The Political Economy of Occupational Licensing Associations*

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Abstract

This paper studies the internal politics of a licensing association with regard to expansion of the licensure and self-regulation. A theoretical model is presented of a professional association that has the power to restrict entry, and yet a majority of its members may *prefer to allow entry, even when doing so reduces the total revenue of its members.* This may happen due to a conflict of interest among professional sub-specialties. On the other hand, the model predicts no heterogeneity of interests within the association regarding self-regulation.

JEL codes: J44

1 Introduction

> "*In 2008, nearly 30 percent of the workforce was required to hold a license up from around 10 percent in 1970.*" (Cited from Kleiner 2011, p. 1)

> "*We propose the general hypothesis: every industry or occupation that has enough political power to utilize the state will seek to control entry.*" (Cited from Stigler 1971, p. 5).

The study of occupational licensing has a distinguished tradition in economics. Adam Smith lamented licensing restrictions in the crafts,[1] as did Milton Friedman concerning the professions.[2] Over time, occupational licensing has grown to cover more than 800 occupations in the US (see Kleiner 2000, p. 190). The quotations above capture two views which I take to be almost universal: first, that occupational licensing is important because it covers many workers; and second, that licensing associations will necessarily seek to restrict entry in order to support wages.

In this paper I do not question the first point: occupational licensing is truly ubiquitous and important. But I offer new insight on the second point. I present a simple model of a professional association which has the power to restrict entry, and yet may *choose to allow entry even when doing so reduces the total revenue of its members.* Entry may even be socially excessive. Thus, I show theoretically that the power to regulate entry can lead to entry above the level that maximizes the rents of the collective members of an association and may in some cases lead to excessive entry. Put differently, merely awarding the power to restrict entry does not necessarily mean that it will be used. I also examine the association's incentives to adopt quality standards.

The existing view in the literature tends to be that licensing associations will generally want to restrict entry to protect the incumbents' monopoly

rents. Note that this argument applies regardless of external economic conditions, because higher rents are always preferred by the incumbents. However, licensing organizations do not generally wither and, in some cases, choose to expand significantly. For example, between 1990 and 2009 the Italian legal bar chose to almost quadruple its size, going from 38,000 lawyers to 140,000.[3] At a broad level of generality, the following are possible explanations why members of professional associations might be willing to allow entry. First, each specialist may have a limited capacity to work. If there is a rising need for their services, there might be an outside political pressure to extend the membership. Anticipating this, the association might opt for voluntary expansion. Second, entry of new specialists might be welcome for the existing ones as there is a probability that the new breed generates a star, whose presence will draw more business to the profession as a whole. Third, if an association does not expand at the necessary pace when the market expands, a competition between professions might take place (for example, between notaries and lawyers for the provision of legal services). In this paper I offer another, complementary explanation.

The key feature of the model is a complementarity in the professional roles covered by the association. For example, lawyers come in two complementary varieties: plaintiff and defense lawyers. These two specialties are complements in the production function because every trial needs (at least) one of each. Besides attorneys, complementarity features in many licensed professional roles; however, for expository concreteness I will settle on attorney-specific language.

To see how the argument goes, consider an expansion of the lawyers' licensing association (the bar). An above-average influx of new lawyers is manufactured, in practice, by lowering the bar exam requirements. Since the "extra entrants" who benefit from this shift are the marginals in the bar exam, the extra entrants must be of a different type than the incumbents. Their different types, in our model, lead the extra entrants to be more inclined to choose one of the two specialties, compared to the incumbents. Say, for

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concreteness, that extra entrants are more likely to become plaintiff lawyers. Now, given the complementarity in the production function, an influx of plaintiff lawyers requires an adjustment: some incumbents need to switch to defense. This occupational switch must be mediated by a relative increase in the defense lawyer's wages. In fact, defense wages could even go up. In this case expansion is good for incumbent defense lawyers. Since they represent 50% of incumbents, we already have a quasi-majority in favor of expanding licensure. In fact, a little reflection shows that there must be a (possibly small) mass of incumbent types who choose to switch from plaintiff to defense work, and who also benefit from the change. And so in fact a strict majority of incumbents favor expansion.

The incentives for incumbents to expand the licensure are reduced when the extra entrants encroach on, or steal, the incumbents' business. Nevertheless, I show that theoretically the incentive for expansion could be arbitrarily large and thus overwhelm any encroachment (business-stealing) effect. Which effect dominates in practice will depend in part on whether the extra entrants can create their own business. I will return to this issue in Section 2.1.

How broadly does this logic apply? In principle it applies to all licensing associations that represent complementary activities. A medical board, for example, allows access to a set of different specialties (family doctor, specialists of various kinds), many of which are complementary in healing the patient. For example, when a patient first visits a family doctor and is then referred to a surgeon, the two specialists are complements in the production function. According to the mechanism proposed in this paper, if the supply of family doctors should increase then surgeons would benefit, which seems reasonable.[4] Along the same lines, I believe that the mechanism proposed here is applicable to a variety of professional associations.[5] The logic fails, however, if there are no complementary specialties represented within the association,[6] or if the different specialties are represented by different associations (if, hypothetically, there were two bar exams, one for plaintiff and another for defense lawyers). In this case there are no incentives to expand

the association(s). I discuss this case in Section 5.

In Section 6 I turn to a different question. I ask whether there is any heterogeneity of interests within the association regarding the adoption of quality standards, or self-regulation. Self-regulation is, arguably, a policy justification for occupational licensing. Our society tolerates the potentially anti-competitive professional associations in part because we believe that associations are able to impose quality standards (codes of professional responsibility) on their members. Self-regulation, as opposed to regulation, is especially prevalent in the case of the professions, arguably because of the expertise required to regulate them. But, will association members *choose* to self-regulate and, if so, to what extent? The answer to this question depends, again, on the internal political economy of these associations. I show that the model predicts homogeneity of interests, even when the cost of the regulation is unequally distributed across specialties. In fact, to maximize the potential for heterogeneity of interests, I consider a rule or regulation the cost of which falls solely on one specialty within the profession, but which benefits all specialties equally. Given this asymmetry, one would guess that there might be a divergence of views within the association, and that the regulation would be supported more strongly by the group which does not bear its cost. However it turns out that, due to a "translation of costs" argument analogous to the analysis of tax incidence, wages adjust so as to fully align the interests of both specialties. As a result, I find that there is perfect unanimity within the professional association with regard to the application of a code of professional ethics. In Section 7 I study the interaction between the two policies: expanding the licensure and self-regulation.

Throughout the paper I focus on the welfare of incumbents, and subgroups of them, because I am interested in the positive questions of whether this institution will voluntarily choose to expand, whether there are conflicts about self-regulation, and on the effect of expansion on self-regulation. I do not take a normative position on whether expansion or self-regulation is good or bad. Normative views are sundry and sometimes conflicting: lawyers are

too expensive (suggesting that expanding licensure would be good) and yet there are too many frivolous lawsuits (suggesting the opposite). The normative question, I believe, is beyond the scope of mere theory and hence of this paper. I say this in Section 8.

1.1   Related Literature

A large and distinguished literature focuses on the ill effects of occupational licensing. Adam Smith lamented licensing restrictions in the crafts, as did Milton Friedman concerning the professions. Stigler (1971, 1972) wrote the seminal political economy papers in this area. Stigler's approach takes as given that professional associations will wish to restrict licensure, and inquires about the constraints posed by the political/administrative structures which are external to the association.[7] There is, also, an empirical literature which is mostly devoted to measuring the effects of licensing. A key challenge in this literature is finding sources of exogenous variation in licensing. Kleiner (2000) provides a good survey of this whole literature.

The sociologist Emile Durkheim emphasized the importance of professional associations in providing their members with moral rules. Professional associations would potentially be able to fill in an ethics gap left open by the disorderly, violent, and confused market system.[8]

The model presented here could be recast as a model of extension of political franchise or club membership. There are literatures on franchise extension (see Acemoglu and Robinson 2000, Lizzeri and Persico 2004) and on club membership extension (see e.g. Roberts 1999, Acemoglu *et al.* 2012), but I am not aware of a model in these literatures that is similar.

In our model, a majority of incumbents may favor expansion but the specialty which is directly hit by the influx (plaintiff lawyers) is unambiguously against expansion. This is because new entrants are substitutes for them. This logic is reminiscent of the labor literature on the impact of immigration

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on the wages of natives (see, e.g., Borjas 2003). A couple of papers studying immigration and licensure are especially intriguing.[9] Friedberg (2001) suggests that the enormous influx of physicians into Israel (caused by the Soviet Union's lifting of emigration quotas) was accommodated in a very similar way to the one predicted in this paper. Most of the Russian physicians became general practitioners (or other lower skilled members of the occupation) and the incumbent physicians shifted into higher skilled specialties. Interestingly, Friedberg estimates the wages of Israeli incumbents in fact increased due to the influx of immigrants. Friedberg (citing other work) suggests that "relations between the two groups were complementary rather than competitive ... in providing medical services." Federman *et al.* (2006) studies the effect of barriers imposed by a licensing association (manicurists) on a wave of Vietnamese applicants.

2   Model

We start with an exogenously fixed measure N of atomistic licensed professionals. For simplicity I will call them lawyers, and the professional association I will call the bar. Each lawyer is indexed by i and has an occupational choice: she can choose to become either a plaintiff or a defense lawyer, or to be inactive. There is a cost c_p^i of being an active plaintiff lawyer and c_d^i of being an active defense lawyer. These costs represent the cost of training in a specialty, keeping an office, professional education (CLE), insurance, customer development, etc. Being inactive costs zero.

Each lawsuit requires exactly one plaintiff lawyer and one defense lawyer. Each active lawyer can be involved in at most one lawsuit. Each lawsuit creates a surplus $V(N)$ that is split between the plaintiff and defense lawyers through their wages. Wages by specialty (plaintiff and defense) are denoted by w_p and w_d, respectively, and are assumed to be constant within specialty. By assumption $w_p + w_d = V(N)$. The per-lawsuit surplus is assumed to be

continuous and weakly decreasing in N, which implies that enlarging the bar reduces (or at least does not increase) the incumbents' business.

Definition 1 *Fix the set of lawyers admitted to the bar. An* occupational equilibrium *is a pair of wages w_p^*, w_d^* such that given those wages half the active lawyers choose to become plaintiff lawyers and the other half choose to become defense lawyers.*

By this definition agents are wage-takers: in choosing her occupation an agent does not take into account the effect of her individual decision on market wages. This assumption seems appropriate in light of the small size of each agent. Still, perhaps this equilibrium notion should be called *Walrasian* occupational equilibrium to emphasize its price-taking nature, in contrast to the price-making features of Makowski and Ostroy's (1995) definition of occupational equilibrium.

Let us arrange lawyers so that $c_p^i - c_d^i$ is increasing in i. This convention means that lower-i lawyers have a comparative (not necessarily absolute) advantage in being plaintiff lawyers. The cumulative distribution of the i's is continuous, takes positive values in the interval (a, ∞), and is denoted by $F(i)$.

Assumption 1 *Bar membership is monotonic in i.*

This assumption is much stronger than is needed to get the results. All we need is that admission to the bar is regulated by a test the outcome of which is correlated—positively or negatively, strongly or weakly—with i. However, for ease of exposition I stick with the strong version of the assumption and defer further discussion and refinement of it to Section 2.1 and Remark 1.

Let $\underline{i}$ be the lowest type admitted to the bar, that is, the admission threshold. By assumption all lawyers with $i > \underline{i}$ belong to the bar and, therefore the total number of lawyers $N \equiv 1 - F(\underline{i})$. Bar membership can be expanded by lowering the admission threshold.

Example 1 *(**functional form example**) Suppose $c_p^i = P/i$ and $c_d^i = D/i$, where $D > P$ are positive numbers. Since lawyers with larger i have a lower cost of entering both specialties, i can be interpreted an index capturing a general-purpose intelligence or ability trait. Given this interpretation of i, it is natural to assume that only those lawyers with high i (the smartest ones) pass the bar exam. Furthermore, $c_p^i - c_d^i = (P - D)/i$ is increasing in i, as required by the model.*

2.1 Discussion of Modeling Assumptions

Assumption 1 implies that new members who are admitted through enlargement have a comparative advantage in becoming plaintiff lawyers. This important assumption is substantiated factually in some important cases. In the case of lawyers, for example, there is widespread lore (and some evidence) that lawyers with low academic credentials are more likely to become plaintiff lawyers.[10] Analogously, medical students with lower MCAT scores are more likely to become family doctors.[11] Thus, if licensure is expanded by lowering the threshold in licensing exams, then the "extra" licensees would be more likely than average to become plaintiff lawyers or family doctors, consistent with the model. Moreover Assumption 1 can be relaxed considerably; this will be shown later in Remark 1.

It is worth remarking that, although we presented the model so that lawyers choose their occupation after gaining admission to the bar, nothing prevents the occupational choice from being made contemporaneously or even before bar admission.

We assume that $V(N)$ is (weakly) decreasing in N. This property captures the possibility that new association members may encroach on the incumbents' business. As we will see, licensure is more likely to be expanded if $V(N)$ does not decrease too sharply with N, that is, if the encroachment effect is not too strong. In practice, this means that new entrants must be

able to generate at least some new business. Whether new entrants in a profession actually generate new business will depend on the situation. Empirical studies attempting to estimate the rate of change $\partial V(N)/\partial N$ have to deal with the serious concern that N is endogenous. I am aware of only very few studies that make use of plausibly exogenous variation in N. For Italian lawyers, Buonanno and Galizzi (2010) use geographic variation in the location of law schools as an instrument for lawyer density; they estimate a 2-6% increase in lawsuits for every 10% increase in lawyers,[12] suggesting that extra entrants are in fact capable of generating a significant amount of new business. For German physicians, Jürges (2007) uses a similar instrument and finds evidence of physician-induced demand of magnitude comparable to that of Italian lawyers.[13]

One can provide a microfoundation for $V(N)$ as follows. Suppose there is a large number of cases, varying in value. Of course, the highest-valued cases will be picked first. Then, when N increases more of the lower-valued cases must also be chosen, although it is likely that incumbents retain at least some advantage in securing high-value cases. In this formulation new entrants may not encroach on the incumbents' business very much, and the decline in average case-value for bar members overestimates the encroachment effect as felt by the incumbents.

We assume that all lawyers can switch occupation in response to extra entry. In reality, it is possible that incumbent lawyers are less adept at switching occupations, compared to new entrants. To the extent that incumbents cannot (or find it hard to) switch occupation, the size of the supermajority in favor of extension will be smaller. But it will remain a supermajority provided that a fraction, albeit small, of incumbents switches occupations in equilibrium.

2.2   Pre-existing Model: No Complementarities

The existing literature implicitly focuses on a model in which, unlike the one presented above, production does not require complementary inputs.[14] This case can be modeled by assuming that the compensation of each member is $w = V(N)$, where $V(N)$ captures the surplus which the (single) member is able to capture from the clients. Notice that here there is no split of this surplus with a different professional figure, which in this case is not required for production. Since the function $V(\cdot)$ is nowhere increasing, extending the licensure (N) decreases wages. Therefore we have the next proposition.

Proposition 1 *Suppose there are no complementarities in production. Then incumbent bar members are unanimously not in favor of any expansion of bar membership.*

So in these associations there is never any support for extending licensure. This result contrasts with Proposition 3 below.

3   Occupational Equilibrium for Fixed Licensure

In this section I work out the occupational equilibrium prices. To avoid keeping track of voluntary unemployment, I will restrict attention to occupational equilibria in which every bar member is active. Sufficient conditions are provided for all lawyers to be active in equilibrium. Throughout this section N, the size of the bar, is kept fixed.

Fix $\underline{i}$, and hence the set of lawyers admitted to the bar. An active bar member i chooses to be a plaintiff lawyer if

$$w_p - w_d \geq c_p^i - c_d^i \equiv c^i, \tag{1}$$

where c^i represents the comparative cost of being a plaintiff lawyer. By construction c^i is increasing in i. Let i^m be the median lawyer among those admitted to the bar and $c^m \equiv c^{i^m}$ denote the comparative cost of that median lawyer. Equation (1) must hold with equality at c^m. Indeed, if this is so then all lawyers with i smaller than i^m strictly prefer to become plaintiff lawyers, and the others will strictly prefer to become defense lawyers; and both groups number exactly $N/2$, as they must in any equilibrium in which all lawyers are active. Figure 1 represents graphically how the different types split across occupations.
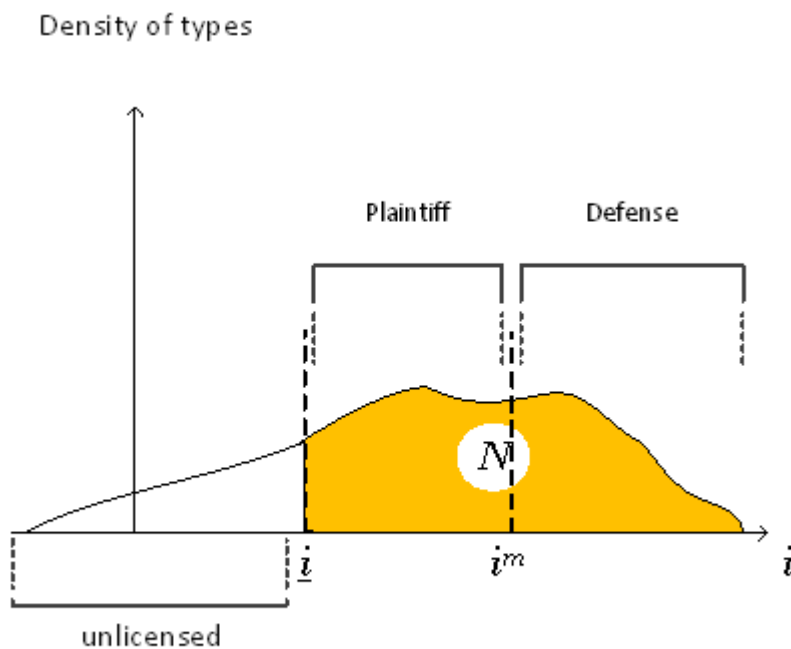
Density of types

Figure 1: Occupational choices by different types.

Substituting c^m and $w_d = V(N) - w_p$ in (1) we can solve for the equilib-

rium plaintiff wages:

$$w_p^* = \frac{V(N) + c^m}{2}. \tag{2}$$

We see that the share of the surplus appropriated by the plaintiff lawyer, is increasing in c^m. This is because an increase in c^m means that the marginal lawyer has a higher opportunity cost of being a plaintiff lawyer. Since the marginal lawyer must be indifferent between the two specialties, equilibrium wages must go up for plaintiff work.

The wage of defense lawyers is

$$w_d^* = V(N) - w_p^* = \frac{V(N) - c^m}{2}. \tag{3}$$

As c^m shifts, we see from (2) and (3) that defense and plaintiff wages respond by moving in opposite directions. This effect causes heterogeneity of views among organization members. We call this the "wage-pivot" effect.

Let us now give conditions under which all lawyers choose to be active in equilibrium. For plaintiff lawyers this means ensuring that $w_p^* - c_p^i \geq 0$ and for defense lawyers that $w_d^* - c_d^i \geq 0$. Using (2) and (3) these participation constraints read, respectively,

$$\frac{V(N) + c^m}{2} \geq c_p^i \text{ for all } \underline{i} \leq i \leq i^m, \tag{4}$$

$$\frac{V(N) - c^m}{2} \geq c_d^i \text{ for all } i \geq i^m. \tag{5}$$

Conditions (4) and (5) are more likely to hold if the value of a lawsuit V is large relative to the costs.

Proposition 2 *Fix the bar admission threshold $\underline{i}$ (which pins down the membership size N, the median type i^m, and that type's comparative cost c^m). If conditions (4) and (5) hold then there exists a unique occupational equilibrium and in this equilibrium all bar members are active. At this occupational equilibrium the 50% of members with types above i^m choose to become defense lawyers, and the remaining 50% choose to become plaintiff lawyers. Equilibrium wages are given by (2) and (3).*

From now on I will implicitly assume that conditions (4) and (5) hold for all bar admission thresholds we consider.

4   The Political Economy of Licensure Expansion

In this section I extend the analysis and allow for the licensure to be chosen endogenously through a (stylized) political process internal to the association. I take the view that membership in the association cannot be revoked once it is granted, so contractions of the membership are not feasible.[15]   Any expansion in the size of the membership is possible however, and will be undertaken if it is desired by a majority of the incumbent members.

Intuitively, I analyze a process whereby membership is initially set at some (any) status quo threshold $\underline{i}^{SQ}$. For any status quo level, I ask whether any expansion of membership is politically feasible and, if so, where the process of licensure expansion ends. I define a specific expansion as *politically feasible* if there is a majority among the current membership which agrees that this particular expansion is the best among all possible expansions and is preferable to the status quo. I then define a *politico-occupational equilibrium* as a membership threshold $\underline{i}^*$ at which no expansion is politically feasible. Since there may be many politico-occupational equilibria, I am also interested in which equilibrium is reached as *the restpoint of the sequence of feasible expansions starting from a given status quo $\underline{i}^{SQ}$* with certain properties. Most of the formal definitions and results are given in the appendix. In the rest of the paper I illustrate the main forces that play out in the model by deriving some basic results and drawing out their implications.

4.1 Conditions for a Majority of Incumbents To Favor a Small Licensure Expansion

Fix any status quo $\underline{i}^{SQ}$, and consider a small expansion of the licensure, which by assumption is obtained by lowering the admission threshold to some $\underline{i}' < \underline{i}^{SQ}$. Using equation(3), and denoting by $w_d^*(\underline{i})$ the equilibrium wage for defense lawyers with admission threshold $\underline{i}$, we can write

$$\frac{\partial w_d^*(\underline{i})}{\partial \underline{i}} = \frac{1}{2}\left(\underbrace{\frac{\partial V(N)}{\partial N}\frac{\partial N}{\partial \underline{i}}}_{\text{encroachment effect}} - \underbrace{\frac{\partial c^m}{\partial \underline{i}}}_{\text{wage-pivot effect}} \right). \qquad (6)$$

We see that the sign of the wage variation depends on the sum of two components. The first component, $\frac{\partial V(N)}{\partial N}\frac{\partial N}{\partial \underline{i}}$, captures the encroachment effect as the profession grows in response to a decrease in the threshold. This component is positive but bounded above. Indeed, even in the case of full encroachment where $V(N) = V/N$ this effect cannot be larger than $\frac{V}{N^2} \cdot \left(-\frac{\partial N}{\partial \underline{i}}\right)$. The second component, $-\frac{\partial c^m}{\partial \underline{i}}$, captures the wage-pivot effect. This effect is negative because increasing the threshold $\underline{i}$ increases the median c^m. The size of the wage-pivot effect can be as large as one wants, depending on the shape of the distribution F around its median c^m. If the density of F is very low around the median then the marginal effect of $\underline{i}$ on c^m is very large. In this sense we can say that even under full encroachment, the wage-pivot effect can dominate under appropriate distributional assumptions.

Whenever the wage-pivot effect dominates, a majority of bar members favors expansion. This is shown in the next proposition.

Proposition 3 *Suppose that at the status quo membership level the wage-pivot effect dominates the encroachment effect, i.e., $\frac{\partial V(N)}{\partial N}\frac{\partial N}{\partial \underline{i}} < \left.\frac{\partial c^m}{\partial \underline{i}}\right|_{\underline{i}=\underline{i}^{SQ}}$. Then a majority of incumbent bar members strictly prefers a slightly larger bar membership to the status quo. Hence, the status quo cannot be a politico-*

occupational equilibrium (unless of course at the status quo no one is excluded from membership).

Proof. Lowering $\underline{i}$ by a small amount will lower c^m to some $c^{m\prime}$ and hence, through (2), it will lower the plaintiff lawyer wage to some $w_p^{*\prime} < w_p^*$. The defense lawyer's wage goes up if and only if expression (6) is positive. This means that all incumbent lawyers of a type above the previous median lawyer i^m, who used to receive a payoff of $w_d^* - c_d^{i^m}$ can now (and will choose to) keep being defense lawyers at a greater payoff. So at least 50 percent of incumbents strictly favors expansion. And in fact, more than 50 percent of incumbents are strictly in favor of expansion. Indeed, since the new median $c^{m\prime}$ is discretely below the old median c^m, there will be some incumbents with type slightly below the old median i^m who at the old wages were almost indifferent between being plaintiff or defense, and now with the new equilibrium wage structure switch to defense lawyer and are made better off. ∎

The proposition says that a small expansion is attractive to a majority of the members if the comparative cost c^i for the median voter is highly responsive to changes in the type, and if the encroachment effect $\frac{\partial V(N)}{\partial N}$ is small. I end this section with a couple of remarks about the role played by Assumption 1.

Remark 1 *(Mixed-ability entrants) Assumption 1 states that aptitude in the bar admission test is perfectly correlated with i. There is no analytical difficulty in relaxing this assumption. To allow for a mix of abilities among new entrants let us assume that a fraction $\eta > 1/2$ of newly admitted lawyers has $i < \underline{i}$ like before; the rest has $i > i^m$. When a small mass Δ of lawyers is admitted to the bar, unless wages adjust, a fraction $(1 - \eta)$ will become defense and the rest will become plaintiff lawyers. There will therefore be $(2\eta - 1)\Delta$ too many plaintiff lawyers. This situation is analytically equivalent to one in which a mass $(2\eta - 1)\Delta$ of new lawyers is admitted. Thus, from an analytical viewpoint the case of mixed ability entrants reduces to*

the case of homogeneous entrants with which we have dealt in Proposition 3. From a quantitative viewpoint, however, the incumbents are less well-disposed towards new entrants the more heterogeneous entrants are. To see this, observe that the wage-pivot effect of any given mass Δ of new entrants will be smaller when there is more heterogeneity (i.e., when η is closer to 1/2), whereas the encroachment effect is independent of η.

Remark 2 *(**Requirements on the population of entrants**) Proposition 3 is preserved if we assume that new entrants are more likely to become defense lawyers. In this case a majority of existing lawyers (including all plaintiff lawyers) will be in favor of expansion. What really matters then for the results to go through, is that the influx of new lawyers should move the median c^m in some direction, and through it the wages. This is a mild assumption.*

4.2 Tyranny of the Majority: Politico-Occupational Equilibrium Extension and Its Effect on Incumbents' Welfare

In this section I show that when the size of the expansion is left to majoritarian politics, there can be expansion even if expansion reduces the payoff (welfare) of incumbents.

Proposition 4 *An expansion in membership that is preferred to the status quo by the majority of incumbents need not improve the incumbents' aggregate welfare: and it will decrease aggregate welfare if the incumbent median voter has a comparative advantage in being a plaintiff lawyer (i.e., if $c^{i^m} < 0$). If $c^{i^m} > 0$ an expansion may improve the incumbents' aggregate welfare and yet the majority of incumbents may prefer the status quo.*

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Proof. Let $\underline{i} = \underline{i}^{SQ}$. The total payoff of the incumbents is given by

$$\int_{\underline{i}}^{\infty} \frac{V(N)}{2} dF(i) - \int_{\underline{i}}^{i^m} c_p^i dF(i) - \int_{i^m}^{\infty} c_d^i \, dF(i).$$

Let us prove our claims using only slight decreases in the admission threshold. As the threshold $\underline{i}$ is moved, the change in incumbent welfare is given by

$$\underbrace{\frac{1}{2} \frac{\partial V(N)}{\partial N} \frac{\partial N}{\partial \underline{i}} \left[1 - F(\underline{i})\right]}_{\text{encroachment effect}} + \underbrace{\frac{\partial i^m}{\partial \underline{i}} \left[c_d^{i^m} - c_p^{i^m}\right] f(i^m)}_{\text{allocational gain/loss}} \tag{7}$$

Note that this quantity is not the derivative with respect to $\underline{i}$ of the expression for the total payoff of the incumbents. It is, instead, the derivative of that expression with respect to $\underline{i}$ holding fixed the lower limit of each of the first two integrals in the expression. Those lower limits, each equal to $\underline{i}$, need to be held fixed because I want to derive the effect that a small change in the threshold has on the original incumbents – the lawyers at or above the original threshold $\underline{i}$.

The first addend in (7) represents the encroachment effect. The sign of this term is positive which means that this effect reduces the incumbents' welfare as the threshold is lowered. The second term reflects the gain or loss in allocative efficiency as the incumbents of median type switch from plaintiff to defense work. This switch might be welfare-improving, but if $c_d^{i^m} > c_p^{i^m}$ it is not. In this case incumbent welfare is unambiguously hurt by expanding licensure. A small licensure extension is welfare-improving for the incumbents if and only if (7) is negative, which after rearranging means

$$\frac{1}{2} \frac{\partial V(N)}{\partial N} \frac{\partial N}{\partial i^m} < c^{i^m} \frac{f(i^m)}{[1 - F(\underline{i})]}. \tag{8}$$

The left-hand side is positive. If $c^{i^m} < 0$ the inequality cannot be satisfied, hence a small expansion of membership is welfare-decreasing for the incumbents. However, such an expansion will be favored by a majority of incumbents if (6) is negative, that is, if

$$\frac{\partial V(N)}{\partial N} \frac{\partial N}{\partial i^m} < \left. \frac{\partial c^i}{\partial i} \right|_{i=i^m}. \tag{9}$$

Remember that by construction $\left.\frac{\partial c^i}{\partial i}\right|_{i=i^m}$ is positive. When $\left.\frac{\partial c^i}{\partial i}\right|_{i=i^m}$ is relatively large so that (9) holds and $c^{i^m} < 0$ so that (8) fails then we are in the situation described in the first sentence of the proposition. If, instead, c^{i^m} is positive and relatively large so that (8) holds, and $\left.\frac{\partial c^i}{\partial i}\right|_{i=i^m}$ is relatively small so that (9) fails, then we are in the situation described in the second sentence of the proposition. ■

The point is that the conditions that govern the welfare (8) and the politics (9) of expansion are different. Whereas expansion increases the incumbents' welfare if the *level* of c^{i^m} is large, the political support for expansion depends on c^i being very responsive to *changes* in i around the median lawyer. Intuitively, the majority tends to favor those extensions that, *ceteris paribus*, cause large wage swings. Incumbent welfare, in contrast, improves when the incumbents who switch specialty realize a large comparative cost saving (irrespective of the size of the wage swing). This proposition therefore highlights the misalignment between the interests of the majority and those of the universe of incumbents.

Corollary 2 *A politico-occupational equilibrium need not maximize the incumbents' aggregate welfare.*

Proof. Follows from the first sentence in Proposition 4. ■

4.3 Existence of Politico-Occupational Equilibrium and Comparison with No-Complementarities Case

This section leverages the results obtained in the previous sections to yield certain important properties of the politico-occupational equilibrium. Unless explicitly stated, all the results in this section pertain to the model with complementarities (our main model).

Proposition 5 *a) For any status quo threshold $\underline{i}^{SQ}$ there exists a unique politico-occupational equilibrium threshold which is reached as the restpoint of the sequence of feasible expansions starting from $\underline{i}^{SQ}$.*

b) At the equilibrium mentioned above, the membership threshold is lower than the status quo threshold $\underline{i}^{SQ}$ if $\frac{\partial V(N)}{\partial N}\frac{\partial N}{\partial \underline{i}} < \frac{\partial c^m}{\partial \underline{i}}$, where N, c^m, and $\underline{i}$ are all evaluated at the status quo threshold.

c) If there are no complementarities the membership threshold at the above-mentioned equilibrium is never lower than the status quo threshold $\underline{i}^{SQ}$.

Proof. a) See the appendix.

b) Proposition 3 says that in this case a marginal decrease in the threshold is preferred by a majority of incumbents. Therefore the status quo cannot be an equilibrium. Since we know from part a) that an equilibrium exists, the equilibrium must exceed the status quo. See the appendix, Corollary 12 for a more formal treatment.

c) Follows immediately from Proposition 1 after we extend the definition of the politico-occupational equilibrium to the no-complementarities case in the obvious way. See the appendix, Corollary 11 for a formal treatment. ∎

The comparison of parts b) and c) in the proposition represents the first major result in this paper: complementarities can lead to membership expansion.

4.4 Different Groups and Their Favored Extension Size(s)

The previous sections focused on small expansions of the licensure. Let us now broaden our focus to extensions of any size $\Delta \geq 0$. When there are several possible extension sizes, which size of extension is supported by the largest plurality? And, more generally, which size of extension do different types of incumbents prefer? These questions are interesting from a governance viewpoint because if the majority has heterogeneous preferences over

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the ideal extension size, then it may be more difficult for those in the majority to agree on a common agenda; and it may be easier for their opponents to "divide and conquer" them. From a technical viewpoint, the definition of politico-occupational equilibrium given at the beginning of Section 4 is most meaningful if a majority of members favors the same size of expansion.

In this model, it turns out, anyone who favors expansion agrees on its optimal size. To understand why this is so, one needs to remember that expansions affect payoffs through wages. All expansions drive down plaintiff lawyers' wages, so if anyone is in favor of expansion it must be those who are defense lawyers as well as some who expect to become that after the expansion. Once we realize this, we see that all those who want expansion want it for the same reason: to increase defense lawyer wages w_d^*. Therefore, there is no heterogeneity regarding optimal expansion size among the proponents of expansion: all want the expansion that maximizes w_d^*, call that an expansion of size Δ^*.[16] Of course Δ^* could be zero if the encroachment effect is so strong that even defense incumbents don't want to expand.

This observation suggests that an expansion of size Δ^* will be implemented in any governance system in which a majority chooses policy. A further implication of this analysis is that simply increasing the size of the extension will not necessarily increase the support for it. This is because support for an expansion depends on whether it generates higher defense wages. Defense wages need not be monotonic in the size of the licensure. If they are maximized at Δ^*, then expanding beyond Δ^* will worsen both wages. In other words, the level of support for extension is not monotonic in the size of the extension.

A further implication of the agreement about the optimal size of expansion is that expansions, when they take place, do not bring on board members who favor further expansion. To see this, observe that after an expansion from membership m_0 to m_1 there must be agreement among all m_1-members who might favor further expansion to m_2, including particularly m_0-defense

lawyers. These old incumbents could have engineered a larger expansion to m_2 in the first go, and they chose not to do that. Since m_1-defense lawyers must agree with m_0-defense lawyers, both must believe that membership m_1 is optimal and see no reason for further change. This reasoning suggests that, in this model, expansion will not be progressive. This intuition is given formal content in Corollary 12 in the appendix.

A final implication of the agreement about the optimal size of expansion has to do with supermajority requirements. In some cases more than 50% of a given incumbent population is required to be in favor of expansion for it to take place. Sometimes this might be because of explicit statutory requirements (supermajority voting rules). In other cases, it may be due to more subtle institutional features.[17] When expansion is subject to supermajority requirements it is less likely to take place. However, support for expansion cannot be increased by distorting the expansion size away from Δ^*. Therefore, we expect that: while the *probability* of an expansion taking place decreases with the size of the supermajority required for extension; the *size* of the expansion, conditional on it being implemented, is independent of the supermajority requirement.

5 Segregated Complementarities and Licensure Extension

I have assumed up to now that two complementary specialties (plaintiff and defense lawyers, in our case) are part of the same association. A more subtle analysis is required when there are two complementary specialties, but they are segregated into separate associations, one for each specialty. We now sketch out a model of a market structure with "segregated complementarities" and show that in this case the incentives to expand disappear.

Suppose there are two licensing associations, one for plaintiff lawyers and

the other for defense lawyers. These associations choose their minimum thresholds t_p and t_d simultaneously and independently. After each association has set its minimum threshold, the following subgame is played among the individual lawyers. Every lawyer i chooses which association to apply to based on the wages of the two types of lawyers. Any type i who is above the threshold and applies is admitted. Wages are determined by the occupational equilibrium.

Proposition 6 *When complementary specialties are segregated in separate associations neither association ever gains from expansion regardless of whether $\frac{\partial V(N)}{\partial N}$ is smaller than $\frac{\partial c^m}{\partial N}$.*

Proof. We start by describing the equilibrium in the subgame.

Case A: Suppose first that the two associations have the same number of open slots: $2(1 - F(t_d)) = (1 - F(t_p))$. Suppose that wages are as in the occupational equilibrium of Section 3. At these wages all lawyers with $i < t_d$ choose to serve plaintiffs, the rest opt to become defense lawyers. So for this choice of t_p and t_d the occupational equilibrium wages give rise to an equilibrium in the subgame where lawyers self-select into associations exactly as in Section 3.

Case B: Suppose now that we decrease t_d to t'_d without changing t_p, so that $2(1 - F(t'_d)) > (1 - F(t_p))$. This means that, in principle, there could be more licensed defense than plaintiff lawyers. Indeed, if t'_d is below t_p then the threat of having more defense than plaintiff lawyers, which would be incompatible with an occupational equilibrium, pushes equilibrium wages down for defense lawyers to the point at which entry is fully deterred. If instead t'_d is above t_p then we now show that the total number of active lawyers does not change and, in fact, the occupational equilibrium wages of Section 3 still represent an equilibrium. To see this, recall that in the occupational equilibrium of Section 3 the lawyer with type just below the median type strictly preferred becoming a plaintiff lawyer. Lowering t_d a little bit does

not constrain how this or any other lawyer self-selects into an occupation. Thus the wages, and behaviors of Section 3 remain an equilibrium. In this equilibrium the defendant lawyers association will be "undersubscribed."

Case C: Suppose instead that we decrease t_p to t'_p without changing t_d, so that $2\left(1 - F\left(t_d\right)\right) < \left(1 - F\left(t'_p\right)\right)$. This means that, in principle, there could be more licensed plaintiff than defense lawyers. In this case the equilibrium cannot be the same as in Section 3. These wages are no longer an occupational equilibrium because now more lawyers join the plaintiff bar than there are defense lawyers. Now, the plaintiff lawyers' wages have to dissuade some types from joining the plaintiff lawyers association. This shows that the new equilibrium wage $w_p^{*\prime}$ must be lower than w_p^*.

Now let us move back to the previous stage and consider the incentives for each association to expand its licensure. There is no longer an incentive to expand. Indeed, the defense lawyers association is at best indifferent between expanding and not (note the difference with Proposition 3). This is because now the defense bar controls only its own membership, but it cannot change the composition of the other specialty. And, as before, plaintiff lawyers are strictly against expansion. ∎

This proposition identifies a scenario in which the conventional view is correct: professional associations don't want to expand membership. The analysis in this section leads to the following hypothesis: a professional association whose boundaries do not include complementary occupations, is more likely to lobby for restricted access compared to an association that (as in previous sections) covers complementary occupations.

Another observation follows from comparison with the model in the previous sections. In that model, whatever defense lawyers prefer with regard to enlargement, they can achieve. So within that model we can think of defense lawyers as running the association. Plaintiff lawyers' preferences regarding expansion are not respected, in that sometimes there is excessive expansion from their perspective. But expansion would be prevented if, as in this sec-

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tion, the two specialties had separate licensing associations (cf. Proposition 6). Therefore the corollary follows.

Corollary 3 *The specialty with high qualifications (defense lawyers) prefers a joint licensing association with the low-qualification specialty (plaintiff lawyers). The low-qualification specialty prefers to have its own separate licensing association.*

The proposition may be relevant for thinking about the effects of the division of labor. Technological progress often causes "traditional" tasks to become standardized and then shifted from "high qualification" workers to other, more technical workers. In the present context, this type of division of labor is interesting because it creates two complementary activities where previously there was only one. This raises the question of what "professional association structure" is expected to emerge, that is, whether the newly emerged technicians will be regulated by the old professional association which spawned them, or whether they will create their own independent association. Proposition 3 predicts a conflict of interest between the two specialties, with the specialty with the highest qualification wanting to control the technical one to potentially expand it.[18]

6   Self-Regulation

A major rationale for our societal (and legal) tolerance of the anti-competitive features inherent in professional associations, is that they are able to impose quality standards on their members. Meeting a quality standard is privately costly for the individual member but, the argument goes, the association is willing to impose this cost on its members because the code benefits the profession as a whole. In other words, the professional association is able to self-regulate in a way that its individual members are not. This is probably

true. The question I address here is whether the associaton *chooses* to self-regulate. This, in principle, depends on the governance of the association.

In this section, as in the rest of the paper, I do not take for granted that the association behaves as a monolith. I ask instead whether there is heterogeneity of interests within the profession regarding the application of an ethics code. I consider, in particular, a rule or regulation the cost of which falls principally (in the model, solely) on one specialty within the profession, but the benefits of which are the same for all specialties. Given this asymmetry, one would guess that there might be a divergence of views within the association and that the regulation would be supported more strongly by the group that does not bear its cost. However, this is not the case in our model. Due to a "translation of costs" argument analogous to the analysis of tax incidence, wages adjust to fully align the interests of both specialties. As a result, the model predicts perfect unanimity within the professional association with regard to the application of a code of professional ethics.

To focus on self-regulation, in this section I fix the size of the licensure N and omit it from the notation. The extent of costly regulation is modeled as a scalar r that raises the plaintiff lawyer's cost which now is given by $c_p^i(r) \equiv c_p^i + r$. Increasing r also increases the reputation of the profession as a whole, so that $V(r)$ is an increasing function of r. The additive scalar r might capture the cost of increasing the professional educational requirement (more CLE courses for lawyers), or the professional liability insurance, or the reporting requirements, etc. The stark discrepancy between the scope of regulation costs (borne by plaintiff lawyers alone) and that of its benefits (enjoyed by all) is set deliberately to highlight the "irrelevance of incidence" result.

For given r, we get the payoffs from expressions (2) and (3):

$$w_p^*(r) - c_p^i(r) \equiv \frac{V(r) + c^m + r}{2} - c_p^i - r,$$

$$w_d^*(r) - c_d^i \equiv \frac{V(r) - c^m - r}{2} - c_d^i .$$

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Even though the direct costs of the regulation are borne only by plaintiff lawyers, we see that the payoffs of plaintiff and defense lawyers are affected in exactly the same way by a change in r (they vary at the same rate of $[V'(r) - 1]/2$.) Therefore there is unanimous agreement within the whole profession about the net benefits from self-regulation. This means that one cannot hope to leverage one side of the profession against the other, and that the form of governance does not matter with respect to self-regulation. Let us denote the degree of self-regulation unanimously preferred by the association members by

$$r^* \equiv \arg\max V(r) - r.$$

The degree of self-regulation unanimously preferred by the association members also maximizes the welfare of the association members. Indeed, the welfare function is

$$\int_{\underline{i}}^{\infty} \frac{V(r)}{2} dF(i) - \left[\int_{\underline{i}}^{i^m} c_p^i(r) dF(i) + \int_{i^m}^{\infty} c_d^i \, dF(i) \right]$$

$$= \frac{N}{2} V(r) - \frac{N}{2} r - \left[\int_{\underline{i}}^{i^m} c_p^i dF(i) + \int_{i^m}^{\infty} c_d^i \, dF(i) \right],$$

which is a monotone transformation of $V(r) - r$. These findings are collected in the following proposition.

Proposition 7 *Regardless of how the costs of professional regulation are distributed between specialties, the entire profession will unanimously agree on the ideal amount of regulation. This amount maximizes the welfare of association members.*

The stark result of zero heterogeneity of interests depends, in part, on the assumption that r enters additively as a cost. If r was not additive the message would be less stark. The nuanced interpretation of Proposition 7, then, is that whatever heterogeneity of interests there might be with respect to self-regulation, the heterogeneity stems from functional form assumptions

and not from a deeper political economy reason. In particular, there is no reason to believe that the association will be systematically biased in a particular direction concerning self-regulation.

7 Licensure Extension with Endogenous Self-Regulation

Proposition 7 implies that r^*, the amount of self-regulation preferred by all association members, is a function of the extent of the licensure (summarized by N). Therefore, if N varies then so does r^*. In this section we return to the problem of licensure extension analyzed in Section 4, but this time taking into account the endogenous adjustment in professional regulations.

Let us define $V(N, r)$ as the value of a case which now depends negatively on N and positively on r. Denote

$$r^*(N) \equiv \arg\max V(N, r) - r.$$

The change in the incumbent defense wages as a function of a change in the admission threshold is now given by (cf. expression 6):

$$\frac{1}{2}\left(\frac{\partial V(N, r)}{\partial N}\frac{\partial N}{\partial \underline{i}} + \left(\frac{\partial V(N, r)}{\partial r} - 1\right)\frac{\partial r^*(N)}{\partial N}\frac{\partial N}{\partial \underline{i}} - \frac{\partial c^m}{\partial \underline{i}}\right)\bigg|_{r = r^*(N)}. \quad (10)$$

Since

$$\frac{\partial V(N, r)}{\partial r} - 1 = 0 \text{ at } r = r^*(N),$$

it follows that expression (10) coincides with expression (6). The implications are collected in the following proposition.

Proposition 8 *The majority is equally likely to approve of a small extension in the licensure when the changes in self-regulation are anticipated, as when regulation is exogenously fixed.*

In other words, taking into account future changes self-regulation does not change the attitude of association members towards licensure expansion.

8   Social Welfare

As in many political economy models, here too the connection between the policies favored by (a majority of) the electorate and those policies that benefit society as a whole is tenuous. A major source of "social welfare ambiguity" in the model is the quantity V, which captures the value of a lawsuit to the lawyers. V may be smaller than the social value of the lawsuit (if, for example, lawyers are able to capture only a minute amount of the value of the lawsuit to their clients and to society as a whole);[19] or it may be larger, which could happen in the case of frivolous lawsuits the outcome of which entails large transfers from defendant to plaintiff, and thus potentially a large V, but whose social value is minimal. In other professions the situation may be different. Among doctors, perhaps, it could be argued that V tracks social welfare more closely. In light of this ambiguity, the normative question of welfare analysis can, in my view, be settled only by empirical work. I believe, however, that the positive model I presented can help structure the empirical analysis of the normative question.

9   Conclusion

Professional licensing covers a large fraction of workers throughout the world. Since the free entry model does not describe these labor markets, it is important to know how access to these markets is governed. It is generally assumed that the desire to restrict competition will inevitably incentivize licensing associations to restrict entry.

This paper challenges the inevitability of this logic. I looked closely at a

licensing association's internal incentives to expand. When the association comprises complementary specialties, there may be heterogeneity of interests within the association about the benefits of expansion, and a majority of members favoring expansion. Expansion may take place even beyond the level that maximizes the incumbents' rents, and possibly even beyond the socially optimal level. This happens because expanding the licensure entails a redistribution of rents among sub-specialties. In principle, then, the power to license may be used to expand the association excessively.

When I talk about the association choosing to expand, I do not suggest that associations are routinely out of equilibrium with regard to membership size. Rather, I have in mind a more dynamic story, i.e., one where a crucial parameter of the environment changes and then the association may expand to re-establish equilibrium.

The predominant view, as I said, is that no association will ever react to any environmental change by expanding the franchise (with the caveat of the possibilities mentioned in the introduction). The theory presented here, in contrast, shows that there may be *politico-economic forces internal to the association* that drive it to embrace expansion. This is important because in the policy debate the entry-restricting objective of licensing associations is usually implicitly assumed, as if requiring no demonstration. This, I believe, is due to the absence of an alternative paradigm. In this paper I have provided such a paradigm. I hope that this alternative can lead to a more careful, evidence-based assessment of the use of licensure.

The analysis also points to a taxonomy of licensing organizations, depending on whether (or how much) they comprise complementary specialties. According to the analysis in this paper, broader-scoped organizations are more likely to experience internal conflicts regarding expansion, and may be prone to over-expansion. To the extent that governance mediates conflicts of interest, we should expect governance to matter more to members of broader-scoped organizations.

The model also predicts that, as the division of labor progressively spins off relatively low-skilled occupations (e.g., laboratory technicians) from high-skilled specialties (physicians), the high-skilled licensing association would want to prevent the creation of a separate low-skilled licensing association.

This paper also considered the internal incentives of a licensing association to self-regulate with regard to quality standards. The paper predicts no conflict of interest within the organization regarding such self-regulation (though the starkness of this result partly reflects functional form assumptions). If this is true, then we should observe the governance of licensing associations to be less concerned with self-regulation, compared with licensure extension.

The paper's singular focus on the majority of incumbents was motivated by the special role that the majority plays in many forms of governance and it makes for sharp results. However, "majority" should not be taken literally; after all, most organizations do not formally vote on expanding the licensure. The same goes for the Leontieff technology (exactly one defense lawyer for each plaintiff laywer). Reality is more nuanced. The nuanced message of this paper is that licensing organizations may, due to internal politico-economic conflicts of interests, sometimes favor expansion. Simple as it is, this message is new as far as I know. Of course, the empirical relevance of this message depends in part on the encroachment effect, as I called it, not being too strong. In Section 2.1 I presented some evidence that, in some circumstances, new entrants can bring with them considerable new business, and so the encroachment effect may not be very strong.

Finally, I emphasize that this paper focuses on the internal politics of licensing organizations. Their external politics, and the politico-administrative ecology in which these organizations live, are equally fascinating; but they have been analyzed extensively and are not the object of this study.

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A   Mathematical Appendix

We start by defining what expansions are deemed politically feasible.

Definition 2 *Fix a membership identified by its threshold $\underline{i}$. For each member $i \geq \underline{i}$ let $M(i, y)$ be an indicator equal to 1 if y is a threshold that, among all thresholds no greater than $\underline{i}$, maximizes this member's occupational equilibrium payoff. Denote by $M(y) = \int_{\underline{i}}^{\infty} M(i, y) \, dF(i)$ the mass of incumbents for whom the threshold y is a maximizer. The set $P(\underline{i})$ of **politically feasible expansions** starting from $\underline{i}$ is the set of all y such that $M(y) \geq [1 - F(\underline{i})]/2$.*

This definition captures the idea that a politically feasible expansion exists only if there is a majority among the current membership that agrees that this specific expansion is the best among all possible expansions. If less than a majority of incumbents agrees about the best course of action, then the correspondence is empty. There is, of course, no a priori guarantee that the correspondence is not empty. When it is non-empty we generally expect, but do not require, the correspondence $P(\cdot)$ to be single-valued.

Definition 3 *A membership threshold $\underline{i}^*$ is a **politico-occupational equilibrium** if $\underline{i}^* \in P(\underline{i}^*)$.*

A membership threshold is a politico-occupational equilibrium if there is no politically feasible expansion given it; more precisely, if there is no threshold lower than $\underline{i}^*$ at which a strict majority of members receive a higher occupational equilibrium payoff. This interpretational point is proved in the next corollary.

Corollary 4 *Suppose $\underline{i}^* \in P(\underline{i}^*)$. Then there is no $y < \underline{i}^*$ such that a strict majority of members strictly prefer y to $\underline{i}^*$.*

Proof. Fix the membership at the threshold $\underline{i}^*$. Suppose, by contradiction, that there existed a $y < \underline{i}^*$ which a strict majority of members strictly preferred to $\underline{i}^*$. Let $\Gamma \subseteq [\underline{i}^*, \infty)$ represent the subset of members who strictly prefer y to $\underline{i}^*$. Then for every $i \in \Gamma$ it must be $M(i, \underline{i}^*) = 0$. Then

$$M(\underline{i}^*) = \int_{\underline{i}^*}^{\infty} M(i, \underline{i}^*) \, dF(i) \leq \int_{\underline{i}^*}^{\infty} \boldsymbol{I}_{\Gamma^C}(i) \, dF(i), \qquad (A.1)$$

where $\boldsymbol{I}_{\Gamma^C}(i)$ represents an indicator function which equals 1 when $i \notin \Gamma$ and is zero otherwise. The first equality is the definition of $M(\underline{i}^*)$ and the inequality follows from the fact that $M(i, \underline{i}^*)$ is no greater than 1 and must be zero on Γ. Now, by the contradictory assumption the set Γ of members who strictly prefer y to $\underline{i}^*$ is a strict majority:

$$\int_{\underline{i}^*}^{\infty} \boldsymbol{I}_{\Gamma}(i) \, dF(i) > \frac{1 - F(\underline{i}^*)}{2}.$$

Its complement Γ^C, therefore, represents a strict minority:

$$\int_{\underline{i}^*}^{\infty} \boldsymbol{I}_{\Gamma^C}(i) \, dF(i) < \frac{1 - F(\underline{i}^*)}{2}.$$

Plugging back this inequality into (A.1) yields $M(\underline{i}^*) < [1 - F(\underline{i}^*)]/2$ which contradicts the assumption that $\underline{i}^* \in P(\underline{i}^*)$. $\blacksquare$

Note that in principle a politico-occupational equilibrium need not exist (see previous discussion of the possible emptiness of the correspondence P). Given our model's assumptions, however, existence can be proved (see Proposition 5).

Note that, by construction of $P(\underline{i}^*)$, a politico-occupational equilibrium $\underline{i}^*$ is the largest among all elements of $P(\underline{i}^*)$. So when the correspondence $P(\cdot)$ is multi-valued, the definition of equilibrium selects the smallest possible membership size among all those which are equally preferred by a majority of members. In this sense, the equilibrium definition is "skewed" towards smaller memberships.

Use (3) to write the wage of defense lawyers as a function of the threshold as follows.

$$w_d^* \left(\underline{i} \right) = \frac{V \left(\left(1 - F \left(\underline{i} \right) \right) \right) - c^{i^m}}{2},$$

where i^m is defined implicitly as a function of $\underline{i}$ by the relationship $\left(1 - F \left(i^m \right) \right) = \frac{1}{2} \left(1 - F \left(\underline{i} \right) \right)$.

Definition 4 *For any membership threshold y, define the set*

$$B \left(y \right) = \arg \max_{a \leq z \leq y} w_d^* \left(z \right).$$

The set $B \left(y \right)$ represents the (set of) membership thresholds that, among all thresholds smaller or equal to y, maximize the wages of anyone who is a defense lawyer. Typically we expect $B \left(y \right)$ to be single-valued.

Lemma 5 *The function $w_d^* \left(\cdot \right)$ is continuous. For any y the set $B \left(y \right)$ is nonempty, closed, and compact.*

Proof. $w_d^* \left(\cdot \right)$ is continuous because both $V \left(\cdot \right)$ and $F \left(\cdot \right)$ are continuous functions. The rest of the lemma follows from the theorem of the maximum. ∎

Lemma 6 *Fix any status quo y and any threshold $z \leq y$. At least 50% of incumbents at y (including all the defense lawyers) weakly prefer membership threshold $B \left(y \right)$ to z. If moreover $z \notin B \left(y \right)$ then more than 50% of incumbents strictly prefer membership threshold $B \left(y \right)$ to z.*

Proof. Take any threshold $z \leq y$. All lawyers who are defense lawyers at y are also defense lawyers at z and at $B \left(y \right)$. This is because the median type corresponding to the distribution of abilities above z or above $B \left(y \right)$ is no greater than the median type corresponding to y. Therefore, all lawyers who

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are defense lawyers at y evaluate the gain in payoff from $B(y)$ relative to z as

$$w_d^*(B(y)) - w_d^*(z), \qquad \text{(A.2)}$$

which is nonnegative by definition of $B(y)$. Thus at least 50% of incumbents y weakly prefer $B(y)$ to z. If moreover $z \notin B(y)$ then (A.2) is strictly positive, so that at least 50% of incumbents strictly prefer $B(y)$ to z. Moreover, because occupational equilibrium payoffs are continuous in types, a small measure of types just below the median corresponding to threshold y can be identified so that these types' relative evaluation of $B(y)$ versus z is arbitrarily close to that of the lowest defense lawyer at the occupational equilibrium corresponding to threshold y. This small measure of types will, therefore, also strictly prefer $B(y)$ to z, and provide the extra numbers to get to a strict majority. ■

Corollary 7 *In the model with complementarities (the main model), $P(y) = B(y)$. In the model without complementarities (Section 2.2), $P(y) = y$.*

Proof. The result for the case of no complementarities follows directly from Proposition 1. Let us turn to the case with complementarities. The first part of Lemma 6 shows that any element of $B(y)$ is preferred to any other threshold no greater than y by a weak majority of $y-$incumbents. So $B(y) \subseteq P(y)$. Now suppose by contradiction that inclusion is strict, so that there is a threshold $y' \in P(y), y' \notin B(y)$. Then by Lemma 6 a majority of y-incumbents strictly prefers $B(y)$ to y', so it is not possible that $y' \in P(y)$. ■

Corollary 8 *In the case with complementarities, if $\underline{i}^* \in B(\underline{i}^*)$ then $\underline{i}^*$ is a politico-occupational equilibrium.*

Proof. Immediate using the previous corollary and the definition of equilibrium. ■

Corollary 9 *A politico-economic equilibrium exists.*

Proof. The lower bound of the type distribution, a, is trivially a politico-occupational equilibrium. ∎

In general there may be multiple politico-occupational equilibria. One way to select among them is to identify a status quo membership, and then study the "political" evolution of the membership toward its restpoint. To this end we need to define a process that guides the progressive expansion of membership starting from any given status quo, and show that the restpoint of this process is in fact a politico-occupational equilibrium. This is done next.

Definition 5 *The sequence of thresholds $y^0, y^1, ...$ is called the **sequence of feasible expansions starting from** y^0 if, for all $n > 0$, $y^n = \max\left[P\left(y^{n-1}\right)\right]$.*

The expression $\max\left[P\left(y^{n-1}\right)\right]$ denotes the maximal element of the set $P\left(y^{n-1}\right)$. It is the largest threshold, corresponding to the smallest membership, among those equally preferred by a y^{n-1}−majority. The maximal element exists because $P\left(y\right)$ is closed and compact (recall that by Corollary 7 $B\left(y\right) = P\left(y\right)$ and $B\left(y\right)$ is closed and compact by Lemma 5). If $P\left(\cdot\right)$ is single-valued, as will typically be the case, then the max operator becomes redundant.

Definition 6 *A threshold y^n is said to be **the restpoint of the sequence of feasible expansions starting from** y^0 if, given the sequence of feasible expansions $y^0, y^1, ...y^n$, we have $y^n = y^{n-1}$.*

Lemma 10 *The restpoint of any sequence of feasible expansions is a politico-occupational equilibrium.*

Proof. The condition that $y^n = y^{n-1}$ means that $y^n \in P\left(y^{n-1}\right) = P\left(y^n\right)$, which means that y^n is a politico-occupational equilibrium. ∎

Corollary 11 *In the case without complementarities, every element in the sequence of feasible expansions starting from any initial status quo $\underline{i}^{SQ}$ equals $\underline{i}^{SQ}$.*

Proof. Follows from the fact that in this case $P(y) = y$. ■

The previous corollary shows that membership never expands above its status quo level in the absence of complementarities. The next corollary shows that it may do so in the case of complementarities.

Corollary 12 *In the case with complementarities, the politico-occupational equilibrium reached as the restpoint of the sequence of feasible expansions starting from any initial status quo $\underline{i}^{SQ}$ exists, is unique, and is reached in just a single feasible expansion. That equilibrium is given by $\max\left[B\left(\underline{i}^{SQ}\right)\right]$.*

Proof. In this case $P(y) = B(y)$. We know from Lemma 5 that $B\left(\underline{i}^{SQ}\right)$ is nonempty. Its maximal element $y^1 = \max\left[B\left(\underline{i}^{SQ}\right)\right]$ is unique. Let us now show that this element represents the restpoint. Because $y^1 \in B\left(\underline{i}^{SQ}\right)$ we have $w_d^*(y^1) \geq w_d^*(z)$ for all $z \leq \underline{i}^{SQ}$. Because $y^1 \leq \underline{i}^{SQ}$, this inequality implies that $w_d^*(y^1) \geq w_d^*(z)$ for all $z \leq y^1$. But then $y^1 \in \arg\max_{a \leq z \leq y^1} w_d^*(z) = B(y^1)$. Moreover, by construction y^1 is the maximal element of $B(y^1)$. Therefore the next element in the sequence of feasible expansions, $y^2 = \max\left[P(y^1)\right]$ is in fact equal to y^1. Therefore $y^1 = \max\left[B\left(\underline{i}^{SQ}\right)\right]$ is the restpoint of the sequence of feasible expansions starting from $\underline{i}^{SQ}$. ■

Notes

[1] In *The Wealth of Nations*, Smith writes thusly regarding laws requiring a minimum apprenticeship period.

> "The patrimony of a poor man lies in the strength and dexterity of his hand. [...] To judge whether he is fit to be employed, may surely be trusted to the discretion of the employers. [...] The affected anxiety of the law-giver lest they should employ an improper person, is evidently as impertinent as it is oppressive."

Cited from Kleiner (2000), p. 189.

[2] Chapter IX of *Capitalism and Freedom* (Friedman 1962) is devoted to occupational licensure.

[3] Changed economic conditions among unlicensed law graduates cannot explain why the Italian bar choose to allow such massive entry. Indeed the association of notary publics (which like lawyers are licensed and are, in Italy, a very lucrative profession), has managed to keep their numbers steady at around 4,500 throughout this period, despite recruiting from the same pool of law graduates.

Why the difference between notaries and lawyers? The theory accounts for this, too. See footnote 6.

[4] One might be concerned that physicians rarely change specialties. However, Kindig (1994, p. 1506) informs us that "There is considerable switching between specialties across a physician's educational and practice career." In Japan, more than half of the physicians who registered in 1974 changed their specialties (Ide et al., p. 83). Among physician assistants in the US, fifty-seven percent of respondents reported changing specialties at least once, and 49% changed specialties within their first 2 years of practice. (Dehn 2009)

[5] Manicurists and hair stylists (e.g., cosmetologists) at spas and beauty salons may also represent good applications. See Federman *et al.* (2006).

[6] Unlike civil lawyers, notaries are substitutes for each other. In the model, substitutability rules out heterogeneity of interests regarding licensure extension. According to the theory, all notaries will therefore be unanimously against expansion. In this way the theory accounts for the different paths taken by the Italian lawyers' and notaries' licensing bodies (refer to footnote 3.)

[7] Stigler (1972), p. 100 writes:

> Particular industries and occupations obtain from the state a variety of economic privileges which are injurious to the vast majority of the population. Farm subsidies, oil import quotas, tariffs, and occupational licensing are examples.

[8]Durkheim (2003), p. 13-17. On p. 37, Durkheim briefly discusses the internal political organization of a theoretical guild, the only mention of internal politics of licensing organizations that I am aware of.

[9]I am grateful to an anonymous referee for pointing these out to me.

[10]Comparing the law school resumes of top plaintiff and defense lawyers reveals a substantial gap in favor of defense lawyers. See Empirical Legal Studies blog,

http://www.elsblog.org/the_empirical_legal_studi/2006/12/where_did_highe.html accessed 9/20/2011, on file with the author.

[11]See Arcidiacono and Nicholson (2005) Table 7, p. 346.

[12]See also Carmignani and Giacomelli (2009), who obtain similar estimates.

[13]Regarding the business-stealing effect, see also Barwick and Pathak (2011).

[14]This is the case, for example, of the notary publics which I mentioned in footnote 6.

[15]This assumption is commonly made in the franchise expansion literature and seems appropriate, at a first approximation, for licensing organizations too.

[16]Lemma 6 in the appendix provides a formal statement of the commonality of interests among more than 50% of the membership.

[17]Consider the presence of criminal lawyers, for example, which we have ignored until now. Criminal lawyers are unanimous in opposing extension, because new entrants cannot possibly increase the ranks of their complementary specialty. This is because the complementary "specialty" to the criminal lawyer is the district attorney, a profession which is not controlled by the bar association. Now if, say, 30% of incumbent lawyers are criminal lawyers and the requirement for expansion is simple majority among all lawyers, then for expansion to happen it must be favored by at least 5/7ths of the incumbent civil lawyers.

[18]An interesting historical example may be provided by the emergence of pathology technicians in the 1930's. See Starr (1982), p. 221.

[19]A lawsuit may have value to society as a whole through its precedential value.