

Pro bono as a human capital learning and screening mechanism: Evidence from law firms

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Research Summary: Inquiry into CSR as a human capital management tool has suggested that firms benefit from such activities because employees value the meaningfulness of these activities, which influences motivation and retention. We propose an alternate avenue through which firms can benefit from an important type of socially responsible activity—pro bono services—that does not require that employees derive utility from the meaningfulness of the activity. We propose that pro bono activities can benefit firms through human capital learning and screening mechanisms, given the stretch roles that pro bono engagements allow. We formalize this argument in the legal services industry, where we provide primary evidence, a formal model, and empirical results using a panel dataset of the top 200 law firms to support this argument.

Managerial Summary: We examine a type of CSR activity, pro bono engagements, in the context of the top 200 law firms in the United States. We show that firms can benefit from these engagements through human capital learning and screening mechanisms, due to the stretch roles that pro bono engagements allow junior lawyers. Our findings suggest that firms in which pro bono engagements provide stretch roles for junior employees can benefit from pro bono activities regardless of whether their employees value the meaningfulness or social impact of the pro bono work.

KEY WORDS

corporate social responsibility, human capital strategy, legal services, organizations, promotions

1 | INTRODUCTION

Scholars are increasingly arguing that socially responsible activities can benefit firm performance through employees. Corporate social responsibility (CSR) has been posited to help attract (Burbano, 2016; Gatewood, Gowan, & Lautenschlager, 1993; Riordan, Gatewood, & Bill, 1997), motivate (Rupp, Ganapathi, Aguilera, & Williams, 2006; Rupp, Shao, Thornton, & Skarlicki, 2013), and retain (Bode, Singh, & Rogan, 2015) employees, thus serving as a lever in the strategic management of human resources. In industries such as professional services industries, where human capital is the most important source of competitive advantage, we would thus expect socially responsible activities such as pro bono activities to be a critical aspect of human capital strategy.¹

Yet the human capital implications of pro bono activities have been understudied, with a few notable exceptions. Bode et al. (2015) showed that employees who valued the meaningfulness of, and worked on, pro bono engagements in a consulting firm exhibited increased retention rates. Carnahan, Kryscynski, and Olson (2017) showed that pro bono in law firms reduced turnover when moves by attorneys were motivated by a search for greater meaningfulness, but was correlated with *higher* rates of departure to other law firms when moves were not motivated by a search for greater meaningfulness. In these studies, as in much of the literature examining the strategic human capital benefits of socially responsible activities, the firm benefits from its investment in CSR because the employee values and generates utility from the meaningfulness of the CSR activity. We propose an alternate avenue through which a type of CSR—pro bono—can be used as a human capital strategy by firms that does not require that employees value the meaningfulness of the CSR activity. Namely, we propose that pro bono can benefit firms through human capital learning and screening mechanisms.

We focus our analysis on the legal services industry, though our rationale can easily be applied to other industries where pro bono engagements enable junior employees to take on roles more typical of senior employees; for example, in the consulting and medical services industries. Indeed, the mechanisms we propose rely on an insight derived from interviews with lawyers and human capital managers at top U.S. law firms: a law firm's pro bono cases are similar to for-profit cases, and participating junior lawyers are commonly given "stretch roles" on pro bono cases—responsibilities that would usually go to more senior lawyers on comparable for-profit cases. For example, a pro bono case might be an associate's first opportunity to conduct a deposition, argue a case in trial, or manage a case and act as the primary client contact.² Given the stretch roles these pro bono engagements allow, work on pro bono cases trains and prepares junior lawyers for work in more senior roles in a lower risk context (since pro bono clients are nonpaying clients). These stretch roles also provide information to the firm about a lawyer's expected future potential in a more senior role.³ Pro bono work can thus also help address the important human capital management challenge of assessing whether a worker will succeed in a new position with different responsibilities (Lazear, 2004; Peter & Hull, 1969).

We outline a formal model in the spirit of Levin and Tadelis (2005) to elucidate this role of pro bono activities. In this simple model, firms must choose whether to promote a junior lawyer to partner and the amount of pro bono. The productivity of a junior employee upon promotion is imperfectly known to the firm at the time of the promotion decision; the firm receives a (noisy)

¹Pro bono, the provision of in-kind services to those who would not otherwise be able to afford them, is the most common type of socially responsible initiative in professional service industries.

²Based on interviews with partners, associates, recruiting managers, and human capital management representatives at top-20 law firms.

³At approximately 95% of the top-100 US law firms, junior lawyers' work on pro bono and for-profit cases alike is formally assessed during performance reviews. *Vault Guide to the Top 100 Law Firms*, 2008 edition.

signal indicating the expected future productivity of each junior as a partner. The intuition behind our model is that pro bono work both increases the average expected future quality of junior employees (learning), and also improves the quality of the signal (screening). The model predicts that for selective firms, the level of pro bono activity will be increasing in the inverse of what the industry refers to as the “leverage ratio,” or ratio of junior lawyers to equity partners. This ratio is seen by prospective junior lawyers as reflecting mentorship opportunities, competition among associates, and recruits’ and associates’ perceptions about the likelihood of promotion to partner; as such, it is an important aspect of a law firm’s human capital management strategy. In firms where proportionally more junior lawyers will be promoted to partner, the benefit of increasing the average expected quality of juniors as partners, and of improving the accuracy of the signal about expected future quality, is higher than in firms where fewer juniors will be promoted to partner, in which case the firm is better off having associates work on billable projects. Indeed, in firms with higher partner-to-junior ratios, employees have on average higher tenure at the firm, such that the firm gets a higher return on pro bono training investments. Likewise, it makes sense to have juniors forego billable hours to gain improved information about their expected future partner potential when a larger proportion of them will actually be promoted to partner.⁴ Our model thus predicts that in firms where junior promotion to partner is more likely (those with a higher partner-to-junior ratio), we would expect to see more pro bono activity.

To test the model’s main prediction, we analyze a sample of selective law firms—the top-200 firms in the U.S. legal services industry—from 1998 to 2012.⁵ We find support for the main hypothesis outlined in our model, controlling for firm profitability, structure, and reputation, as well as when including firm fixed effects in our analysis. The results are robust to two different measures of pro bono, and to different specifications of the analysis.

Our primary research, model, and empirical analysis provide evidence of a novel set of mechanisms through which firms can benefit from pro bono investments. The learning and screening mechanisms we elucidate in this article do not require that employees value the meaningfulness or prosocial outcomes of the socially responsible activity per se. As such, we extend the existing theory on CSR as a strategic human capital management tool (Brammer, Millington, & Rayton, 2007; Burbano, 2018a; Turban & Greening, 1997) by outlining new mechanisms through which CSR activities can be used as human capital management strategies. We also contribute more broadly to the literature on human-resource-based competitive advantage (Coff, 1997; Coff & Kryscynski, 2011) and on strategies relevant for human-capital-intensive and knowledge-based firms (Anand, Gardner, & Morris, 2007; Chatain & Meyer-Doyle, 2017).

2 | PRIOR LITERATURE

Scholars have sought to identify factors that explain the variation in CSR, defined as practices that improve the workplace and benefit society in ways that go above and beyond what companies are

⁴One could make an intuitive argument predicting the opposite relationship between leverage ratio and pro bono levels. For example, one could argue that when a smaller proportion of associates will be promoted to partner, it is key that each promotion be correct, such that firms with lower partner-to-junior ratios should have higher pro bono levels. Given that an intuitive argument could be made in either direction, we make use of a formal model to specify precise assumptions under which promoting a higher fraction of associates (lower leverage ratio) implies greater investment in pro bono activities.

⁵There has been a substantial amount of literature on the legal services industry in strategy, economics, and organizational behavior. A noncomprehensive list includes studies focused on the issue of survival (Phillips, 2002), employee mobility (Campbell, Ganco, Franco, & Agarwal, 2012), employee hiring (Rider & Negro, 2015; Sauer, 1998), social status (Rider, 2011), and specialization (Garicano & Hubbard, 2007). See Baker and Parkin (2006) for further references on this extensive literature.

legally required to do.⁶ One important factor is human capital; understanding how CSR affects the firm through employees is critical given the established importance of talent management to the firm (Bidwell, 2011; Campbell, Coff, & Kryscynski, 2012; Coff, 1997). We build on the literature that has identified the employee as an important stakeholder through which CSR can positively influence firm value. Scholars have suggested that certain CSR practices can cause employees to accept lower wages (Burbano, 2016), work more (Burbano, 2018b), shirk less (Flammer & Luo, 2017; Tonin & Vlassopoulos, 2015), cheat less (Burbano & Chiles, 2018), attract applicants (Abraham & Burbano, 2018; Backhaus, Stone, & Heiner, 2002; Gatewood et al., 1993; Greening & Turban, 2000; Riordan et al., 1997; Turban & Greening, 1997), and improve retention (Bode et al., 2015; Carnahan et al., 2017). A common theme underlying much of this literature is that employees value the prosocial impact of or meaningfulness in the CSR activity and that this is driving the positive behavioral outcomes in employees. Indeed, much of the literature has shown the largest behavioral effects among prosocially oriented individuals (e.g., Burbano, 2018b; Tonin & Vlassopoulos, 2015), and described moral or prosocial motives as explaining positive employee responses to CSR (Aguilera, Rupp, Williams, & Ganapathi, 2007; Gond, Akremi, Swaen, & Babu, 2017; Kim, Kim, Han, Jackson, & Ployhart, 2017; Rupp et al., 2006, 2013). In this article we suggest that a type of CSR—pro bono work that enables employees to take on stretch roles relevant to for-profit work—can be used as a strategic lever for firms *without* requiring that employees derive any utility or value from the prosocial nature or meaningfulness of the CSR activity.

By focusing on a specific type of CSR and examining the mechanisms through which firms can benefit from that particular type of CSR activity, we follow the lead of scholars who have broken down the rather broad construct of CSR into its distinct types of firm practices and activities. Other research has pointed out that different types of CSR affect the firm differently (Chen & Delmas, 2011; M. Delmas & Blass, 2010; Hawn & Ioannou, 2016; Mattingly & Berman, 2006; Rowley & Berman, 2000), and that there is value in studying finer-grained CSR activities (Godfrey et al., 2009).⁷ Despite its prevalence as the most common type of CSR in professional service industries, in-kind pro bono services have received relatively little focus to date. Scholars have only very recently begun to examine the benefits of such services in the management consulting industry (Bode et al., 2015; Bode & Singh, 2018). We are among the first to examine the effects of pro bono services on human capital in the legal services industry (along with Carnahan et al., 2017).

The mechanisms we describe as the avenues through which pro bono can be used as a strategic human capital management tool by firms are human capital learning and screening. Using a French survey, M. A. Delmas and Pekovic (2013) found that the adoption of environmental standards by firms led to organizational changes that included increased implementation of employee training programs. The pro bono learning mechanism that we describe is more direct: time spent on pro bono projects serves as training for more senior roles on for-profit cases. With respect to CSR and screening, it has been suggested that some types of CSR, such as environmentally friendly policies, can be used to passively screen against lower performing prospective employees (Brekke & Nyborg, 2008),

⁶Examples of such factors include agency (Hong, Kubik, & Scheinkman, 2012; Johnson & Greening, 1999), competition (Bennett, Pierce, Snyder, & Toffel, 2013; Flammer, 2015; Snyder, 2010), private politics and stakeholder pressure (Baron, 2001; M. A. Delmas & Toffel, 2008; Freeman, Wicks, & Parmar, 2004; Henisz, Dorobantu, & Nartey, 2014; Hillman & Keim, 2001; King, 2007; Sen, Bhattacharya, & Korschun, 2006; Soule, Swaminathan, & Tihanyi, 2014), access to finance (Cheng, Ioannou, & Serafeim, 2014; Graves & Waddock, 1994), and mitigating risk (Godfrey, Merrill, & Hansen, 2009; Koh, Qian, & Wang, 2014; Minor & Morgan, 2011).

⁷Strategy scholars have considered the value of corporate disaster donations (e.g., Madsen & Rodgers, 2015; Muller & Kräussl, 2011), corporate philanthropy more broadly (e.g., Lev, Petrovits, & Radhakrishnan, 2010), pollution reduction (King & Lenox, 2002), and environmental informational disclosure programs (e.g., Doshi, Dowell, & Toffel, 2013; Reid & Toffel, 2009), as well as standards (M. A. Delmas & Pekovic, 2013) and ratings (Chatterji & Toffel, 2010).

though the literature has not yet explored the use of a type of CSR as part of an active screening mechanism wherein that type of CSR provides information about employees' expected future performance. Furthermore, the human capital screening mechanism we describe elucidates that CSR can serve as a source of information flow in the opposite direction from that which is commonly described in the literature. Indeed, much of the CSR literature (both with respect to influencing employee, but also other stakeholder, behavior) suggests that employees and other stakeholders gain information from CSR activities about aspects of firm quality that are otherwise hard to observe. The screening mechanism we propose elucidates that pro bono enables the *firm* to gain information about an aspect of *employee* quality that is otherwise hard to observe—future employee quality in a more senior role.

3 | THE LEGAL SERVICES CONTEXT

3.1 | Pro bono, recruiting and retention

Pro bono work is defined by *The American Lawyer* as legal services provided to those who could not otherwise afford them.⁸ Pro bono opportunities are highlighted very heavily during law firms' recruiting of summer and new associates, the point at which the vast majority of law firm hiring takes place.⁹ As a result, it has become increasingly difficult for prospective hires to differentiate between firms' pro bono, and few actually base their decisions to apply to or accept offers from firms based on pro bono differences. A former associate at a top-10 law firm stated, "Firms tend to market their pro bono programs very prominently to prospective hires...because [firms] were all marketing their pro bono hours heavily, I did not view it as a differentiator." An associate at a top-10 U.S. law firm stated that "as a graduating [law] student, it is hard to really know ...about pro bono at a firm." Likewise, an associate at a leading global law firm noted, "In the end my decision to apply [and] accept was based on other factors." There are a number of guides, websites, and blogs aimed to provide an insider's perspective of top law firms, which all interviewees indicated that they referenced during their decision-making process. These resources and word-of-mouth, rather than pro bono levels, appear to drive prospective lawyers' perceptions of and decisions to apply to or accept a job from that firm.

Likewise, decisions to stay versus leave a firm appear to be driven mainly by factors other than pro bono. An associate noted, "The main reasons I stay at [top-20 U.S. law firm] are the work, the pay, and the people." Though this associate has worked on pro bono projects, he did not indicate those projects as a consideration in his decision to stay at his firm. Carnahan et al. (2017) even found a negative relationship between pro bono levels and retention rates in law firms on average. This suggests pro bono is not a major factor in the attraction or retention of employees at law firms, and that there is instead a different mechanism through which pro bono creates value for law firms.

⁸For example, many top 200 law firms have represented indigent individuals in criminal appeals, postconviction proceedings in death penalty cases, legal matters for nonprofit clients, children's rights, civil rights, community economic development, and human rights issues (*Vault Guide to the Top 100 Law Firms*, 2008). Average pro bono hours per lawyer increased by more than 65% between 2000 and 2008, although it has declined since the recession of 2008. Over 100 law firms have signed on to the "Law Firm Pro Bono Challenge," an aspirational minimum standard of pro bono service posed to firms with 50 or more attorneys. Signatories to the Challenge target a pro bono commitment of between 3 and 5% of annual billable hours, which constitutes an average of 60 to 100 hr per attorney per year. Many firms that have signed on to the Challenge use it as a goal for their pro bono practices, although not every firm that accepts the Challenge meets its goals every year.

⁹Based on interviews with recruiters and human capital managers at top-50 U.S. law firms.

3.2 | Pro bono management, allocation, and evaluation

A firm's pro bono strategy is usually designed and managed by a designated pro bono counsel (Cummings & Rhode, 2010). The work of the counsel generally falls into two categories: external relations (with the nonprofits interested in receiving the services) and internal coordination, which includes determining which pro bono cases to take on and often, staffing (Cummings & Rhode, 2010). The process of assigning pro bono cases to lawyers tends to be similar to that of for-profit cases. Although a lawyer's interest in pro bono cases is taken into account if possible, given that most lawyers indicate interest in pro bono cases at some point, staffing on pro bono cases is "more...a function of other factors...case workload at the time of staffing and the expertise or experience required," explained a human capital manager at a top-20 U.S. law firm.

The allocation of pro bono projects "is not based on associates' performance or ranking beyond their relevant expertise and skills," noted another human capital manager at a top-10 U.S. law firm. Associates "across the board tend to indicate interest in pro bono projects at some point," she explained. This suggests that associates are not self-selecting into pro bono projects, nor are associates of higher or lower quality being staffed on pro bono compared to for-profit cases. Furthermore, an analysis of the correlation between firms' average pro bono hours and proxies of incoming associate quality are not highly correlated and in fact directionally negatively correlated.¹⁰ It thus does not appear to be the case that the main benefit of pro bono to law firms is through an employee selection mechanism, though we cannot rule this out altogether.

The notion that engaging in pro bono work could be viewed negatively or generate a negative feedback effect for participating lawyers does not appear to hold in this context. An associate's work on pro bono cases is evaluated alongside his or her work on for-profit cases during performance reviews, and according to human capital managers at top-50 U.S. law firms, is not treated more negatively or positively in comparison to work on for-profit cases when an associate's performance is assessed.¹¹ Importantly, supervisors' assessments of a lawyer's performance on every pro bono case are included as part of the lawyer's formal overall performance evaluation.¹²

¹⁰We obtained data on the number of incoming associates entering each of the top-200 law firms from each law school from the ALM Law School Hiring Survey. We also obtained the Above the Law Ranking of each law school, and the U.S. News Ranking of each law school. We used these two rankings as proxies for quality of the law schools and in turn, proxies for quality of the incoming associates. We constructed two proxies for quality of new associates at a given firm in a given year, *ATL_IncomingAssociateQualityScore*, using the Above the Law Rankings for each law school and *USNews_IncomingAssociateQualityScore*, using the U.S. News rankings for each law school. Each score was calculated as follows: $\forall f : \sum_{i \in \text{lawSchool}} \left(\frac{n_i}{N_{\text{year}}} \right) \cdot r_i$ where $f = \text{Firm name}$, $n_i = \text{Number of associates hired from law school } i$, $N_{\text{year}}^f = \text{Total number of associates hired from firm } f \text{ in given year}$, $r_i = \text{Ranking for law school } i$. The correlation between average pro bono hours and *USNews_IncomingAssociateQualityScore* is -0.104 , $N = 404$. The correlation between average pro bono hours and *ATL_IncomingAssociateQualityScore* is -0.312 , $N = 404$. Both of these income associate quality measures indicate a low correlation between average pro bono hours and incoming associate quality, and a negative, rather than a positive, directional relationship between pro bono and incoming associate quality. Though this suggests that firms are not benefiting from pro bono via a selection mechanism wherein higher quality entering employees self-select into law firms with higher pro bono, we cannot rule this out together.

¹¹The number of billable hours logged is an important performance metric for lawyers. Approximately half of law firms that give their lawyers billable hours credit for pro bono work have a maximum number of pro bono hours that will be credited, while half do not cap the number of hours that count towards billable hours. The most commonly reported maximum is 50 hours per year, reported by 51% of offices surveyed by the Association for Legal Career Professionals (NALP), followed by 100 hours per year, reported by 20% of offices. When asked if the opportunity cost of billable hours hurts an associate working on a pro bono case at the time of his or her performance review, a human capital manager at a top 20 US law firm responded, "There is much more to performance here than billable hours."

¹²"A Look at Associate Hours and at Law Firm Pro Bono Programs," *NALP Bulletin*, April 2010, available at <http://www.nalp.org/july2009hoursandprobono>.

3.3 | Pro bono as a means for junior lawyers to take on stretch roles

An important aspect of pro bono is that junior lawyers take on stretch roles when working on these cases. For example, Quinn, Emanuel, Urquhart, & Sullivan's pro bono section of its website states, "We are always working to expand opportunities for lawyers to participate in pro bono activities; we recognize that such work contributes to a lawyer's professional development ... We generally seek out pro bono opportunities that will get associates hearing and trial experience."¹³ Indeed, pro bono cases give associates the opportunity to take on roles and responsibilities characteristic of more senior lawyers on for-profit cases. A recruiting manager at a top 10 U.S. law firm confirmed, "[Pro bono work] definitely gives associates stretch roles." An associate at a top-10 U.S. law firm stated, "A major benefit to pro bono work is the experience...I completed six pro bono depositions by myself in my first year. Deposition experience on regular cases usually begins in the third year at my firm." Another associate at a top-10 U.S. law firm noted that "pro bono can be...a way to get into the court-room quicker."

Senior associates staffed on a pro bono case often take on responsibilities characteristic of partners on for-profit cases. For example, at Akin, Gump, Strauss, Hauer, & Feld, "associates are expected to take primary responsibility for all aspects of the [pro bono] case, including all court appearances and client contact."¹⁴ A former associate at a top-10 firm stated, "The majority of the pro bono cases are done with very limited partner involvement." Some firms put partners in a godparent role with senior associates such that they provide general guidance on pro bono cases, but do not dedicate much time to these cases (Cummings & Rhode, 2010). Pro bono cases are, thus, effectively led and managed by senior associates, and provide opportunities for junior lawyers to take on roles typical of more senior lawyers, including partners, in for-profit cases. They thus serve a training function, wherein junior lawyers learn and practice new skills without the risk of disappointing or losing a paying client.

3.4 | Junior lawyers' pro bono work as illustrative of "partner potential"

Given the stretch roles afforded to juniors on pro bono cases, work on such cases is illustrative of likely "equity partner potential." Indeed, the ability to effectively lead, manage, and "deliver" on cases are skills critical for law firm partners. A partner at a top-20 law firm explained, "If you are good at doing client work, that is the main way you bring in work [as a partner]." A senior associate's expected ability to deliver as a managing partner on a case is an extremely important component of expected partner potential since, in the legal services industry, there is an objective performance outcome on which a managing partner's case can be assessed by potential clients. New work is often based on referrals and can result from, for example, a new division of an existing client company seeking legal services if previous legal work for that company was completed successfully.¹⁵ "[In much smaller firms], there may be more of a hustle and networking aspect [to the rainmaking abilities of a partner], but if they think you can't lead a case successfully, there is no way you will even be considered for partner," explained a partner at a top-20 law firm. Pro bono cases, thus, provide a setting for the firm to observe how junior lawyers would perform in these partner-like roles without the risk of disappointing or losing a paying client if expectations are not met.

¹³<http://www.quinnemanuel.com/work-at-quinn/the-firm/talent-mandatory-suit-optional/why-work-here.aspx>

¹⁴Vault Guide to Law Firm Pro Bono Programs. 2007 edition.

¹⁵Based on interviews with legal services professionals at top-50 law firms.

3.5 | Partner-to-associate ratio

Given its service-oriented nature, much of a law firm's value offering is derived from its human capital—the work of its employees. Thus, employee management strategies, which influence employee satisfaction and productivity, are critical. The legal services industry as a whole is characterized by long hours, but there are great differences in lawyer satisfaction and in perception about how well lawyers are treated among law firms.

One important human capital management and structural difference among firms is what is called the “leverage ratio,” or the ratio of junior lawyers (including associates and nonequity partners) to equity partners. This is a statistic that is commonly reported in Vault.com and other law firm comparison sources. Firms with higher partner-to-associate ratios are considered to be more nurturing of their associates and have higher promotion potential. For example, an article about Wachtell, Lipton, Rosen, & Katz on Top-Law-Schools.com, a source often frequented by law students, points to the fact that the firm has the highest partner-to-associate ratio in its peer group (1:1.4) as lending credibility to the firm's recruiting claim that associates are hired with the expectation that they are capable of becoming partners.¹⁶ Furthermore, the article states that this ratio makes it possible for new associates to be mentored by and work closely with partners. Indeed, interviews with law students and junior associates at top law firms confirmed that the leverage ratio is an important distinction across firms that influences a firm's attractiveness to recruits and the work satisfaction of its junior lawyers.¹⁷

4 | A MODEL OF FIRM PRO BONO CHOICES

4.1 | A partnership model

Our model focuses on the interaction between the selectivity of the promotion process, which is closely related to the leverage ratio (ratio of nonequity junior employees to equity partners). The latter ratio depends on the fraction of junior employees promoted each year as well as an employee's tenure as a junior and as a partner. We assume a “fixed proportions” production technology for the firm; each partner in the firm brings in business yielding a surplus θ . To do this, each partner requires the services of a fixed number of junior nonequity employees. The number of junior employees per partner is the same for all partners in a firm but differs between firms, reflecting market conditions, the firms' main lines of business, and established clientele. We assume that a worker's tenure as junior and partner are the same for all workers in the industry. With these assumptions, the required ratio of partners to juniors fixes the selectivity of the firm (the proportion of juniors promoted to partner each year). In this setting the promotion ratio (equivalently selectivity) of a firm is inversely proportional to the leverage ratio; that is, positively proportional to the equity partner-to-junior ratio. Given that the leverage ratio of each law firm is in practice common knowledge, we assume that each firm knows its “type” or, in this case, selectivity.

Our model focuses on the firm's decision to promote and how much pro bono activity to subsidize, simplifying the sequencing of promotion decisions, firm size, and tenure as associate and partner. While formally similar to the partnership model proposed by Levin and Tadelis (2005), our focus is on the promotion decision within the firm, and not on the interaction between the market information and choice of firm structure in external hiring decisions. We assume that the revenue to the firm is the sum of equity partner productivities, and the costs to the firm are the cost of paying junior employees

¹⁶“Wachtell, Lipton, Rosen & Katz LLP,” published February 2011, available at <http://www.top-law-schools.com/wachtell-lipton-rosen-katz.html>.

¹⁷Based on interviews with law students at top-20 law schools and junior associates at top-20 law firms.

(associates and nonequity partners). We add the twist that the firm does not directly observe a junior employee's future productivity as partner, but instead observes a noisy signal of this productivity.

Mathematically, the set of junior employees of the firm are modeled on a two dimensional continuum, \mathbb{R}^2 . Each employee is characterized by a productivity θ and a signal value s . The signal values and productivity are jointly absolutely continuously distributed. We denote by $f(\theta, s)$ the joint density of productivity and signal. A junior lawyer has a tenure of length n_J years. In the n_J^{th} year of employment she is either promoted to partner or let go and replaced. If promoted, an employee remains a partner for n_P years.¹⁸ Each year the firm must promote a set of junior employees of measure α from the “senior” class of junior employees; because the θ is not observable, the firm promotes based on the observed signal s . Hence the firm promotes a set $\mathbb{R} \times A$ of juniors where A is a Borel subset of \mathbb{R} representing the set of signal values of junior employees promoted to partner. Normalizing the number of junior employees currently under consideration for promotion (those in their n_J^{th} year) to 1, the “number” of new partners each year (equivalently the fraction of juniors promoted annually) is $\alpha = \int_A \int_{-\infty}^{\infty} f(\theta, s) d\theta ds = P_S(A)$ where $P_S(A)$ is the marginal probability measure of the set of signal values of promoted juniors and the promotion ratio of the firm is α . At any given time (after the first n_P years) there are n_P generations of partners working for the firm amounting to $n_P P_S(A)$. The income available to pay junior lawyers is the sum of the contributions of partners promoted in the last n_P years,¹⁹ $n_P \int_A \int_{-\infty}^{\infty} \theta f(\theta, s) d\theta ds$. We assume that the junior employees hired in each year work collectively L hours per year, at wage w . At any given time the junior lawyers hired in the last n_J years (n_J “classes” of junior lawyers) are working yielding a total wage cost of $n_J w L$, and the annual wage cost per partner is $\frac{n_J w L}{n_P P_S(A)}$. Thus the profit per partner is

$$\frac{\int_A \int_{-\infty}^{\infty} \theta f(\theta, s) d\theta ds}{P_S(A)} - \frac{n_J w L}{n_P P_S(A)}.$$

Representing productivity and signal as jointly distributed random variables Θ and S respectively with joint density $f(\theta, s)$, we can rewrite the last expression in more manageable notation²⁰

$$E[\Theta | S \in A] - \frac{n_J w L}{n_P P_S(A)}. \quad (1)$$

When the firm can directly observe junior productivity (to simplify exposition we shall say “junior productivity” or “employee productivity” to mean the productivity that a junior employee would bring to the firm were he or she to be promoted to partner) and tenure as a junior and a partner is the same length, our model reduces to a version of the partnership model of Levin and Tadelis (2005).²¹ In the complete information case, the firm optimizes per-partner profit by choosing a Borel set $A \subset \mathbb{R}$ for which $\int_A f(\theta) d\theta = \alpha$ that maximizes

¹⁸The real situation in law firms is somewhat more complex than our model, each year junior lawyers leave the company either voluntarily or involuntarily. The proportion of surviving junior lawyers promoted each year may vary from a strict proportion, even the tenure as associate and partner may differ from firm to firm.

¹⁹We assume $\int_{\mathbb{R}^2} |\theta| f(\theta, s) d\theta ds < \infty$.

²⁰The aggregate productivity of the set of juniors to be promoted, $\int_A \int_{-\infty}^{\infty} \theta f(\theta, s) d\theta ds$ is also the expected values of Θ on the set $\mathbb{R} \times A$.

Similarly the productivity per partner, $\frac{\int_A \int_{-\infty}^{\infty} \theta f(\theta, s) d\theta ds}{P_S(A)}$ is the conditional expectation of Θ given a signal in the set A or $E[\Theta | S \in A]$.

²¹In the modeling framework of Levin and Tadelis, one could equivalently think of this as junior employees and partners working together producing a quantity of services $P_S(A)$ at average quality (and price) $E[\Theta | A]$. For our purposes, θ encompasses the surplus available to pay junior employees and returns to equity partners from the work obtained by a partner, which presumably depends on a partner's knowledge, leadership skills and network of contacts, (not all of which are observable at the time of promotion). We refer to Θ as the productivity of a partner.

$$\frac{\int_A \theta f_\Theta(\theta) d\theta}{\int_A f_\Theta(\theta) d\theta} - \frac{wL}{\int_A f_\Theta(\theta) d\theta}$$

where $f_\Theta(\theta)$ is the density of junior productivity.

It is important to stress that our model deviates from Levin and Tadelis (2005) in several important ways. First, both junior employees and partners are needed in fixed proportions to produce the firm's services. This proportion may differ from firm to firm, but is stable from year to year for given firm. Because we assume a fixed proportions production technology (the requirement to promote a fixed fraction of associates) our stability condition for partnership shares is simpler than that of Levin and Tadelis. We require only that the set of promoted juniors maximize the ex-ante conditional expected surplus per partner among all sets of measure α and that this surplus exceeds the partner's outside opportunity wage (which we take as 0 for convenience), but not that the fraction of partners optimize the surplus per partner.²² Second, we assume that all firms in the industry are partnerships; the choice of corporate structure is not at issue. Third, we assume that the productivity of a junior employee upon promotion is unknown to the employee and known only imperfectly, via a signal S , to the firm at the time of the promotion decision. Because the junior employees' anticipated productivity is idiosyncratic to the firm and unknown to the employee there is no possibility for self selection in the labor market for juniors.²³ As far as the distribution of pro bono hours among junior employees, our model considers only the aggregate level of pro bono activity and the effect that has on the expected productivity of a junior employee and the accuracy of the firm's signal about that employee's future productivity. Finally, in accord with our empirical and anecdotal data, each firm chooses partners exclusively from within its own pool of junior employees.

We shall assume that productivity and signal are jointly normally distributed random variables. The signal is assumed to have mean 0 and standard deviation 1 and the correlation between the signal and productivity is $\rho > 0$. Conditional on a signal value s the distribution of Θ is normal with mean $E(\Theta|S) = \mu_\Theta + \rho \frac{\sigma_\Theta}{\sigma_S} (S - \mu_S) = \mu_\Theta + \rho \sigma_\Theta S$ and variance $\sigma_\Theta^2(1 - \rho^2)$ (see for example, Thomasian, 1969, p. 463). The firm chooses a set of signal outcomes for which to promote juniors to partners while maintaining a promotion proportion α that maintains a fixed leverage ratio. Formally, the firm chooses a Borel set A_S of \mathbb{R} , $P(S \in A_S) = \alpha$ and promotes all juniors whose signal value falls into A_S . The resulting expected productivity is given by

$$E[\Theta|S \in A_S] = E[E[\Theta|S]|S \in A_S] = E[\mu_\Theta + \rho \sigma_\Theta S|S \in A_S] = \mu_\Theta + \rho \sigma_\Theta E[S|S \in A_S].$$

Denote by z_α the upper α^{th} percentile of the signal distribution (standard normal), that is, the point such that $P(S > z_\alpha) = \alpha$. Applying Corollary 3 from the Appendix S1,²⁴ among all sets in $B \in \mathcal{B}$ with $P(X \in B) \geq \alpha$ the set $\{\omega: S > z_\alpha\}$ maximizes $E[S|S \in B]$.²⁵ As detailed in the Appendix S1 (Lemmas 2–4), $E[S|S > x] = \mu_S + \sigma_S \left[\phi\left(\frac{x - \mu_S}{\sigma_S}\right) / \left(1 - \Phi\left(\frac{x - \mu_S}{\sigma_S}\right)\right) \right]$; because $\mu_S = 0$ and $\sigma_S = 1$, $E[S|S > z_\alpha] = \phi[z_\alpha]/(1 - \Phi(z_\alpha)) = \phi(z_\alpha)/\alpha$ yielding

²²Because junior employees are part of the production process and are required in fixed proportion to partners, a subset of partners cannot leave the firm and create a new partnership with a more profitable mix of juniors and partners.

²³Because the role of partner is notably different from that of associate, junior employees do not know their future productivity as a partner.

²⁴The Appendix S1 to this article brings together a collection of routine results used in our model of pro bono activity.

²⁵This makes intuitive sense as well, if the correlation between an employee's signal and productivity is positive, the firm can do no better than to promote those juniors whose signal value falls in the upper α^{th} percentile of the signal distribution.

$$E[\Theta|S>z_\alpha] = \mu_\Theta + \rho\sigma_\Theta\phi(z_\alpha)/\alpha, \quad (2)$$

where $\phi(\cdot)$ and $\Phi(\cdot)$ are the standard normal density and cumulative distribution function, respectively.

4.2 | A model of pro bono activity

Given that a proportion α of juniors must be promoted to maintain the firm's promotion proportion, the per-partner profit is the per-partner productivity less the per partner fixed cost, which we take to be the sum of the wage bill for junior employees and the replaced hours of junior employees assigned to pro bono activities (equivalently the conditional expected productivity less the per-partner wage cost). Denote by x_p the total hours of pro bono activities of each class of junior employees. We model pro bono activities as having three consequences: (a) increasing the wage cost to the firm that pays to replace the pro bono hours, (b) improving the firm's information about the potential productivity of juniors as potential partners (by increasing the correlation between the signal and the employee's productivity), and (c) improving the productivity of all nonequity employees (by increasing the mean productivity μ_Θ). We call the last two consequences "screening" and "learning," respectively. Consistent with our data, our model treats only the aggregate impact of pro bono activity. We model this by assuming that μ_Θ and ρ depend on the total annual number of hours of pro bono activity:

$$\begin{aligned} \Pi(x_p, \alpha) &= E[\Theta|S>z_\alpha] - \frac{n_J w(L+x_p)}{n_P \alpha} \\ &= \mu_\Theta(x_p) + \rho(x_p)\sigma_\Theta\left(\frac{\phi(z_\alpha)}{\alpha}\right) - \frac{n_J w(L+x_p)}{n_P \alpha}. \end{aligned} \quad (3)$$

We shall assume that the firm is profitable without pro bono activities, $\Pi(0, \alpha) > 0$, and that pro bono activities are initially worthwhile $\frac{\partial\Pi(0, \alpha)}{\partial x_p} > 0$. We also need to impose some structure on the way in which pro bono activity changes employee productivity. We assume that $\mu_\Theta(x_p)$ is bounded and both $\mu_\Theta(x_p)$ and $\rho(x_p)$ are twice continuously differentiable, nonnegative, nondecreasing, and concave with at least one of them being strictly increasing and strictly concave, reflecting the idea that pro bono activity increases the average productivity of junior lawyers and at the same time increases the accuracy of the firms signal about their future productivity, but at declining rates. The first order condition for the optimal level $x_p^*(\alpha)$ of pro bono activity is

$$\frac{\partial\Pi(x_p, \alpha)}{\partial x_p} = \mu'_\Theta(x_p) + \rho'(x_p)\sigma_\Theta\left(\frac{\phi(z_\alpha)}{\alpha}\right) - \frac{n_J w}{n_P \alpha} = 0. \quad (4)$$

Concavity assures us that there is at most one solution to Equation 4. By assumption, $\frac{\partial\Pi(0, \alpha)}{\partial x_p} > 0$. The concavity and boundedness of $\mu_\Theta(\cdot)$ and $\rho(\cdot)$ imply that $\mu'_\Theta(\cdot)$ and $\rho'(\cdot)$ decrease to 0 as $x_p \rightarrow \infty$, hence for some $\bar{x}_p > 0$, $\frac{\partial\Pi(\bar{x}_p, \alpha)}{\partial x_p} < 0$. Coupling these results with the continuity of $\mu'_\Theta(\cdot)$ and $\rho'(\cdot)$ establishes that for a firm characterized by promotion ratio α , there is a unique optimal level of pro bono activity $x_p^*(\alpha)$. For the population of selective firms (those with $\alpha < 0.5$), increases in α (decreases in selectivity) are associated with increases in $x_p^*(\alpha)$.

Proposition 1 *Under the assumptions of the model, if $\alpha < 0.5$, then $x_p^*(\alpha)$ is increasing in α .*

Proof Write the optimal level of pro bono activity as $x^*(\alpha)$. Substituting into Equation 4 yields

$$\mu'_\Theta(x_p^*(\alpha)) + \rho'(x_p^*(\alpha))\sigma_\Theta \left(\frac{\phi(z_\alpha)}{\alpha} \right) - \frac{n_J w}{n_P \alpha} = 0$$

or

$$\alpha \mu'_\Theta(x_p^*(\alpha)) + \rho'(x_p^*(\alpha))\sigma_\Theta \phi(z_\alpha) = \frac{n_J w}{n_P}.$$

Differentiating both sides of the last expression with respect to α

$$\mu'_\Theta(x_p^*(\alpha)) + \alpha \mu''_\Theta(x_p^*(\alpha)) \frac{dx_p^*(\alpha)}{d\alpha} + \rho''(x_p^*(\alpha)) \frac{dx_p^*(\alpha)}{d\alpha} \sigma_\Theta \phi(z_\alpha) + \rho'(x_p^*(\alpha)) \sigma_\Theta \frac{d\phi(z_\alpha)}{d\alpha} = 0. \quad (5)$$

Using the fact that $\alpha = 1 - \Phi(z_\alpha)$ and differentiating yields $1 = -\phi(z_\alpha) \frac{dz_\alpha}{d\alpha}$, or $\frac{dz_\alpha}{d\alpha} = -1/\phi(z_\alpha)$.

On the other hand, $\phi'(x) = \frac{d}{dx} \left[\frac{1}{\sqrt{2\pi}} e^{-x^2/2} \right] = -x\phi(x)$. Thus

$$\frac{d\phi(z_\alpha)}{d\alpha} = \phi'(z_\alpha) \frac{dz_\alpha}{d\alpha} = -z_\alpha \phi(z_\alpha) \left(\frac{-1}{\phi(z_\alpha)} \right) = z_\alpha.$$

Substituting into Equation 5 yields

$$\mu'_\Theta(x_p^*(\alpha)) + \alpha \mu''_\Theta(x_p^*(\alpha)) \frac{dx_p^*(\alpha)}{d\alpha} + \rho''(x_p^*(\alpha)) \frac{dx_p^*(\alpha)}{d\alpha} \sigma_\Theta \phi(z_\alpha) + \rho'(x_p^*(\alpha)) \sigma_\Theta z_\alpha = 0.$$

Collecting terms and solving for $\frac{dx_p^*(\alpha)}{\alpha}$ yields:

$$\frac{dx_p^*(\alpha)}{d\alpha} = \frac{-[\mu'_\Theta(x_p^*(\alpha)) + \rho'(x_p^*(\alpha))\sigma_\Theta z_\alpha]}{\alpha \mu''_\Theta(x_p^*(\alpha)) + \rho''(x_p^*(\alpha))\sigma_\Theta \phi(z_\alpha)}. \quad (6)$$

If $z_\alpha > 0$ (true when $\alpha < 0.5$), $\mu_\Theta(\cdot)$ and $\rho(\cdot)$ are nondecreasing, concave, and possess continuous second derivatives, and at least one of μ_Θ and ρ are strictly increasing and strictly concave, then the expression on the right-hand side of Equation 6 is positive, establishing the result.

The model (Equation 3) posits that the action of pro bono activity is to increase the mean productivity of nonequity employees and simultaneously the quality of the signal obtained on each employee. The implication of Proposition 1 is that for selective firms (the population captured in our data), increases in the promotion ratio lead to increases in pro bono activities. In practice, it is difficult to separate the screening effect from the learning effect, and our observation is that they are indeed intertwined.

Although in practice both the screening and learning mechanisms are at play, we can examine with our mathematical model two extreme cases: either pure screening (without learning) or pure learning (without screening). In the pure screening extreme case, assume $\mu'_\Theta(\cdot) \equiv 0$ and assume that $\rho(\cdot)$ strictly increasing and strictly concave, then Equation (6) becomes

$$\frac{dx_p^*(\alpha)}{d\alpha} = \frac{-\rho'(x_p^*(\alpha))z_\alpha}{\rho''(x_p^*(\alpha))\phi(z_\alpha)}$$

In the case of the pure learning extreme case assume $\rho'(\cdot) \equiv 0$ and assume that $\mu_\Theta(\cdot)$ is strictly increasing and strictly concave, then Equation 6 becomes

$$\frac{dx_p^*(\alpha)}{d\alpha} = \frac{-\mu'_\Theta(x_p^*(\alpha))}{\alpha\mu''_\Theta(x_p^*(\alpha))}$$

Corollary 1 *In the case of pure screening, as the promotion ratio (α) increases, the optimal level of pro bono activities increases for selective firms ($\alpha < 0.5$) and decreases for unselective firms ($\alpha > 0.5$).*

Corollary 2 *In the case of pure learning, as the promotion ratio (α) increases, the optimal level of pro bono activities increases.*

The comparative statics established in Corollaries 1 and 2 are intuitive: for selective firms, increasing the promotion ratio (α) (decreasing selectivity) promotes investment in improving signal quality, for unselective firms the opposite holds. For all firms, decreasing selectivity promotes investment in raising the average productivity of all employees.

While there are many potential strategic reasons for firms to engage in pro bono activities, our model concentrates on two related reasons: (a) to improve junior employee productivity (“learning”) and (b) to improve information about employees’ potential contribution as a partner (“screening”). We believe that this model is particularly well suited to the firms we study in our empirical sample—the most sought after (top-200) law firms. If we assume that the tenure of a partner is four times the tenure of a junior lawyer, from Table 1, for the firm in our sample with the largest partner-to-junior ratio of 1.97, this would imply a promotion ratio of $(1.97/4) = 0.49$. For the average firm in our sample the partner-to-junior ratio was 0.46, yielding a promotion ratio of 0.115.²⁶

Whether the effect of pro bono activity is better characterized as learning versus screening is a subtle point, and we posit that both are at play in this setting. It is important in our view that our model shows that either a learning or a screening explanation by itself is sufficient to provoke theoretical behavior that we can test in the data of top 200 (all selective) law firms. Namely, that pro bono activity increases as the promotion ratio increases. Because the promotion ratio is positively proportional to the partner-to-junior ratio, this is equivalent to the prediction that pro bono activity increases as the partner-to-junior ratio increases.

Of course, our stylized model omits factors that might influence a firm’s leverage ratio and pro bono strategy, such as the extent to which pro bono activities may attract business to the firm, or signal other firm-specific characteristics to either customers or potential employees. We address these concerns in our empirical analysis.

5 | DATA AND SUMMARY STATISTICS

Our main analysis uses two datasets of the top-200 revenue-grossing U.S. law firms from 1999 to 2012. All of the firms in our sample can be considered “selective” as defined in our model; as such, we test the

²⁶Recall that the tenure of a partner is n_P and a junior is n_J , then in our model the partner-to-junior ratio is $\alpha n_P/n_J$. If we take n_J to be 8 years and n_P to be 32 years, then a partner to junior ratio of $0.46 = \alpha(32/8)$ yields a promotion proportion $\alpha = 0.115$.

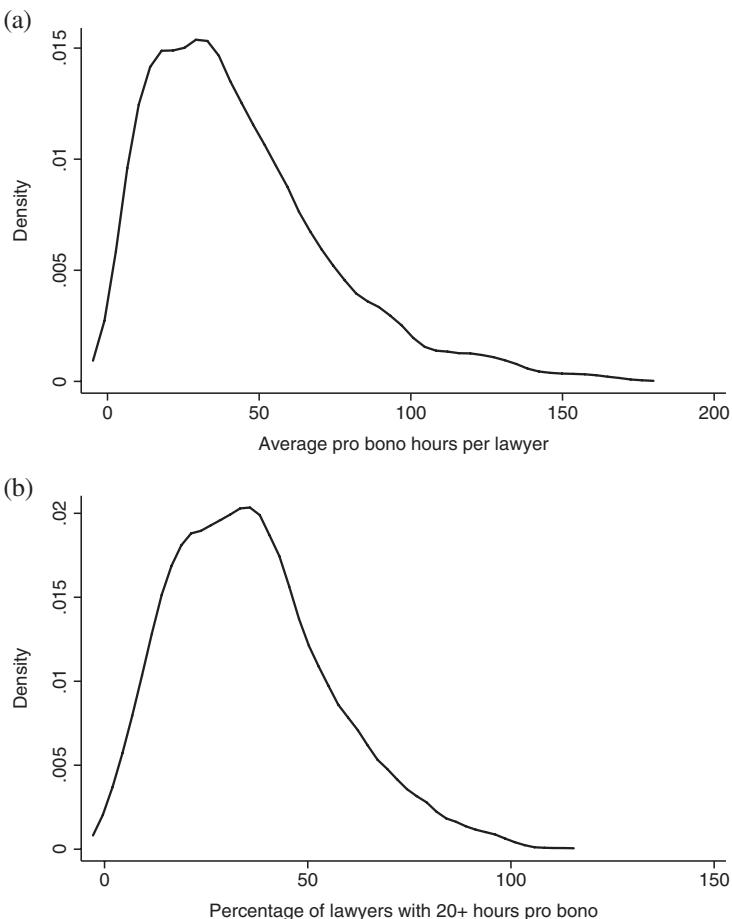


FIGURE 1 (a) Average pro bono hours per lawyer. (b) Lawyers with 20+ hours pro bono

same prediction derived from both the screening and learning models: that the level of pro bono will increase with the partner-to-junior ratio. The first dataset, gathered from the American Lawyer Survey, includes data on firm characteristics such as structure, size, ranking, and profitability. The second dataset, gathered from the American Lawyer's Pro Bono Survey, includes information about firms' pro bono work. We use a firm identifier to merge these two datasets. Eighty-nine percent of the 200 top revenue-grossing firms provided data for the Pro Bono Survey. Larger firms (with more lawyers) were more likely to fill out the pro bono survey than smaller firms.²⁷ Firms that filled out the pro bono survey did not differ from those that did not fill out the survey in other structural or profitability characteristics. Our data is an unbalanced panel due to firms entering and dropping out of the survey over the 13-year period.

Although our model predicts a relationship between the partner-to-junior ratio and pro bono work by juniors, our data only includes information on pro bono amounts per lawyer. As time allocated to pro bono cases by equity partners is generally low, with juniors leading and managing cases and often receiving only godparent-like advice from partners on pro bono work (Cummings & Rhode,

²⁷Based on regressing missing-survey (1 if the firm did not fill out the survey, 0 otherwise) on the log of the partner-to-associate ratio, log of profits per partner, single tier structure, log of number of lawyers, and year fixed effects, with errors clustered at the firm level ($B = -0.13, p = 0.01$).

TABLE 1 Summary statistics

Variable	Mean	SD	Min	Max	N
Average pro bono hours per lawyer	43.87	30.24	0.40	174.80	2,664
Percent of lawyers with 20+ hours pro bono	36.18	19.39	0.80	99.00	2,638
Partner-to-junior ratio	0.47	0.24	0.08	1.97	3,000
Log of partner-to-associate ratio	-0.88	0.48	-2.52	0.68	3,000
Profits per partner (in millions of dollars)	0.87	0.60	0.19	4.97	3,000
Log of profits per partner (in millions of dollars)	-0.32	0.57	-1.66	1.60	3,000
Gross revenue (in millions of dollars)	323.01	312.71	57.00	2,440.50	3,000
Profit margin	36.26	8.68	9.45	75.63	3,000
Log of profit margin	3.56	0.25	2.25	4.323	3,000
Single tier partnership structure	0.21	0.40	0	1	3,000
Number of lawyers	486.63	398.60	96	4,036	3,000
Log of number of lawyers	5.98	0.61	4.56	8.30	3,000

2010), pro bono hours per lawyer is a reasonable proxy for pro bono hours per junior. Moreover, concentrating on pro bono per lawyer offers a more stringent test of our model predictions as pro bono per lawyer decreasing in selectivity implies pro bono per junior decreasing in selectivity.²⁸

Figure 1a, b demonstrate the kernel density of our main dependent variables of interest, average pro bono hours per lawyer and proportion of lawyers logging at least 20 hr of pro bono per year, respectively. Table 1 provides summary statistics for our sample. The average pro bono hours per lawyer per year was 44, with 36% of lawyers logging at least 20 hr of pro bono per year.²⁹ Summary statistics are also included in Table 1 for firm size (number of lawyers) and measures of firm profitability (net income, profits per partner, and gross revenues).

6 | EMPIRICAL RESULTS

Our model predicts that pro bono intensity should increase as the ratio of equity partners to junior lawyers increases. Table 2 reports panel regression analyses that examine this empirically. Column 1 illustrates that, controlling for profitability, structure, reputation, year, and region, a 1% increase in the partner-to-junior ratio is associated with an increase of 0.50 pro bono hours per lawyer per year ($B = 50.10, p = 0.000$). Column 2 demonstrates a positive relationship between the partner-to-junior ratio and the percent of lawyers with at least 20 pro bono hours ($B = 31.03, p = 0.000$). The control variables included in these regressions are meant to help address plausible alternative explanations that might explain the positive correlation between the partner-to-junior ratio and hours of pro bono. For example, profit margin and the partner-to-junior ratio are positively correlated. If we did not control for the profit margin, one might think that the hypothesized relationship between the partner-to-junior ratio and the hours of pro bono activity could be driven by the profit margin. A positive

²⁸Within the confines of our mathematical model, increases in pro bono hours per lawyer imply increases in pro bono hours per associate. To see this, recall that we normalize the number of juniors in each class to 1, hence $x_p^*(\alpha)$ in Proposition 1 can be thought of as pro bono hours per junior and the total number of lawyers in the firm is $n_p\alpha + n_j$. Pro bono hours per lawyer is $\frac{n_jx_p^*(\alpha)}{an_p + n_j}$. If $\frac{n_jx_p^*(\alpha)}{an_p + n_j}$ is increasing in α , then $x_p^*(\alpha)$ must be increasing.

²⁹Pro bono work is defined as legal services provided to those who could not otherwise afford them and is based on US offices only. Work done by paralegals or summer associates is not included in reported pro bono hours, nor is time spent on bar association work, on boards of nonprofit organizations, or on nonlegal work for charities. Source: American Lawyer's Pro Bono Survey.

TABLE 2 Ordinary least squares regression results

	(1) Avg pro bono hours	(2) Percent 20+ pro bono hours	(3) Avg pro bono hours	(4) Percent 20+ pro bono hours
Log of partner-to-junior ratio	50.097*** (9.492) [0.000]	31.030*** (6.264) [0.000]	33.459*** (8.064) [0.000]	24.540*** (7.279) [0.001]
Log of profits per partner	53.443*** (9.653) [0.000]	26.387*** (6.493) [0.000]	38.557*** (11.289) [0.001]	29.978*** (8.329) [0.000]
Log of profit margin	-67.180*** (13.636) [0.000]	-39.276*** (9.252) [0.000]	-47.088*** (12.693) [0.000]	-38.878*** (9.716) [0.000]
Log of number of lawyers	19.486** (8.944) [0.030]	9.248* (5.511) [0.095]	36.709*** (8.306) [0.000]	16.623** (7.101) [0.020]
Single tier partnership structure	10.732** (4.878) [0.029]	2.265 (2.821) [0.423]	-4.085 (2.785) [0.144]	-0.483 (1.964) [0.806]
AM law ranking	0.056 (0.099) [0.572]	-0.007 (0.063) [0.907]	0.448*** (0.085) [0.000]	0.264*** (0.067) [0.000]
Year fixed effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	Yes	Yes
Observations	2,329	2,303	2,329	2,303

Notes. Standard errors in parentheses. *p*-Values in brackets. Standard errors clustered at the firm level.

correlation between the partner-to-junior ratio and the hours of pro bono conditional on the profit margin diminishes the likelihood that this alternative hypothesis explains the results. While our main relationship of interest holds conditioning on these important control variables, the relationships we observe in the control variables are also interesting in and of themselves. The positive relationship between profits per partner and pro bono activity suggests that pro bono is a normal good. As firm income goes up, so does the demand for pro bono activity. The strong negative relationship between profit margin and pro bono activity suggests that when controlling for levels of profitability, firms with higher marginal returns to effort are less likely to engage in pro bono work. Put another way, a firm that is doing well financially is more likely to do good, but that effect is damped when the returns to spending an additional hour of work on profitable economic activity are high. Finally, the positive relationship between the number of lawyers and average pro bono hours suggests that there are significant scale effects in pro bono.

As there are a number of firm-specific characteristics such as firm culture and management style, as well as other firm-level unobservables, that one could imagine drive both the partner-to-associate ratio and pro bono intensity, Columns 3 and 4 add firm fixed effects to the specifications presented in Columns 1 and 2. With inclusion of these firm fixed effects, Columns 3 and 4 provide further support a positive relationship between the partner-to-associate ratio and average pro bono hours ($B = 33.46$,

$p = 0.000$) and percent of lawyers with at least 20 hr of pro bono ($B = 24.540$, $p = 0.001$), respectively.

If learning and screening are indeed the mechanisms driving the relationship between partner-to-junior ratio and pro bono, we would expect that very small amounts of pro bono would not be enough to have any type of learning or screening benefits. As such, we would not expect to see the predicted relationship between partner-to-junior ratio and pro bono intensity for small levels of pro bono, but would expect to see the predicted relationship between partner-to-junior ratio and pro bono intensity for higher levels of pro bono. Table 3 reports logistic regression results with variations in the cutoff of average pro bono hours as the dependent variable to examine this. In Columns 1 and 2, the dependent variable is a binary variable equal to 1 if average pro bono per lawyer is greater than the 5th percentile of pro bono in the sample (which corresponds to 8 hr of pro bono per lawyer), and equal to 0 if average pro bono per lawyer is less than or equal to the 5th percentile of pro bono in the sample (8 hr). In Columns 3 and 4, the dependent variable is equal to 1 if average pro bono per lawyer is greater than the 25th percentile of pro bono (21 hr), 0 otherwise. In Columns 5 and 6, the 50th percentile cutoff corresponds to 37 hr; in Columns 7 and 8, the 75th percentile cutoff corresponds to 59 hr; and in Columns 9 and 10, the 95th percentile corresponds to 104 hr. Columns 1 (without firm fixed effects) and 2 (with firm fixed effects) confirm that there is no statistically significant relationship between partner-to-junior ratio and logging average pro bono hours greater than the 5th percentile of pro bono hours (equivalent to 8 hr), and the relationship is directionally negative ($B = -0.15$, $p = 0.922$ and $B = -3.313$ $p = 0.192$, respectively).³⁰ Columns 3 through 10 indicate a strengthening of the relationship between leverage ratio and pro bono intensity as the cutoff point for average pro bono hours increases. This is consistent with what we would expect under the learning and screening mechanisms we propose.

7 | CONCLUSIONS

This article uses multiple methodological approaches—primary industry research, a formal model, and empirical analysis to suggest that law firms can use pro bono services strategically, to facilitate junior lawyers' learning of skills relevant for more senior positions, and to gain proprietary knowledge about expected junior lawyers' quality as partners. Our proposition that pro bono can act as an informational signal to the *firm* about an aspect of *employee* quality is contrary to the common explanation that CSR acts as an informational signal to the *employee* about an aspect of *firm* quality. Our mechanisms also differ from much of the existing work on CSR in that the benefit to the firm does not require that the employee value the prosocial nature or meaningfulness of the CSR program. Even if none of a law firm's employees are prosocially oriented or value the meaningfulness of working on pro bono projects, pro bono can still be used strategically by the firm as a human resource management tool. This suggests that firms can benefit from pro bono projects even if these projects are not necessarily high (social) impact, and even if their employees find no meaning *per se* in the engagements.

There are a number of potential alternative explanations for the positive relationship between the partner-to-junior ratio and pro bono that we cannot rule out, and that further work can explore. One is that of a social capital mechanism, wherein firms with higher partner-to-junior ratios have higher pro

³⁰The number of observations declines notably with the inclusion of firm fixed effects due to a lack of variation within firms over time in logging average pro bono per lawyer as more or less than 8 hr, but the results are consistent with (Column 1) and without (Column 2) the inclusion of firm fixed effects.

TABLE 3 Logistic regression results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Avg probono	Avg probono	Avg probono	Avg probono	Avg probono	Avg probono	Avg probono	Avg probono	Avg probono	Avg probono
	more than 5th	more than 5th	more than 25th	more than 25th	more than 50th	more than 50th	more than 75th	more than 75th	more than 95th	more than 95th
Log of partner-to-junior ratio	-0.152	-3.127	2.463 ***	2.717 ***	2.976 ***	4.900 ***	3.151 ***	5.787 ***	1.672	4.803 ***
(1.564)	(2.398)	(0.832)	(1.259)	(0.816)	(1.004)	(1.008)	(1.002)	(1.363)	(1.211)	
[0.922]	[0.192]	[0.003]	[0.031]	[0.000]	[0.002]	[0.000]	[0.000]	[0.220]	[0.000]	
Log of profits per partner	0.991	-3.652	3.401 ***	3.560 ***	3.358 ***	5.761 ***	4.232 ***	7.276 ***	2.462 *	5.863 ***
(1.996)	(3.415)	(1.126)	(1.551)	(0.909)	(1.169)	(1.084)	(1.130)	(1.450)	(1.417)	
[0.620]	[0.285]	[0.003]	[0.022]	[0.000]	[0.000]	[0.000]	[0.000]	[0.089]	[0.000]	
Log of profit margin	0.532	3.256	-3.518 ***	-6.134 ***	-4.016 ***	-7.937 ***	-4.409 ***	-8.410 ***	-2.251	-6.806 ***
(2.395)	(3.928)	(1.266)	(1.922)	(1.266)	(1.470)	(1.584)	(1.447)	(2.165)	(1.785)	
[0.824]	[0.407]	[0.005]	[0.001]	[0.002]	[0.000]	[0.005]	[0.000]	[0.298]	[0.000]	
Log of number of lawyers	0.012	-1.030	2.766 **	3.994 ***	1.875 **	5.788 ***	2.345 ***	5.986 ***	1.342 *	5.267 **
(1.670)	(2.742)	(1.228)	(1.282)	(0.762)	(0.985)	(0.662)	(1.001)	(0.705)	(1.184)	
[0.994]	[0.707]	[0.024]	[0.002]	[0.014]	[0.000]	[0.000]	[0.000]	[0.057]	[0.000]	
Single tier partnership structure	0.643	1.944 ***	0.728 ***	0.968 ***	0.725 ***	0.260	0.789 ***	0.055	0.949 ***	0.401
(0.469)	(0.610)	(0.290)	(0.344)	(0.268)	(0.267)	(0.264)	(0.264)	(0.338)	(0.352)	
[0.170]	[0.001]	[0.012]	[0.005]	[0.007]	[0.331]	[0.003]	[0.848]	[0.005]	[0.255]	
AM law ranking	-0.017	-0.030	0.013	0.050 ***	0.013	0.080 ***	0.029 ***	0.082 ***	0.027 ***	0.080 ***
(0.017)	(0.026)	(0.012)	(0.012)	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.013)	
Observations	2,554	446	2,600	1,140	2,600	1,677	2,600	1,726	2,560	1,109
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Notes. Standard errors in parentheses. *p*-Values in brackets. Standard errors clustered at the firm level.

bono levels because partners are those approached to do projects, and firms with a larger proportion of partners are approached to do more pro bono projects, resulting in more pro bono at those firms.³¹ Another is that of an assignment-related mechanism, wherein certain types of firms could be more likely to assign pro bono because they have more slack resources. Likewise, though we provide suggestive evidence in the qualitative section of our article that employee selection is not the main mechanism through which pro bono benefits law firms, employee selection is indeed a plausible alternative explanation that existing work on other types of (non–pro bono) CSR has described (Burbano, 2016; Gatewood et al., 1993; Riordan et al., 1997), and that we cannot rule out given our data. Future work can seek to examine and disentangle these potential alternative mechanisms.

Given the nature of pro bono and the stretch roles they allow, the human capital learning and screening mechanisms are very related, and it is difficult to distinguish between the two. Our primary evidence and model suggest that both are at play, though it is reasonable to expect that one might create a larger benefit for the firm than the other. Future work could seek to disentangle the learning and screening mechanisms empirically and consider the circumstances under which different types of firms might stand to benefit more from one mechanism versus the other.

We see broad patterns consistent with our theory in other professional service industries where pro bono is a common type of CSR. In medicine, for instance, less-experienced doctors gain new experience by providing services to patients who cannot afford treatment (Gawande, 2002). Likewise, junior management consultants often gain stretch-role experience by working on pro bono consulting projects. Given the similar stretch-role opportunity provided by pro bono activities in these different settings, and similar opportunities for more senior managers to observe performance in these stretch roles, pro bono likely serves the same mechanisms that we put forth in these settings. Opportunities remain for future research on pro bono practices in other human-capital-intensive or knowledge-based industries (Anand et al., 2007; Chatain & Meyer-Doyle, 2017).

Informing the strategic human capital conversation, our study suggests the relevance of considering socially responsible activities in concert with other employee management strategies as levers in the strategic management of human resources. We demonstrate that a firm's pro bono strategy can complement its existing employee management strategy and related structure. Although the CSR literature in strategic management has considered how socially responsible activities influence current and prospective employee behavior, there has been relatively little consideration of how the firm's CSR strategies interact with other elements of the firm's employee management strategies. We find these strategies to be very related in our context, suggesting that there may be opportunities to explore the interaction between these strategies in other industries, for other types of CSR, and for other types of employee management practices.

ACKNOWLEDGEMENTS

We would like to thank Sushil Bikchanani, Aaron K. Chatterji, Bennett Chiles, Ian Larkin, Steven Lippman, James Ostler, Sara Parker-Lue, Lamar Pierce, seminar participants at UCLA, and participants of the Alliance for Research on Corporate Sustainability Conference for their valuable feedback. All mistakes are ours alone. Please send correspondence to vanessa.burbano@gsb.columbia.edu.

³¹The NALP reports that only a third of surveyed firms allow individual lawyers to bring pro bono cases to the firm directly, with 70% distributing cases through centralized channels such as the pro bono counsel or committee that sets the policies and direction of the pro bono work (Cummings & Rhode, 2010), suggesting that partners are not the primary conduit through which pro bono cases are brought to and chosen by the firm. Nonetheless, future work could explore the possibility of a social capital mechanism, which we cannot rule out altogether, in more detail empirically.

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How to cite this article: Burbano VC, Mamer J, Snyder J. Pro bono as a human capital learning and screening mechanism: Evidence from law firms. *Strat Mgmt J*. 2018;39:2899–2920.
<https://doi.org/10.1002/smj.2947>