222	67.88	96	2070
U Osaka	4.7	3,582	169	66.00	95	2040
Keio	4.2	14,708	619	69.50	97	2110
Jochi	3.6	3,258	116	65.26	94	2020
Nagoya	3.5	2,341	82	63.63	91	1950
Hokkaido	3.5	2,100	73	61.00	86	1860
Tohoku	3.4	3,311	112	62.75	90	1930
Waseda	3.4	27,206	912	67.63	96	2070
Kobe	3.3	3,183	105	64.35	91	1950
Rikkyo	2.9	1,429	42	60.25	85	1840
Kyushu	2.8	2,862	80	62.25	88	1890
Chuo	1.9	20,682	386	63.25	90	1930

Notes: LRTI exam data are for 2000-2004. The Entrance Exam Mean standardized score is the t-Score for the approximate passing exam performance; here, we take the mean of the t-Score estimates given by four Japanese college entrance exam preparation schools. The percentile rank gives the percentile for the t-Score. Purely for reader reference, the last column gives the SAT score (out of 2400) that approximates that percentile in the U.S.
Sources: See Shiho shiken daigaku betsu goukakusha oyobi gokaku ritsu iran [Overview of the Number of Passers and the Passage Rate in the LRTI Entrance Exam, by University], available at: http://www.geocities.jp/gakureking/shihou.html. Standardized scores (t-Scores) are as given at http://daigakujyuken.boy.jp/; http://daigaku.jyuken-goukaku.com/nyuushi-hensati-ranking/siritu/hougaku.html; http://daigaku.jyuken-goukaku.com/nyuushi-hensati-ranking/kokkouritu/hougaku.html.

By selectivity, the top 10 undergraduate law faculties start with the University of Tokyo (440 students per class). The law departments at two other national universities—the University of Kyoto (330 students) and Hitotsubashi University (170 students)—constitute a close second and third. The other schools in the top 10 generally include the Waseda, Keio, Osaka, Kobe, Jochi, Tohoku, and Nagoya Universities. Among these, the first two are unusually large—740 students per class at Waseda and 600 at Keio.

The range in student ability from the first school to the 10th is massive. The estimated t-score for the passing exam at the University of Tokyo is 70.75. At Tohoku University it is 62.75.

In percentiles, these scores represent the 98th at Tokyo and the 90th at Tohoku. On the SAT math exam, the 90th to 98th range would cover the distance from 680 (the University of Miami middle) to 780 (CalTech).[4] On the reading exam, the range would run from 740 (the Princeton median) to 650 (University of Michigan) .

As Table 2 shows, success on the university entrance exams correlates with success on the LRTI exam. Over 2000–2004, the graduates from the University of Tokyo passed the exam with a 7.0 percent rate, and those from Kyoto passed at 6.6 percent. Graduates of Waseda and Keio passed at 4.2 and 3.4 percent rates, and those from Chuo University—a major law faculty on the top-10 border—passed at a 1.9 percent rate.

(c) Determinants of Student College Choice. Students in Japan do not select their college by the quality of the food and gyms, by whether they can endure winter snow or high crime rates, or even by their perceived "fit." Instead, they accept the highest ranked school that admits them. Because talented American students choose among a set of largely equivalent-quality schools, even high-prestige Harvard College had a 2013 yield of only 82 percent, while the Princeton yield was 67 percent, Dartmouth 49 percent, and Cal Tech 43 percent. [5] In Japan, the hierarchy is much clearer, and students select by that hierarchy.

Consider the choices students make at Kaisei Gakuin High School, an elite exam-based private high school in Tokyo. Kaisai regularly sends the most students to the University of Tokyo of any high school in the country. In 2013, 170 Kaisei students (and alumni who took a gap year or two rather than attend a safety) passed the University of Tokyo entrance exam; crucially, 168 chose to attend—a 99 percent "yield." Of those admitted to the law faculty, all chose to attend. Fewer applied to the first-tier national universities of Kyoto and Hitotsubashi, but among those admitted all chose to attend.[6] Kaisai students do not choose either Waseda or Keio over Tokyo, Kyoto or Hitotsubashi. Instead, theyuse Waseda and Keio—storied universities with history and tradition, arguably the best private universities in the country—as safety schools. They attend them only if not admitted to one of the top national schools. Of the 152 admitted to Keio, barely a quarter chose to attend (and none of those admitted to the law faculty). Of the 196 admitted to Waseda, only a fifth chose to attend. What is more, among those who did choose to attend

[4]More precisely, the "middle" is the approximate midpoint between the 25th and 75th percentiles for a school, as given on the College Board website cited earlier.

[5] See "Colleges Report 2013 Admission Yields and Wait-List Offers," Tanya Abrams, *The New York Times* (May 30, 2013), http://thechoice.blogs.nytimes.com/category/admissions-data/.

[6]Tokyo, Kyoto and Hitotsubashi all administer their entrance examinations on the same day. As a result, a student can apply only to one of the three, and the 100% acceptance rates of Hitotsubashi in Table 3 do not imply that any students turned down Tokyo. The importance of knowing which of the top three to recommend to a given student is one reason prep schools try so carefully to gauge high student ability and entrance test difficulty.

Waseda or Keio, a majority at both were gap-year students. Rather than settle for either, in other words, Kaisei students take a year off and then try again to get into the top three.[7]

The Komaba High School affiliated with Tsukuba University similarly places a large number of its graduates at the University of Tokyo. Of all 2013 Komaba graduates (and gap-year alumni), 103 passed the Tokyo entrance exam, and 99 chose to attend. Among those who passed the exam to the law faculty, all decided to attend. Of those admitted to Kyoto and Hitotsubashi, all decided to attend. Of those admitted to Keio, only 25 percent chose to attend, and a majority of them were gap-year students. Of those admitted to Waseda, only 9 percent chose to attend, again a majority gap-year students. Only 1 student chose to attend the Waseda law faculty; no one chose to attend the Keio law faculty.

[7] The same phenomenon appears among students at Kaisei's Kobe rival, Nada High School. In 2012, Nada admittees included 98 students at the University of Tokyo, 34 at University of Kyoto, 11 at Osaka University, and 2 at Nagoya University. http://koukou-hyougo.ldblog.jp/archives/25077984.html. In 2008, 114 Nada students passed the University of Tokyo exam, and 23 passed the University of Kyoto exam (Nada does not release information about where the students will attend). Among the 42 Nada students admitted to Keio, however, only 8 were seniors, and among the 33 admitted to Waseda, only 2. All others admitted to Keio and Waseda were gap-year students. Like their peers at Kaisei, Nada students see Keio and Waseda as safetiy schools. See http://koukouranking.blog17.fc2.com/blog-entry-4.html.

TABLE 3
COLLEGE CHOICES OF ELITE HIGH SCHOOL STUDENTS

Kaisei Gakuen High School

	Admitted	Attended
U Tokyo	170	168
U Kyoto	6	6
Hitotsubashi	6	6
U Osaka	0	0
Keio	152	39
Jochi	7	0
Nagoya	0	0
Hokkaido	6	5
Tohoku	5	5
Waseda	196	39
Kobe	0	0
Rikkyo	3	0
Kyushu	1	1
Chuo	22	2

Tsukuba University Komaba High School

	Admitted	Attended
U Tokyo	103	99
U Kyoto	3	3
Hitotsubashi	5	5
U Osaka	0	0
Keio	56	14
Jochi	6	0
Nagoya	1	1
Hokkaido	0	0
Tohoku	1	0
Waseda	115	10
Kobe	0	0
Rikkyo	1	1
Kyushu	1	1
Chuo	1	0

Notes: Data are for the 2013 university entrance exam results, for Kaisei gakuen High School and Tsukuba University Komaba High School.

Source: 2013 (Heisei 25) nendo daigaku nyushi kekka [2013 University Entrance Exam Results], at http://www.kaiseigakuen.jp/kaiseihp/shinro/shinro25.htm; 2013 nendo daigaku gokakushasu, shingakushasu [2013 University Passage and Matriculation Figures], at http://www.komaba-s.tsukuba.ac.jp/official/intro.goon.html.

4. The logic of opportunity costs. Although the post-war LRTI exam may have excluded most law graduates with the lowest abilities, it did not produce a cohort with the highest abilities either. Law graduates with the best job options did not invest the years necessary to pass the LRTI exam. Consider the position of even an average University of Tokyo student. Given his intellectual talent, he enjoyed access to a wide range of elite and high-paying jobs. From prestigious government offices to the Tokyo-Stock-Exchange-listed banks and manufacturing firms, employers bid for the chance to hire him. If he preferred to practice law instead, he could take the LRTI exam. If he passed while still a student, fine and good. But if not (and with a 7.0 percent pass rate, most did not) he might need to invest years to the effort before he passed. That investment he could make only if he abandoned his prestigious and lucrative job offers.

Contrast this University of Tokyo student with his counterpart at one of the many third-tier law faculties. That this other student was at a third-tier college indicates that he brought fewer cognitive skills and had a lower chance of ever passing the LRTI exam. Yet he also incurred much lower opportunity costs in the long years of studying for the test. The prestigious government offices would never hire him, and neither would most of the TSE-listed corporations. Compared to his University of Tokyo peer, he sacrificed less in devoting years toward studying for the exam. LRTI and a law job may have been a longshot for him, but they were still his best chance to overcome his college background and break into the top rank of Japanese society.

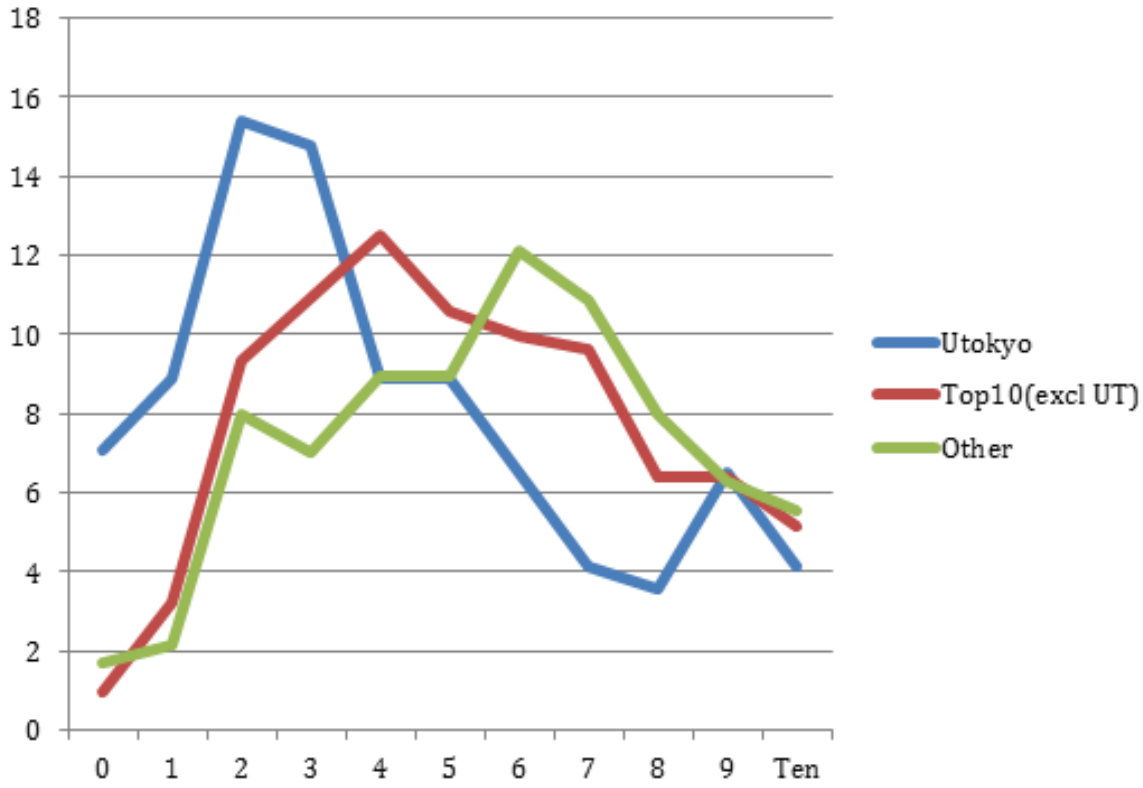
Consider the number of times lawyers in our random sample of 893 lawyers practicing in 2005 (who entered the bar over a wide variety of years)) failed the exam,as estimated by their age upon finally passing it. Those from the University of Tokyo failed a mean 5.4 times. Graduates of arch-rival Kyoto University also failed 5.4 times, and those of the third-ranked Hitotsubashi University failed 5.9 times. Graduates of Keio, Waseda, and Chuo averaged between 6 and 7 times. Those from the third-tier Nihon University failed 9.1 times.

Tokyo graduates did not fail the exam fewer times than Nihon graduates just because they passed at higher rates. They failed it fewer times because they more readily dropped out of the exam-taking pool. Most Tokyo graduates did not pass on one of their first tries, but many then abandoned the effort. Rather than take it again, they accepted the elite, well-paying government or corporate jobs offered them. Nihon graduates had fewer job opportunities anyway, so they stayed to take the exam, year after year. Eventually, a few of them passed and joined the bar.

Figure 7 illustrates the way the strongest students take the exam a few times and abandon the effort if they do not pass, while the weakest students devote their careers to the test. For this figure, we sort our random sample into three groups: lawyers from the University of Tokyo (169 lawyers), those from one of the other top-10 schools (311), and all others (413). We then chart their distribution by the number of times they failed the exam before eventually passing. The Universty of Tokyo graduates tend to fail it two or three times, but then to leave the pool and join

the work force. Other applicants take it many more times.

FIGURE 7:
NUMBER OF YEARS FAILING THE OLD LRTI EXAM, BY SCHOOL TIER



Notes: The table gives the percentage of practicing lawyers who failed the LRTi exam a given number of times. Calculated failures of over 10 are excluded. The lawyers are divided into University of Tokyo graduates, other graduates of a top-10 university (as defined in the text), and all other lawyers. The figure is based on a random sample of 893 lawyers from the 2005 bar association directory.
Source: Random sample of attorneys from Horitsu shimbunsha, ed., Zenkoku bengoshi taikan [National Lawyer Directory], 10th ed. (Tokyo: Horitsu shimbun sha, 2005).

This discussion actually understates the ability difference between the Tokyo graduate who passed on one of his first tries and a third-tier graduate who passed on his 7th or 8th attempt. Exams measure talent with error. If someone (particularly someone who passed the 98th percentile University of Tokyo entrance exam) passes the LRTI exam on his first try, the best estimate of his ability is the passing grade. If someone (particularly someone whose best score in the college admissions tournament landed him at the 77th percentile Nihon University) fails six times and passes on the 7th, the best estimate of his ability is the average failing grade over all seven tries.

B. The Change:

1. The politics of the increase in the bar passage rate. To measure the effect of expanding the bar, ideally we would prefer an exogenous change in the number of lawyers. After all, even in this non-regression context "identification" is necessary to untangle causation. Few policy changes are exogenous, and the change in the Japanese bar was decidedly endogenous. The story began in the 1980s, and involved country lawyers, the large corporate law firms, the business community, the Ministry of Justice, and the ruling Liberal Democratic Party. As Japan deregulated its economy in the 1980s and 1990s, firms increasingly bought and sold products and raised funds on international markets. To guide them through the legal labyrinths involved, they needed sophisticated attorneys. They needed lawyers who were smart. They needed lawyers who understood the complex international economic and financial environment they faced. And they needed lawyers who could engineer the legal mechanisms by which to manipulate that environment most effectively.

In the 1980's, business corporations could not find these sophisticated lawyers in Japan. The best U.S. law firms offered the necessary talent and sophistication, but not in Japanese. A few Japanese lawyers did offer that economic and financial sophistication, but they worked in firms that lacked the necessary scale. The Nishimura firm was the largest, but as of 1985 even it had only 26 lawyers (Aronson, 2007, p. 83, table 1).

Clients needed the top Tokyo law firms to expand, but given the LRTI bottleneck those firms could not recruit the legal, economic, and financial talent they needed. The Institute admitted only 500 students a year and about 200 of them became prosecutors or judges (see Figure 4). This left 300 to become lawyers. According to our random sample of 2005 lawyers (we have school information on 1,120), about 15.9 percent attended the University of Tokyo, 25.1 percent attended one of the top three schools, and 44.8 percent attended one of the top ten. If these fractions approximate the composition of new classes, then in any given year the bar would have added only about 48 lawyers from the University of Tokyo, 75 from a top-three school and 134 from a top-ten. With fewer than 50 Tokyo graduates (or 75 from any of the top three schools), the best firms would never reach the scale of operations that their clients so badly needed.

For the partners at the top Tokyo firms, the problem did not just involve serving clients. It also involved creating the pyramidal structure that enriches big-law equity partners in the United States. They needed bright young lawyers working long hours to support them as residual claimants and let them earn rents and quasi-rents from the increased business demand. Under the LRTI exam as it was in 1990, the Institute simply did not graduate enough lawyers with the necessary quality and sophistication.

Predictably, the generally left-leaning lawyers outside the large Tokyo firms opposed any increase in the LRTI. Given that about half of all Japanese lawyers practice in Tokyo, lawyers in

the capital are relatively plentiful. Outside the city, they are scarce. How scarce? In 2000, of the 253 court districts in Japan, 72 had either one or zero lawyers. Of the 3,371 registered cities and towns in Japan, 3,023 had either one or zero (Foote, 2013, 391).

Reflecting that scarcity, provincial lawyers earn a substantial scarcity rent: they bring less talent than the Tokyo lawyers, but a lawyer of average talent will earn a higher income in his lonely kingdom than in Tokyo. In 2004, 24.7 percent of Tokyo lawyers attended the University of Tokyo, but only 12.3 percent of the lawyers outside major metropolitan areas. Tokyo lawyers had failed the LRTI exam a mean 6.32 times, but those outside metropolitan areas had failed 7.50 times. Yet where only 1.0 percent of Tokyo lawyers earned more than about $400,000, 5.0 percent of the non-metropolitan lawyers earned that much (Nakazato, Ramseyer & Rasmusen [2010], p. 460).

Earning rents from their scarcity, the non-metropolitan lawyers opposed any increase to the LRTI. In late 1994, for example, 1,137 lawyers petitioned the bar association to fight any expansion. At a time when 46 percent of all lawyers practiced in the competitive Tokyo market (Nihon bengoshi rengokai [2006], p. 4), only 37.7 percent (311) of the petitioners came from Tokyo (as calculated from the roster of signers at Suzuki et al. [2012], pp. 386–389). Instead, the petitioners practiced in areas with scarcity rents. Similarly, when a regional bar group polled lawyers about the planned expansion in the mid-1994, the respondents again showed a geographical bias. Of the 4,166 respondents, only 16.5 percent supported increasing the LRTI class. Within Tokyo, however, 22.5 percent supported the increase (calculated from data on p. 383 of Suzuki, et al. [2012]).

The corporate sector lobbied for an increase in the LRTI. The left-wing bar lobbied against it. Dominated by the moderately conservative and generally business-aligned Liberal Democratic Party, the government sided with the corporate sector and expanded the bar.[8]

2. The increase in talent.—(a) Colleges. Consistent with Proposition 1, the easier LRTI exam did indeed draw in a larger number of the most talented college graduates. The bar every year adds a much larger cohort of lawyers, bringing the depth and breadth (and, especially, facility with numbers) that the large firms need. Recall the estimated annual production of lawyers from the top law faculties under the pre-1990 regime:

U Tokyo: 48
Top 3: 75
Top 10: 134

[8]For more on the fascinating politics of the change, see Chan (2012), Foote (forthcoming), Miyazawa (2001), Saegusa (2009), and Sato (2002).

Table 3 gives the undergraduate backgrounds for the new lawyers, and details a much larger cohort from the top schools:

U Tokyo: 223
Top 3: 419
Top 10: 1,120

The government quadrupled the number of new lawyers, and the number from the premier University of Tokyo rose proportionately. Those from the top three climbed more steeply—by 5.6 times. And those from the top-10 schools jumped by a multiple of 8.4. The government increased the number of LRTI graduates fourfold, and the number from the top-10 schools rose by a factor of 8.4.

TABLE 4
ACADEMIC ORIGINS OF PASSERS OF THE NEW TEST IN 2008

Undergraduate College		Post-Graduate Law School	
Waseda	262	Tokyo	200
Keio	225	Chuo	196
Tokyo	**223**	Keio	165
Chuo	136	Waseda	130
Kyoto	**116**	Kyoto	100
Hitotsubashi	**80**	Meiji	84
Doshisha	64	Hitotsubashi	78
Osaka	52	Kobe	70
Kobe	43	Tohoku	59
Jochi	39	Ritsumeican	59
Meiji	39	Doshisha	59
Tohoku	33	Kansai gakuin	51
Ritsumeikan	33	Jochi	50
Nagoya	27	Osaka	49
Kyushu	25	Kansai	38
Osaka City	25	Kyushu	38
Total	1,422	Total	1,426

Sources: Post-graduate law schools— 2008 nendo (Heisei 20 nendo) shin shiho shiken hoka daigakuin betsu

gokaushasu, gokaku ritsu rankingu [Ranking of Law Schools by Number of Passers and Passing Rates for 2008 New Bar Exam], available at: http://2chreport.net/hen13_5.htm, and http://www.moj.go.jp/jinji/shihoushiken/shiken_shinshihou_h20kekka01.html. Undergraduate colleges—2008 nendo shinshihoshiken shusshin daigakubetsu gokakusha rankingu [Ranking of Colleges by Number of Passers for 2008 New Bar Exam], available at: http://jbbs.livedoor.jp/bbs/read.cgi/school/21000/1336225407/l50.

That the number of University of Tokyo graduates did not increase further reflects the limits of the pool. As the Tokyo law faculty only graduates 440 students a year, 223 is over half the class. Much the same is true for the other schools that produce students with the necessary breadth and depth: 80 is 47 percent of the Hitotsubashi class, and 116 is 35 percent of Kyoto.

Neither students nor faculty have seen undergraduate law faculties primarily as a training ground for lawyers. Before the bar expansion, only about 10% of the undergraduates became lawyers. Some students do enroll in law faculties because they hope to become lawyers. But many plan to work as civil servants in government, as officers at the large banks, or as managers in major corporations. For them, the law department provides the basic background that they will need in management and public policy.

As a result, at the very top schools most of the students who want to become lawyers probably now do so. If half of the Tokyo law majors join the bar, probably nearly all of those who want to join it do. Much the same thing holds true of Hitotsubashi and Kyoto. The easier exam at the LRTI now admits virtually all of the top aspiring lawyers.

In a country like the U.S. with heavily overlapping student populations, an easier licensing exam might draw in more students from the top schools because it drew in the less qualified students. It would, in other words, admit weaker students from schools all across the quality distribution. Suppose it earlier admitted students from both Princeton (where the 25th to 75th percentile math scores range from 710 to 800) and Wisconsin (630 to 750). If with a lower passing threshhold it admitted more students from both schools, it would not necessarily be admitting more high-quality students. Instead, it would be working down the quality distribution at both of the schools, admitting less able students from both Princeton and Wisconsin.

In Japan, student abilities overlap much less. Because each school admits almost exclusively by a blindly graded exam, the floor on ability at each school is clear. Given that students tend to choose the highest ranked school that admits them, so is the ceiling—namely the passing grade at the next-highest ranked school. When the bar admits a larger number of University of Tokyo students, it simply admits a larger number of more talented students.

(B) LAW SCHOOLS. The data on law school backgrounds confirm this increase in the number of high quality lawyers. To be sure, the college backgrounds capture a different set of qualities than

law school backgrounds. A student from the undergraduate law faculties at Tokyo, Kyoto or Hitotsubashi brings not just high levels of cognitive ability, but also intellectual breadth. By contrast, a student from the Waseda or Keio law faculty may have a high IQ but has chosen to attend a school that did not test either science or math. He brings a narrower focus.

Law school background reflects cognitive ability, but not intellectual breadth. From 2009 to 2011, an average of 209 graduates of the University of Tokyo law school moved to the LRTI (see Table 3 for 2008 figures). For a law school that graduates 240 students a year (300 students through 2009), this constitutes an 87-percent eventual pass rate.[9] Not all Tokyo law school graduates passed the exam on their first try, of course. Given that those who fail it may take it a second or third (but not more) time, in any given year the actual University of Tokyo pass rate may be closer to 1/2. But if the university graduates 240 people a year and 209 enter the LRTI, necessarily most must eventually become lawyers.

Much the same thing is true for the other top schools. Hitotsubashi admits 85 students a year—suggesting an eventual pass rate of 92 percent. The analogous pass rates for many of the other top schools are similarly high: 88 percent at Kobe, 74 percent at Tohoku, 72 percent at Keio, and 63 percent at Kyoto.

Unlike those at the undergraduate law faculties, students enroll in a post-graduate law school only if they hope to become a lawyer. At Tokyo and Hitotsubashi, most eventually do. The reason the LRTI does not admit more Tokyo and Hitotsubashi law school graduates is simple: there are no more to admit.

(c) Law firm composition. With the expanded pool of talented lawyers, the top firms have grown exponentially. From their low double-digit sizes in the mid-1980s, the top three firms came to number 300 to 420 lawyers in 2013. Table 5 details several aspects of this growth. Note first that the partners have successfully built their pyramids. The associate to partner ratio is over 2:1 at the Nagashima and Mori firms. At the even-larger Nishimura, it exceeds 3:1.

[9]For information on class size at the law schools, see http://laws.shikakuseek.com/capacity.html.

Table 5:
Top Three Firms: Selected Summary Statistics

A. Size:

	Attorneys	Assoc./Partner
Nishimura & Partners	417	3.44
Nagashima, Ohno & Tsunematsu	342	2.32
Mori, Hamada & Matsumoto	303	2.26

B. Associates:

	Total	Average Flunks (if hired before 2006)
Nishimura & Partners	323	1.2
Nagashima, Ohno & Tsunematsu	239	.4
Mori, Hamada & Matsumoto	210	.6

C. Associates, by College:

	n	Tokyo(%)	Top 3(%)	Top 10(%)
Nishimura & Partners	321	48	59	91
Nagashima, Ohno & Tsunematsu	239	47	61	94
Mori, Hamada & Matsumoto	210	52	67	96

D. Associates, by Law School

	n	Tokyo(%)	Top 3(%)	Top 10(%)
Nishimura & Partners	149	52	68	95
Nagashima, Ohno & Tsunematsu	116	45	63	96
Mori, Hamada & Matsumoto	121	64	77	96

Sources: Firm websites, February 2013.

Second, in hiring associates who took the "old" LRTI exam before 2006, the firms turned almost exclusively to lawyers who passed it on their first or second try. In a world where the typical lawyer passed it on his 6th or 7th try, the associates at Nishimura failed it a mean 1.1 times. Those at Nagashima and Mori failed it a mean 0.4 to 0.6 times. These firms wanted only the very best LRTI graduates.

Third, the firms have continued to hire primarily only lawyers from the most selective colleges. The top three firms hired half their associates from the University of Tokyo. They hired 60 to 70 percent from either Tokyo, Kyoto or Hitotsubashi. Among those associates who attended a post-graduate law school, they again hired only from the top schools. They hired 45 to 64 percent of their associates from the University of Tokyo. They hired 63 to 77 percent from the top 3 schools, and 95 to 96 percent from the top 10 law schools.

To service their clients effectively, the top firms need associates with the cognitive skills to handle complex legal questions, and the sophistication and breadth to understand the intricacies of corporate finance, international trade, and managerial economics. With entrance examinations that included brutally hard questions in math and science, the Tokyo, Kyoto and Hitotsubashi law faculties offer graduates with exactly these qualities. At the top three firms, 50-70 percent of the associates who survived to 2013 brought this background. In 2007, these three firms hired at least 69 lawyers from the University of Tokyo, and 86 from the top 3 firms. Yet recall that under the old LRTI regime, in any given year barely 50 Tokyo graduates and 75 top-3 university graduates joined the bar. In 2007, in other words, the top 3 law firms together hired more lawyers from those schools than the entire LRTI output under the old regime.

Table 6:
Top Three Firms: Distribution by Class

A. College:

	Total	U Tokyo		Top3		Top10	
Class	n	n	%	n	%	n	%
2000	7	3	42.9	3	42.9	6	85.7
2001	22	12	54.5	12	54.5	22	100
2002	40	14	34.1	19	46.3	38	92.7
2003	38	26	68.4	29	76.3	37	97.4
2004	36	23	63.9	25	69.4	35	97.2
2005	48	23	48.9	27	57.4	44	93.6
2006	66	29	43.9	44	66.7	63	95.5
2007	111	69	62.7	86	78.2	107	97.3
2008	91	43	47.3	52	57.1	85	93.4
2009	94	41	43.6	49	52.1	82	87.2
2010	89	44	49.4	55	61.8	80	89.9
2011	58	24	41.4	34	58.6	52	89.7
2012	67	32	47.8	38	56.7	63	94

B. Law School:

	Total	U Tokyo		Top3		Top10	
Class		n	%	n	%	n	%
2007	66	33	50	43	65.2	60	90.9
2008	59	28	47.5	35	59.3	54	91.5
2009	79	42	53.2	50	63.3	74	93.7
2010	70	38	54.3	53	75.7	68	97.1
2011	49	28	57.1	40	81.6	49	100
2012	63	38	60.3	46	73.1	63	100

Sources: Firm websites, February 2013.

III. Conclusion

Making it easier to enter an occupation can actually increase the quality of those in it. If more talented people have a greater opportunity cost of studying for an examination (or apprenticing themselves, or taking coursework), a relaxation in the rigor of the requirements can attract them to a formerly avoided occupation. Quality does not necessarily become better—it depends on the magnitude of the opportunity cost—but the usually noted tradeoff between quality and quantity is not inevitable. The key to the phenomenon lies in the distinction between a world

where the population of test-takers is fixed, and a world where applicants choose whether to take a test: If the population is fixed, then a harder test will always increase quality and reduce quantity; if applicants can choose whether to apply, a harder test can reduce both quality and quantity.

Thus, the way licensing requirements affect quality varies by industry. In this article, we examine the Japanese bar—an industry that maintained a brutally restrictive exam in 1990, and currently imposes a much easier exam. We cannot guage whether the quality of the average lawyer has risen. We do find that the number of very talented lawyers has increased dramatically. Under the old regime, most would-be lawyers could join the bar only after studying several years first. Disproportionately, the students who chose to invest those years were the ones without attractive job prospects anyway. The most talented students skipped the investment, and took the attractive jobs. With a much easier exam, many of those talented students now enter the bar instead.

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