

Pro Bono as a Human Capital Learning and Screening Mechanism: Evidence from Law Firms

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Abstract

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.

Keywords: Corporate Social Responsibility, Human Capital Strategy, Promotions, Organizations, Legal Services

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Introduction

Scholars are increasingly arguing that socially responsible activities can benefit firm performance through employees. Corporate social responsibility has been posited to help attract (Burbano 2016, Gatewood *et al.*, 1993; Montgomery and Ramus, 2011; Riordan *et al.*, 1997), motivate (Rupp *et al.*, 2006, Rupp *et al.*, 2013), and retain (Bode *et al.*, 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 *et al.* (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

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.

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 US 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 non-paying 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 (Peter and Hull, 1969; Lazear, 2004).

We outline a formal model in the spirit of Levin and Tadelis (2005) to elucidate this

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.

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) 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

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

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 US legal services industry - from 1998-2012.⁵ 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 provides 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 paper 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 (Burbano, 2017; Turban and Greening 1997; Brammer *et al.* 2007) 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 and Kryscynski 2011) and on strategies relevant for human-capital-intensive and "knowledge-based" firms (Anand et al 2007, Chatain and Meyer-Doyle 2016).

should have higher pro bono levels. Given that an intuitive argument could be made in either direction, the use of a formal model to describe the mechanism and formally predict the implications of a relationship in one direction is particularly helpful.

⁵There has been a substantial amount of literature on the legal services industry in strategy, economics, and organizational behavior. A non comprehensive list includes studies focused on the issue of survival (Phillips, 2002), employee mobility (Campbell *et al.*, 2012a), employee hiring (Sauer, 1998; Rider and Negro, 2015) social status (Rider, 2013), and specialization (Garicano and Hubbard, 2007). See Baker and Parkin (2006) for further references on this extensive literature.

Prior Literature

Scholars have sought to identify factors that explain the variation in corporate social responsibility (CSR), defined as practices that improve the workplace and benefit society in ways that go above and beyond what companies are 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 (Campbell *et al.*, 2012b; Coff, 1997; Bidwell, 2011). 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 work more (Burbano, 2017), shirk less (Flammer and Luo, 2017; Tonin and Vlassopoulos, 2014), attract applicants (Backhaus *et al.*, 2002; Gatewood *et al.*, 1993; Greening and Turban, 2000; Riordan *et al.*, 1997; Turban and Greening, 1997), and improve retention (Bode *et al.*, 2015; Carnahan *et al.*, 2015). 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 amongst prosocially-oriented individuals (e.g., Burbano 2017, Tonin and Vlassopoulos 2014), and described moral or prosocial motives as explaining positive employee responses to CSR (Rupp *et al.*, 2006, 2013, Aguilera *et al.*, 2007, Kim et al, 2017, Gond et al., 2017). In this paper we suggest that a

⁶Examples of such factors include agency (Brammer and Millington, 2008; Hong *et al.*, 2012; Johnson and Greening, 1999), competition (Bennett *et al.*, 2013; Flammer, 2015; Snyder, 2010), private politics and stakeholder pressure (Baron, 2001; Delmas and Toffel, 2008; Hillman and Keim, 2001; Freeman *et al.*, 2004; Henisz *et al.*, 2014; King, 2007; Sen *et al.*, 2006; Soule *et al.*, 2014), access to finance (Cheng *et al.*, 2014; Graves and Waddock, 1994), and mitigating risk (Godfrey *et al.*, 2009; Koh *et al.*, 2013; Minor and Morgan, 2011).

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 and Delmas, 2011; Delmas and Blass, 2010; Hawn and Ioannou, 2016; Mattingly and Berman, 2006; Rowley and Berman, 2000), and that there is value in studying finer-grained CSR activities (Godfrey *et al.*, 2009). Strategy scholars have considered the value of corporate disaster donations (e.g., Madsen and Rodgers, 2015; Muller and Kruassl, 2011), corporate philanthropy more broadly (e.g., Lev *et al.*, 2010), pollution reduction (King and Lenox, 2002), and environmental informational disclosure programs (e.g., Doshi *et al.*, 2013; Reid and Toffel, 2009), as well as standards (Delmas and Pekovic, 2013) and ratings (Chatterji and Toffel, 2010). 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 and Singh, 2015; Bode *et al.*, 2015). 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, Delmas and Pekovic (2012) 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 and Nyborg, 2008), 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.

The Legal Services Context

Pro Bono

Definition and Trends

Pro bono work is defined by *The American Lawyer* as legal services provided to those who could not otherwise afford them.⁷ For example, many top 200 law firms have represented indigent individuals in criminal appeals, post-conviction proceedings in death penalty cases, legal matters for nonprofit clients, children's rights, civil rights, community economic development, and human rights issues.⁸ Average pro bono hours per lawyer increased by more than 65% between 2000 and 2008, although it has declined since the recession of 2008.⁹

Pro Bono, Recruiting and Retention

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.¹⁰ 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 US 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

⁷2011 *American Lawyers Pro Bono Survey*. Time spent by lawyers on bar association work, on boards of nonprofit organization, or on non-legal work for charities is not considered pro bono work.

⁸*Vault Guide to the Top 100 Law Firms*, 2008 Edition.

⁹"Pro Bono Report 2012: Under Construction," *The American Lawyer*, June 27, 2012. 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 hours 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.

¹⁰Based on interview with recruiters and human capital managers at top-50 US law firms

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 at some point during their decision-making process. These resources and word-of-mouth, rather than pro bono levels, appear to drive prospective lawyers' perceptions of a given law firm and, relatedly, their decision 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 US 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 that 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.

Pro Bono Management and Allocation Across Employees

A firm's pro bono strategy is usually designed and managed by a designated pro bono counsel (Cummings and Rhode, 2010). The work of the pro bono 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 and 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, staffing on pro bono cases is “more often 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 US 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 US 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.¹¹ 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.

¹¹We 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 US 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_Incoming_Associate_Quality_Score`, using the Above the Law Rankings for each law school and `USNews_Incoming_Associate_Quality_Score`, using the US News rankings for each law school. Each score was calculated as follows: $\forall f : \sum_{i \in lawSchool} \left(\frac{n_i}{N_{year}^f} \right) \cdot r_i$

where f = Firm name, n_i = Number of associates hired from law school i , N_{year}^f = Total number of associates hired from firm f in given year, r_i = Ranking for law school i . The correlation between average pro bono hours and `USNews_Incoming_Associate_Quality_Score` is -0.104, N=404. The correlation between average pro bono hours and `ATL_Incoming_Associate_Quality_Score` 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. 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.

Evaluation of Pro Bono Work

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 US law firms, is not treated more negatively or positively in comparison to work on for-profit cases when an associate's performance is assessed. The 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. Importantly, regardless of the number of pro bono hours counted towards billable hours, 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 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>.

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 ten US law firm confirmed, "[Pro bono work] definitely gives associates stretch roles." An associate at a top-10 US 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 US law firm noted that "pro bono can be. . . a way to get into the courtroom 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

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

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

they provide general guidance on pro bono cases, but do not dedicate much time to these cases (Cummings and 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.

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

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

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.

Human Capital Management

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 amongst law firms.¹⁶

“Leverage Ratio” (Ratio of Juniors to Equity Partners)

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 non-equity 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

¹⁶For example, McKee Nelson, *Vault Guide's* top law firm to work for, has been described as “a...place that values and recognizes the individual and fundamentally wants to develop the potential of each associate” (source: *Vault Guide to the Top 100 Law Firms*, 2008 edition), whereas Wilson Elser Moskowitz Edelman & Dicker has been described as a “sweatshop law firm” (source: Top-Law-Schools.Com online forum, posting on October 24, 2010) where “work hours/conditions...[are] objectionable.” (source: Vault.com Career Discussions page, posting on December 18, 2007)

credibility to the firm's recruiting claim that associates are hired with the expectation that they are capable of becoming partners.¹⁷ 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.¹⁸

A Model of Firm Pro Bono Choices

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 non-equity 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 an amount of business yielding a surplus θ . To do this, each partner requires the services of a fixed number of junior non-equity 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

¹⁷Wachtell, Lipton, Rosen & Katz LLP," published February 2011, available at <http://www.top-law-schools.com/wachtell-lipton-rosen-katz.html>.

¹⁸Based on interviews with law students at top-20 law schools and junior associates at top-20 law firms..

proportion of juniors promoted to partner each year). In this setting the promotion ratio (proportion of junior lawyers promoted to partner) of a firm is inversely proportional to the leverage ratio; that is, positively proportional to the equity partner-to-junior ratio.

Our simple model focusses on the 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 (associates and non-equity 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 is either promoted to partner or let go and replaced. If promoted, an employee remains a partner for n_p years.¹⁹ Each year the firm must promote a set of junior employees of measure α from the “senior”

¹⁹The 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. We shall see that the tenure pattern does not matter for our comparative statics results, only the fact that few junior lawyers are promoted to partner annually.

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 to 1, the "number" of new partners each year (as well as the fraction of juniors promoted) 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 on the set of signals 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 years²⁰, $n_P \int_A \int_{-\infty}^{\infty} \theta f(\theta, s) d\theta ds$. We assume that the junior employees work collectively L hours per year, at wage w . At any given time the junior lawyers hired in the last n_J years are working, and the annual wage cost per partner is $\frac{n_J w L}{n_P P_S(A)}$; the firm pays a wage of w for L . Thus the profit per partner is

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

We can rewrite this expression in more manageable notation

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

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

²⁰We assume $\iint_{\mathbb{R}^2} |\theta f(\theta, s)| d\theta ds < \infty$.

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

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

where $f(\theta)$ is the density of junior productivity the corresponding probability distribution.

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.²² 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 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.²³ Second, we assume that all firms in the industry are partnerships; the choice of corporate structure is not at issue. Third, we

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, we needn't think of θ as strictly a measure of the quality of services, it also encompasses the profitability of the work obtained by a partner, and a measure of the strength of a partner's network of contacts, for this reason we refer to Θ as the productivity of a partner.

²²It makes sense in our context to view the leverage ratio as determined by the firms main lines of business. For example a firm with a large litigation practice might require a very different mix of partners and associates from a firm that does a lot of in administrative or regulatory law.

²³Because 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.

assume that the productivity of a junior employee upon promotion is unknown to the employee and known only imperfectly, via a signal S by 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. 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 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, with very few exceptions, each firm chooses partners exclusively from within its own pool of junior employees.

To afford easy direct calculation we assume that the quality and the 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 $\rho > 0$.²⁴ 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, pp.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 set Borel set A_S in \mathbb{R} , $P(S \in A_S) = \alpha$ and promotes all juniors whose signal value falls into A_S . The resulting expected productivity

²⁴It entails no loss of generality to assume that $\rho > 0$ as a negative correlation would simply reverse the firm's decision function.

is given by

$$\begin{aligned}
E[\Theta|S \in A_S] &= E\left[E[\Theta|S]|S \in A_S\right] \\
&= E\left[\mu_\Theta + \rho\sigma_\Theta S|S \in A_S\right] \\
&= \mu_\Theta + \rho\sigma_\Theta E[S|S \in A_S]
\end{aligned}$$

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

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

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

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

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.

wages of junior employees assigned to pro-bono activities, x_p (equivalently the conditional expected productivity less the per-partner wage cost). We model pro-bono activities as having three consequences: 1) increasing the wage cost to the firm, 2) 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 3) improving the productivity of all non-equity 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 number of hours of pro-bono activity per period:

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

We shall assume that the firm is profitable without pro-bono activities, $\Pi(0, \alpha) > 0$, and that prob-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 smooth, non-negative, non-decreasing, and exhibit strict diminishing marginal returns (are strictly concave functions), 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. The first order condition for the optimal level $x_p^*(\alpha)$ of pro-bono activity is

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

Concavity assures us that there is at most one solution to (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 $x^*(\alpha)$. For the population of selective firms (those with $\alpha < 0.5$), increases in α (decreases in selectivity) are associated with increases in x^* .

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

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

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

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 yields

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

using the fact that $\alpha = 1 - \Phi(z_\alpha)$ and differentiating both sides 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 in to (??) 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 $\frac{dx_p^*(\alpha)}{d\alpha}$ yields:

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

If $z_\alpha > 0$ (true when $\alpha < 0.5$), the expression on the right-hand side of (??) is positive, establishing the result. ■

The model of equation (??) posits that the action of pro-bono activity is to increase the mean productivity of non-equity employees and simultaneously the quality of the signal obtained on each employee. The implication of Proposition ?? 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.

Though we posit that both the screening and learning mechanisms are at play, we can examine with our mathematical model two extreme cases: either pure screening ($\mu'_\Theta(\cdot) \equiv 0$)

(without learning) or pure learning (without screening). In the pure screening extreme case, equation (??) becomes

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

In the case of the pure learning extreme case ($\rho'(\cdot) \equiv 0$), (??) 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 un-selective firms the opposite holds. For all firms, decreasing selectivity promotes investment in raising the average productivity of all employees.

While there are many potential reasons for firms to strategically engage in pro-bono activities, our model concentrates on two related reasons: 1) to improve junior employee productivity ("learning") and 2) 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 posit that the tenure of a partner is 4 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 .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 that either a learning or 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.

Data and Summary Statistics

Our main analysis uses two datasets of the top-200 revenue-grossing US law firms from 1999 to 2012. All of the firms in our sample can be considered "selective" as defined in our

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 $\alpha = 0.115$.

model; as such, we test the 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 and Rhode, 2010), pro bono hours per lawyer is a reasonable proxy for pro bono hours per junior.²⁸

Figures 1a and 1b demonstrate the kernel density of our main dependent variables of

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).

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 to 1, hence the pro bono hours in Proposition (??) can be thought of as pro-bono hours “per junior”. In terms of our model increasing pro bono hours per lawyer is equivalent to $\beta(\alpha) = x_p(\alpha)/(1 + \alpha)$ increasing. Because $\beta'(\alpha) > 0$ is equivalent to $0 < \beta'(\alpha) = \frac{x_p^*(\alpha)(1+\alpha) - x_p^*(\alpha)}{(1+\alpha)^2}$ which implies $x_p^*(\alpha) > 0$.

interest, average pro bono hours per lawyer and proportion of lawyers logging at least 20 hours 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 hours 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).

Insert Figures 1a and 1b and Table 1 about here

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 which 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 complementary relationship between the partner-to-junior ratio and the percent of lawyers

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.

with at least 20 pro bono hours (B=31.03, p=0.000). 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 log of the partner-to-associate ratio and average pro bono hours (B=33.46, p=0.000) and percent of lawyers with at least 20 hours of pro bono (B=24.540, p=0.001), respectively.

Insert Table 2 about here

Table 3 reports logistic regression results with variations in the cutoff of average pro bono hours as the dependent variable. 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 hours 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 hours). 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 hours), 0 otherwise. In Columns 5 and 6, the 50th percentile cutoff corresponds to 37 hours; in Columns 7 and 8, the 75th percentile cutoff corresponds to 59 hours; and in Columns 9 and

10, the 95th percentile corresponds to 104 hours. If learning and screening are the 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 as the cutoff points, but would expect to see the predicted relationship between partner-to-junior ratio and pro bono intensity for higher levels of pro bono as the cutoff points. 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 hours), 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.

Insert Table 3 about here

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 hours, but the results are consistent with (Column 1) and without (Column 2) the inclusion of firm fixed effects.

Conclusions

This paper 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. We thus contribute to the body of literature examining the mechanisms through which CSR activities can serve as a strategic human capital management tool.

A potential alternative explanation for the positive relationship between the partner-to-junior ratio and pro bono is that of a social capital mechanism, wherein firms with higher partner-to-junior ratios have higher pro 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. The NALP reports that only a third of surveyed firms allow individual lawyers to bring pro bono cases to the firm directly, with seventy percent distributing cases through centralized channels such as the pro bono counsel or committee which sets the policies and direction of the pro bono work (Cummings and 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.

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. If pro-bono activities were primarily opportunities for learning, one might suspect that the skills learned from pro bono at one firm would be applicable to other firms. Yet firms tend to promote to partner junior associates from their firm, rather than from other firms. So if learning new skills is the primary impact of pro-bono activity, these skills must be

idiosyncratic to the firm. If, on the other hand, productivity is matter of an idiosyncratic match between a junior's "future partner type" and a firm's "type" which cannot be known by either party until the junior employee can be observed in a partner role, a screening model seems a better fit to the situation. Idiosyncratic "fit" would be appropriable by the firm, while skills are not. Lastly, it is notable that, controlling for other firm characteristics, average starting associate salary and pro bono intensity are not correlated.³¹ Under a pure learning model, one could imagine that the value of pro bono would be appropriated by the employee who gains skills from pro bono engagements, not just by the firm. One would thus expect firms to pass along some of the cost of pro bono activities to their employees, in the form of lower wages. This does not manifest in practice, though employees could pay implicitly by working extra uncompensated hours while doing pro bono work. 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

³¹To examine this point empirically we merged data on obtained by the National Law Journal's annual survey of the 250 largest law firms in the US, from 1999 to 2011, which included average starting salary for first year associates, with our existing dataset by firm-year. A regression of average pro bono hours on average starting salary, controlling for region, year fixed effects, profitability, size, and reputation controls, shows an economically insignificant and statistically insignificant relationship between average starting salary and pro bono ($B=0.0005$, $p=0.69$, $N=1,598$).

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 and Meyer-Doyle, 2016).

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. For example, future work could consider under what circumstances CSR activities and other employee management practices are substitutes and complements.

Appendix

Lemmas Used in Section "A Model of Pro Bono Activity"

Let \mathcal{B} denote the Borel sets of \mathbb{R} .

Lemma 1. *Given a probability space (Ω, \mathcal{F}, P) and a real \mathcal{F} measurable random variable*

X . Suppose that there is a $0 < p < 1$ and a ξ_p so that $P(X > \xi_p) = p$. Among all sets

$A \in \mathcal{F}$ with probability at least p , the set $\{\omega : X(\omega) > \xi_p\}$ maximizes

$$E[X|A] = \frac{E[X\mathbf{1}_A]}{P(A)}$$

Proof. Consider any $B \in \mathcal{F}$ with $P(B) \geq p$. We will show $E\left(\frac{X\mathbf{1}_{\{X > \xi_p\}}}{p}\right) - E\left(\frac{X\mathbf{1}_B}{P(B)}\right) \geq 0$.

Because $B \cap B^c = \emptyset$ and $B \cup B^c = \Omega$, $X\mathbf{1}_{\{x > \xi_p\}} = X\mathbf{1}_{\{X > \xi_p\} \cap B} + X\mathbf{1}_{\{X > \xi_p\} \cap B^c}$ and

because $\{X \leq \xi_p\} \cap \{X > \xi_p\} = \emptyset$ and $\{X \leq \xi_p\} \cup \{X > \xi_p\} = \Omega$

$X\mathbf{1}_B = X\mathbf{1}_{\{X \leq \xi_p\} \cap B} + X\mathbf{1}_{\{X > \xi_p\} \cap B}$. Thus,

$$\begin{aligned} \frac{X\mathbf{1}_{\{x > \xi_p\}}}{p} - \frac{X\mathbf{1}_B}{P(B)} &= \frac{X\mathbf{1}_{\{X > \xi_p\} \cap B}}{p} + \frac{X\mathbf{1}_{\{X > \xi_p\} \cap B^c}}{p} - \frac{X\mathbf{1}_{\{X \leq \xi_p\} \cap B}}{P(B)} - \frac{X\mathbf{1}_{\{X > \xi_p\} \cap B}}{P(B)} \\ &= \underbrace{X\mathbf{1}_{\{X > \xi_p\} \cap B} \left(\frac{1}{p} - \frac{1}{P(B)} \right)}_{*} + \underbrace{\frac{X\mathbf{1}_{\{X > \xi_p\} \cap B^c}}{p} - \frac{X\mathbf{1}_{\{X \leq \xi_p\} \cap B}}{p}}_{**} \left(\frac{p}{P(B)} \right) \end{aligned}$$

Starting with expression (*), because $X > \xi_p$ on the set $\{X > \xi_p\} \cap B$ and $p \leq P(B)$,

$$X \mathbf{1}_{\{\{X > \xi_p\} \cap B\}} \left(\frac{1}{p} - \frac{1}{P(B)} \right) = \frac{X \mathbf{1}_{\{\{X > \xi_p\} \cap B\}}}{p} \left(1 - \frac{p}{P(B)} \right) \geq \frac{\xi_p \mathbf{1}_{\{\{X > \xi_p\} \cap B\}}}{p} \left(1 - \frac{p}{P(B)} \right).$$

Moving on to expression (**), because $X > \xi_p$ on the set $\{X > \xi_p\} \cap B^c$ and $X \leq \xi_p$ on the set $\{X \leq \xi_p\} \cap B$,

$$\begin{aligned} \frac{X \mathbf{1}_{\{\{X > \xi_p\} \cap B^c\}}}{p} - \frac{X \mathbf{1}_{\{\{X \leq \xi_p\} \cap B\}}}{p} \left(\frac{p}{P(B)} \right) &\geq \frac{\xi_p \mathbf{1}_{\{\{X > \xi_p\} \cap B^c\}}}{p} - \frac{\xi_p \mathbf{1}_{\{\{X \leq \xi_p\} \cap B\}}}{p} \left(\frac{p}{P(B)} \right) \\ &= \frac{\xi_p \mathbf{1}_{\{\{X > \xi_p\} \cap B^c\}}}{p} + \frac{\xi_p \mathbf{1}_{\{\{x > \xi_p\} \cap B\}}}{p} \left(\frac{p}{P(B)} \right) - \frac{\xi_p \mathbf{1}_{\{\{x > \xi_p\} \cap B\}}}{p} \left(\frac{p}{P(B)} \right) - \frac{\xi_p \mathbf{1}_{\{\{X \leq \xi_p\} \cap B\}}}{p} \left(\frac{p}{P(B)} \right) \\ &= \frac{\xi_p \mathbf{1}_{\{\{X > \xi_p\} \cap B^c\}}}{p} + \frac{\xi_p \mathbf{1}_{\{\{x > \xi_p\} \cap B\}}}{p} \left(\frac{p}{P(B)} \right) - \frac{\xi_p \mathbf{1}_{\{B\}}}{p} \left(\frac{p}{P(B)} \right). \end{aligned}$$

We now have

$$\begin{aligned} \frac{X \mathbf{1}_{\{x > \xi_p\}}}{p} - \frac{X \mathbf{1}_B}{P(B)} &= \underbrace{X \mathbf{1}_{\{\{X > \xi_p\} \cap B\}} \left(\frac{1}{p} - \frac{1}{P(B)} \right)}_* + \underbrace{\frac{X \mathbf{1}_{\{\{X > \xi_p\} \cap B^c\}}}{p} - \frac{X \mathbf{1}_{\{\{X \leq \xi_p\} \cap B\}}}{p} \left(\frac{p}{P(B)} \right)}_{**} \\ &\geq \frac{\xi_p \mathbf{1}_{\{\{X > \xi_p\} \cap B\}}}{p} \left(1 - \frac{p}{P(B)} \right) + \frac{\xi_p \mathbf{1}_{\{\{X > \xi_p\} \cap B^c\}}}{p} + \frac{\xi_p \mathbf{1}_{\{\{x > \xi_p\} \cap B\}}}{p} \left(\frac{p}{P(B)} \right) - \frac{\xi_p \mathbf{1}_{\{B\}}}{P(B)} \end{aligned}$$

By assumption, $P(B) \geq p$ so that $0 \leq p/P(B) \leq 1$, thus

$$\begin{aligned} &= \frac{\xi_p \mathbf{1}_{\{\{X > \xi_p\} \cap B\}}}{p} + \frac{\xi_p \mathbf{1}_{\{\{X > \xi_p\} \cap B^c\}}}{p} - \frac{\xi_p \mathbf{1}_{\{B\}}}{P(B)} \\ &= \frac{\xi_p \mathbf{1}_{\{X > \xi_p\}}}{p} - \frac{\xi_p \mathbf{1}_{\{B\}}}{P(B)} \end{aligned}$$

Taking expectations establishes the result

$$\begin{aligned} E \left[\frac{X \mathbf{1}_{\{x > \xi_p\}}}{p} - \frac{X \mathbf{1}_B}{P(B)} \right] &\geq E \left[\frac{\xi_p \mathbf{1}_{\{X > \xi_p\}}}{p} - \frac{\xi_p \mathbf{1}_{\{B\}}}{P(B)} \right] \\ &= \frac{\xi_p E[\mathbf{1}_{\{X > \xi_p\}}]}{p} - \frac{\xi_p E[\mathbf{1}_{\{B\}}]}{P(B)} = \xi_p \left(\frac{P(X > \xi_p)}{p} - \frac{P(B)}{P(B)} \right) = \xi_p \left(\frac{p}{p} - \frac{P(B)}{P(B)} \right) = 0; \end{aligned}$$

where we have used the fact that $E[\mathbf{1}_B] = P(B)$ and $E[\mathbf{1}_{\{X_p > \xi_p\}}] = p$. \blacksquare

Corollary 3. *Let $f(x)$ be a density on the \mathbb{R} . Given a constant p , $0 < p < 1$, and let ξ_p be a point so that $1 - F(\xi_p) = p$. For any Borel set A of for which $P_F(A) = p$*

$$\frac{\int_A x dP(x)}{\int_A dP(x)} \leq \frac{\int_{\xi_p}^{\infty} u f(u) du}{\int_{\xi_p}^{\infty} f(u) du}$$

Proof. $F(t) = \int_{-\infty}^t f(u) du$ is continuous and non-decreasing, hence $1 - F(\cdot)$ is

non-increasing and $\lim_{x \rightarrow -\infty} 1 - F(x) = 1$ and $\lim_{x \rightarrow \infty} 1 - F(x) = 0$ so, for any p , there

exists an ξ_p so that $1 - F(\xi_p) = p$ (intermediate value theorem). Use the previous

proposition take $\Omega = \mathbb{R}$, $\mathcal{F} = \mathcal{B}$, $P(A) = \int_A f(u) du$, and $X(\omega) = \omega$. \blacksquare

Corollary 4. *Given a probability space Ω, \mathcal{F}, P and a real random variable X . Suppose that there is a $0 < p < 1$ and a ξ_p so that $P(X > \xi_p) = p$. Among all sets $B \in \mathcal{B}$ for which*

$P(X \in B) > p$, the set $\{\omega : X(\omega) > \xi_p\}$ maximizes

$$\frac{E[X \mathbf{1}_{\{\omega: X(\omega) \in B\}}]}{P(B)}$$

Proof. Define \mathcal{G} to be the sub-sigma field of \mathcal{F} generated by X , and apply Proposition ?? to (Ω, \mathcal{G}, P) . ■

Lemmas Used in Section "A Model of Firm Pro Bono Choices"

Lemmas 1, 2 and 3 are standard and recapitulated here for convenience.

Lemma 2. *Suppose that S and Θ are random variables on some probability space (Ω, \mathcal{F}, P) and that $E(\Theta|S)$ is well defined. Then, if $P(S > s) > 0$,*

$$E(\Theta|S > s) = E[E[\Theta|S]|S > s].$$

Proof. Let \mathcal{G}_Θ denote the smallest sigma-field containing the sets $\{\omega|\Theta(\omega) > t\}$. This is the sigma-field of sets of Ω “generated” by the random variable Θ . Define \mathcal{G}_S similarly. Because Θ and S are random variables defined on (Ω, \mathcal{F}, P) , $\mathcal{G}_\Theta \subseteq \mathcal{F}$ and $\mathcal{G}_S \subseteq \mathcal{F}$. The conditional expectation of Θ given \mathcal{G}_S , $E[\Theta|\mathcal{G}_S]$, is a \mathcal{G}_S measurable function on (Ω, \mathcal{F}, P) such that, for any set $A \in \mathcal{G}_S$, $E(\Theta \mathbf{1}_A) = E(E(\Theta|\mathcal{G}_S) \mathbf{1}_A)$.

It follows from the definition of conditional expectation, that, for any set $A \in \mathcal{F}$ with $P(A) > 0$, $E[\Theta|A] = \frac{E(\Theta \mathbf{1}_A)}{P(A)}$. Denote by A_s the set $\{\omega | S(\omega) > s\}$; by assumption, $P(A_s) > 0$.

$$E[\Theta|S > s] = \frac{E[\Theta \mathbf{1}_{A_s}]}{P(A_s)} = \frac{E[E(\Theta \mathbf{1}_{A_s}|S)]}{P(A_s)} = \frac{E[E(\Theta|S) \mathbf{1}_{A_s}]}{P(A_s)} = E[E[\Theta|S]|A_s] = E[E[\Theta|S]|S > s]$$

The second equality holds because for any two random variables, X and Y , if $E[X|Y]$ is well defined, then $E[E[X|Y]] = E[X]$. The third equality holds because $A_s \in \mathcal{G}_S$. ■

Lemma 3. *Suppose that Z is normally distributed with mean 0 and variance 1. Then*

$$E(Z|Z > z) = \frac{\phi(z)}{1 - \Phi(z)}$$

Proof. We have

$$E(Z|Z > z) = \frac{E(Z \mathbf{1}_{\{Z > z\}})}{P(Z > z)} = \frac{\int_z^\infty x \phi(x) dx}{1 - \Phi(z)} = \frac{\int_z^\infty \frac{x}{\sqrt{2\pi}} e^{-x^2/2} dx}{1 - \Phi(z)}.$$

We can simplify the numerator by making the substitution $u = x^2/2$ hence $du = x dx$. For $z \geq 0$, as x goes from z to ∞ u goes from $z^2/2$ to ∞ , for $z < 0$, as x goes from z to ∞ u

goes from $z^2/2$ to 0, then from 0 to $z^2/2$ and then from $z^2/2$ to ∞ ; therefore

$$\int_z^\infty \frac{x}{\sqrt{2\pi}} e^{-x^2/2} dx = \int_{z^2/2}^\infty \frac{1}{\sqrt{2\pi}} e^{-u} du = 0 - \left(-\frac{1}{\sqrt{2\pi}} e^{-z^2/2}\right) = \phi(z). \quad (7)$$

Which establishes the desired result. ■

Lemma 4. *If X is normally distributed with mean μ and variance σ^2 , then*

$$E[X|X > x] = \mu + \sigma \frac{\phi\left(\frac{x-\mu}{\sigma}\right)}{1 - \Phi\left(\frac{x-\mu}{\sigma}\right)}$$

Proof. We know that $(X - \mu)/\sigma$ has a standard normal distribution; hence, X has the same distribution (and hence, the same mean and variance) as the random variable $\sigma Z + \mu$. Thus,

$$\begin{aligned} E(X|X > x) &= E[\sigma Z + \mu | \sigma Z - \mu > x] \\ &= \mu + \sigma E[Z | Z > \frac{x - \mu}{\sigma}] \end{aligned}$$

The lemma now follows on applying Lemma 2. ■

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Tables and Figures

Figure 1a: Average pro bono hours per lawyer

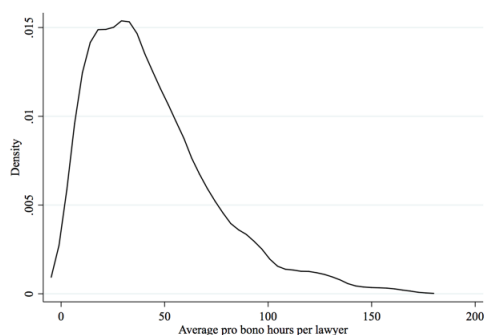


Figure 1b: Lawyers with 20+ hours pro bono

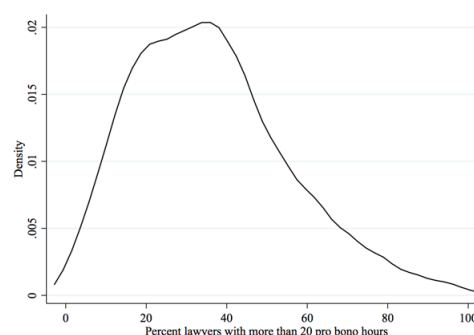


Table 1: Summary statistics

Variable	Mean	Std Dev.	Min	Max	N
Average pro bono hours per lawyer	43.87	30.24	0.40	174.80	2664
Percent of lawyers with 20+ hours pro bono	36.18	19.39	0.80	99.00	2638
Partner-to-junior ratio	0.47	0.24	0.08	1.97	3000
Log of partner-to-associate ratio	-0.88	0.48	-2.52	0.68	3000
Profits per partner (in millions of dollars)	0.87	0.60	0.19	4.97	3000
Log of profits per partner (in millions of dollars)	-0.32	0.57	-1.66	1.60	3000
Gross revenue (in millions of dollars)	323.01	312.71	57.00	2440.50	3000
Profit margin	36.26	8.68	9.45	75.63	3000
Log of profit margin	3.56	0.25	2.25	4.323	3000
Single tier partnership structure	0.21	0.40	0	1	3000
Number of lawyers	486.63	398.60	96	4036	3000
Log of number of lawyers	5.98	0.61	4.56	8.30	3000

Table 2: OLS regression results

	(1)	(2)	(3)	(4)
Log of partner-to-junior ratio	Avg pro bono hours 50.097*** (9.492) [0.000]	Percent 20+ pro bono hours 31.030*** (6.264) [0.000]	Avg pro bono hours 33.459*** (8.064) [0.000]	Percent 20+ pro bono hours 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	2329	2303	2329	2303

Standard errors in parentheses. P-values in brackets. Standard errors clustered at the firm level.

Table 3: Logistic regression results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Avg probono more than 5th	Avg probono more than 5th	Avg probono more than 25th	Avg probono more than 25th	Avg probono more than 50th	Avg probono more than 50th	Avg probono more than 75th	Avg probono more than 75th	Avg probono more than 95th	Avg probono more than 95th
Log of partner-to-junior ratio	-0.152 (1.564) [0.922]	-3.127 (2.398) [0.192]	2.463*** (0.832) [0.003]	2.717** (1.259) [0.031]	2.976*** (0.816) [0.000]	4.900*** (1.004) [0.000]	3.151*** (1.008) [0.002]	5.787*** (1.002) [0.000]	1.672 (1.363) [0.220]	4.803*** (1.211) [0.000]
Log of profits per partner	0.991 (1.996) [0.620]	-3.652 (3.415) [0.285]	3.401*** (1.126) [0.003]	3.560** (1.551) [0.022]	3.358*** (0.909) [0.000]	5.761*** (1.169) [0.000]	4.232*** (1.084) [0.000]	7.276*** (1.130) [0.000]	2.462* (1.450) [0.089]	5.863*** (1.417) [0.000]
Log of profit margin	0.532 (2.395) [0.824]	3.256 (3.928) [0.407]	-3.518*** (1.266) [0.005]	-6.134*** (1.922) [0.001]	-4.016*** (1.266) [0.002]	-7.937*** (1.470) [0.000]	-4.409*** (1.584) [0.005]	-8.410*** (1.447) [0.000]	-2.251 (2.165) [0.298]	-6.806*** (1.785) [0.000]
Log of number of lawyers	0.012 (1.670) [0.994]	-1.030 (2.742) [0.707]	2.766** (1.228) [0.024]	3.994*** (1.282) [0.002]	1.875** (0.762) [0.014]	5.788*** (0.985) [0.000]	2.345*** (0.662) [0.000]	5.986*** (1.001) [0.000]	1.342* (0.705) [0.057]	5.267*** (1.184) [0.000]
Single tier partnership structure	0.643 (0.469) [0.170]	1.944*** (0.610) [0.001]	0.728** (0.290) [0.012]	0.968*** (0.344) [0.005]	0.725*** (0.268) [0.007]	0.260 (0.267) [0.331]	0.789*** (0.264) [0.003]	0.055 (0.286) [0.848]	0.949*** (0.338) [0.005]	0.401 (0.352) [0.255]
AM Law Ranking	-0.017 (0.017) [0.339]	-0.030 (0.026) [0.247]	0.013 (0.012) [0.276]	0.050*** (0.012) [0.000]	0.013 (0.008) [0.115]	0.080*** (0.010) [0.000]	0.029*** (0.008) [0.000]	0.082*** (0.010) [0.000]	0.027*** (0.008) [0.002]	0.080*** (0.013) [0.000]
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
Observations	2554	446	2600	1140	2600	1677	2600	1726	2560	1109

Standard errors in parentheses. P-values in brackets. Standard errors clustered at the firm level.