# Compensation and Intrinsic Motivation in Nonprofit and For-Profit Organizations[❄]

by

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**Abstract**

We develop a theoretical model in which for-profit and nonprofit employers compete to hire a worker who derives intrinsic motivation from the nonprofit's social mission. We also use a unique data set of California establishments to provide new evidence on sectorial differences in pay and HRM systems, finding a greater incidence of training and benefits in nonprofits, lower wages (with the wage gap increasing in skill level), and less incentive pay than in for-profits. The model is used to interpret both this new evidence and other empirical results from the literature, including the inconclusive sign of the FP-NP wage differential.

Keywords: nonprofits, incentive pay, intrinsic motivation, compensating differentials, fringe benefits, training

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# I. INTRODUCTION

Understanding the behaviors of nonprofit (NP) organizations and how they differ from for-profit (FP) firms is important because the NP sector employs about 10 percent of all workers (Salaman, Sokolowski, and Geller 2012) and provides services that help fulfil social welfare needs. Nonetheless, theoretical work on NPs is rare, and Roomkin and Weisbrod's (1999) observation that economic theory concerning behavioral differences between the two types of organizations is underdeveloped remains true today.[1] Empirical work has focused heavily on measuring wage differentials between the two sectors and tends to ignore how those differentials are related to components of the human resource management (HRM) system. We develop a theoretical model of organizational decision making that incorporates firm-sponsored training (a key component of HRM systems) into the process of wage determination when NPs and FPs compete in the labor market. Our model yields new implications for the sectorial wage differential. We also provide new empirical evidence from a novel data set of Northern California employers concerning sectorial differences in base wages, incentive pay, fringe benefits, and training, interpreting that evidence and the prior literature through the lens of the theoretical model.

The model offers a new explanation for the following puzzle in the literature. Compensating differentials theory predicts a wage differential favoring FPs, because NP workers derive non-pecuniary value from the organization's social mission and are therefore willing to accept lower wages.[2] But the empirical literature is inconclusive concerning the sign of the wage differential, as we document in Section V. The model offers an explanation for this mixed evidence, and clarifies the conditions under which the differential should be positive or negative. Also, it offers a new explanation for how skill levels affect the sectorial wage differential. Furthermore, the model offers a new prediction regarding the sectorial difference in firm-sponsored training, and clarifies the conditions under which training is used more intensively in NPs or FPs. We present new empirical evidence regarding this prediction. Fringe benefits are incorporated in an extension.

[1] A potential reason for the scarcity in theoretical work is that profit maximization, which is taken as axiomatic in standard economic theory, is a poor behavioral assumption for NPs.

[2] A literature review of intrinsic motivation and its connection to NP social missions appears in Leete (2000). See also Kreps (1997) for a discussion of intrinsic motivation versus external incentives, and Frank (1996) for evidence concerning a negative relationship between workers' earnings and the extent to which their employers and occupations are viewed as being socially responsible.

The model features an NP organization, with a unique social mission, that competes with a market of FP firms to hire a worker who derives intrinsic motivation from the social mission. This setup reflects a well-known observation that NPs are more likely than FPs to have social missions that create intrinsic motivation for workers. Whereas the FPs maximize profit, the NP maximizes the degree to which the worker enhances the organizational mission, subject to maintaining non-negative profit. This setup reflects the "non-distribution constraint" (Hansmann 1980, 1996), the central feature of NPs, which is described as follows in Hansmann (1980): "A nonprofit organization is, in essence, an organization that is barred from distributing its net earnings, if any, to individuals who exercise control over it, … . It should be noted that a nonprofit organization is not barred from earning a profit. … It is only the distribution of the profits that is prohibited. Net earnings, if any, must be retained and devoted in their entirety to financing further production of the services that the organization was formed to provide."

Regarding incentive pay, our model reflects another well-known observation that output and performance, both at the organizational and worker level, are generally harder to measure in NPs than in FPs. This observation, along with the non-distribution constraint, suggests that incentive pay should be more prevalent in FPs than in NPs. The non-distribution constraint forbids certain forms of performance-based pay at the organizational level (e.g. profit sharing).[3] And other forms of incentive pay that are not legally prohibited may be thwarted by performance measurement problems. Moreover, the literature suggests that NP workers' intrinsic motivation can substitute for incentive pay. The empirical literature consistently finds that output-contingent compensation is more prevalent in FPs than NPs. Our model assumes that the NP cannot offer incentive-based bonuses, and we explore the implications of that assumption for other (related) organizational decisions.

In our model, the organizations make offers (the NP offers base wages, and the FPs offer base wages plus revenue-contingent bonuses), the worker accepts an offer, the employer provides training, and the worker exerts costly effort on two dimensions (revenue-enhancing effort and mission-enhancing effort). The incentive to invest in mission-enhancing effort derives from the worker's intrinsic motivation, and the incentive to invest in revenue-enhancing effort derives from the worker's desire to be paid a bonus. The employer's initial compensation offer is then honored, and the game ends when profit and (in the case of the NP) the mission are realized.

[3] As noted in Hallock (2011), Hansmann (1980) writes on page 900 that money given to a manager that varies with "annual surplus achieved by the firm is likely to be viewed as a distribution of profits either by the state authorities charged with policing nonprofit corporations or by the Internal Revenue Service".

Because the NP competes with the FPs in the labor market, the NP can only hire if the worker is more profitable in the NP than in the FPs. A disadvantage faced by the NP (but not the FP) is that it cannot incentivize workers via bonus payments. On the other hand, the NP can pay a lower base wage due to the worker's intrinsic motivation. If the worker is employed by an FP, the firm sets the bonus to make the worker the full residual claimant, and the base wage is then determined by Bertrand competition. If the worker is employed by the NP, in equilibrium the NP base wage plus intrinsic motivation (net of effort costs) must equal what the worker would enjoy in an FP. The worker is hired by the NP if intrinsic motivation exceeds a threshold level and is otherwise hired by an FP.

Our model provides an explanation for the inconclusive sign of the FP-NP wage differential, via the following logic. In addition to the aforementioned advantage and disadvantage with respect to incentive pay and intrinsic motivation, the NP might have a relative advantage (or disadvantage) in the *effectiveness of training*. Suppose for the moment that the effectiveness of training is identical in both sectors. Then the NP base wage is lower than the FP base wage. To see why, consider a worker whose intrinsic motivation is equal to the threshold level. For this worker, the relative advantage and disadvantage faced by the NP exactly cancel out, so that the worker's NP base wage is equal to the FP base wage. Moreover, for any worker whose intrinsic motivation is strictly above the threshold level, the relative advantage by the NP dominates the relative disadvantage. This means that the NP can push down the worker's base wage further, so that the worker's NP base wage is lower than the FP base wage. The result is that the expected NP base wage is lower than the expected FP base wage. An analogous logic applies if training is more effective in the FPs than in the NP.

But if training is more effective in the NP than in the FPs, then the NP's disadvantage regarding incentive pay is (at least) partially offset by its training advantage. Hence the NP can profitably hire a worker whose intrinsic motivation is relatively low, by paying a base wage higher than the FP's base wage. The expected NP base wage is still lower than the expected FP base wage when training is slightly more effective in the NP than in the FP, but the relationship is reversed when training is significantly more effective in the NP than in the FP.

How do skill levels affect the FP-NP wage differential? In our model the answer depends on how skill levels affect mission-enhancing and revenue-increasing efforts, and training. Suppose, for example, that as the worker's skill level increases, the effectiveness of mission-enhancing effort in the NP increases more than the effectiveness of revenue-increasing effort in the FPs, holding effectiveness of training constant. Then the NP's advantage associated with

intrinsic motivation increases more than its disadvantage associated with incentive pay, so the NP can push down the worker's based wage further as the skill level increases. The result is that the FP-NP differential in base wages increases with skill level in this case, whereas the result is reversed in the opposite case.

Preston (1989) provides empirical evidence that the wage gap increases with skill level, though her preferred explanation (based on "labor donations") is that the tasks of higher-skilled workers are more closely tied to the organization's social mission than those of lower-skilled workers.[4] Our empirical result corroborates Preston's, though Leete (2001) finds no evidence that the wage differential increases in skill levels, and she interprets this as casting doubt on labor donations. Our theoretical analysis explains the ambiguous sign on the relationship between skill levels and the sectorial wage gap and can reconcile Preston's empirical evidence (and ours) with Leete's.

What does our model predict regarding the sectorial difference in firm-sponsored training? Profit-maximizing employers provide training up to the point where marginal profit is zero. Thus, in the FPs the equilibrium and profit-maximizing training levels are identical. But in the NP the equilibrium training level can exceed the profit-maximizing level, based on the following logic. Suppose the NP hires the worker in equilibrium. If the NP chooses the profit-maximizing training level, it must make a positive profit (otherwise it would not have succeeded in hiring the worker). Since the NP's objective is to maximize the extent to which the mission is enhanced, subject to maintaining non-negative profit, the NP spends all the profit to enhance the mission. By providing training beyond the profit-maximizing level, the NP decreases its profit, which indirectly hurts the advancement of its mission. But a higher level of training directly enhances its mission. At the chosen training level, the direct and the indirect effects balance out, as long as profit is not zero.[5]

The fact that the NP chooses a level of training higher than its profit-maximizing level means that, even if the NP is relatively less effective in training, the NP may still provide a higher level of training than the FP. Moreover, if the NP is relatively more effective in training, the NP necessarily provides a higher training level than the FP. Thus, the model suggests a tendency for NPs to provide more training than FPs. An additional reason to anticipate this result

[4] See also Young (1983), Handy and Katz (1998), and DeVaro and Brookshire (2007).

[5] The same logic suggesting over-investment in training applies to investments in improving match quality via the design of fringe benefits packages, as we discuss in an extension. "Over-investment" arising from the non-distribution constraint also applies to other types of investments that we do not explicitly consider, such as R&D.

is that NPs may use training to inculcate in workers the mission, deepening their commitment to it. Although we expect that reason to be relevant in practice, we do not model it so as to illustrate that even without this effect the result is present.

Our empirical analysis is based on a unique data set. The California Health and Employment Survey (CHES) is a sample of establishments from 27 counties in Northern California, surveyed in 2005 – 2006. An appealing and distinctive feature of the CHES is that, for each establishment, it contains data on the average starting wage for each of three skill groups. This permits an analysis of how the NP wage differential varies across skill groups *within the same sample of establishments*. We use the data to provide new evidence (at the establishment level) on sectorial differences in base wages, incentive pay, fringe benefits, and training, interpreting that evidence in light of the theoretical model.

We find evidence of a wage differential (favoring FPs) that varies considerably by skill level; for the lowest-skill group there is no statistically significant difference between NP and FP establishments in the average starting wage; for the highest-skill group, a large and statistically significant difference emerges favoring FPs. The differential in training provision favors NPs which, to our knowledge, is the first empirical evidence on sectorial training differences, and we corroborate this new result in the British Household Panel Survey. We also find a greater likelihood of output-based compensation (i.e. tips, bonuses, and commissions) in FPs, and evidence that NPs are more likely than FPs to use each of several fringe benefits.

Our theoretical model provides an understanding of the link between FP-NP differences in training and wage levels for different skill groups. We find that NPs provide more training than FPs do. The model suggests two possible reasons for this result: (i) Training is more efficient in NPs than in FPs, and (ii) NPs provide levels of training higher than their profit-maximizing levels. For the low-skill group, our model suggests that training is significantly more efficient in NPs than in FPs, because otherwise the FP-NP wage differential should be positive (favoring FPs). We find that the FP-NP wage differential is positive and increases as the skill level increases. The model suggests two possible reasons for this result: as the skill level increases, (i) the relative effectiveness of training in NPs deceases, and/or (ii) the effectiveness of mission-enhancing effort in NPs increases more than the effectiveness of revenue-increasing effort and training in the FPs.

The FP-NP wage differential is necessarily positive if training is more efficient in FPs than in NPs, whereas, otherwise, the sign of the differential depends on the degree of relative effectiveness of training in NPs and FPs in our model. Hence the model can generate three

alternative configurations of sectorial differences in base wages and training: 1) differentials in both variables favoring the FPs, 2) differentials in both variables favoring the NP, 3) differentials in base wages favoring FPs and a training differential favoring the NP. A fourth configuration (i.e. a base wage differential favoring the NP and a training differential favoring the FPs) is inconsistent with the model and would allow it to be rejected empirically.

## II. PRIOR THEORETICAL LITERATURE

To the best of our knowledge, our study is the first to theoretically analyze FP-NP competition in the labor market. Several prior studies incorporate competition between FP firms (principals) and "mission-oriented" organizations or public ones in the labor market, where the objective of the mission-oriented principal is the success of a project in Besley and Ghatak (2005) and profit in Barigozzi and Burani (2014), and the objective of the public firm is cost-effective production of a given amount of public goods in Delfgaauw and Dur (2008, 2010). However, the non-distribution constraint, which is what defines an NP, is not incorporated in those models. Our model incorporates the non-distribution constraint by assuming that NPs maximize the level of their social mission subject to non-negative profit constraints.

Besley and Ghatak (2005) show that intrinsic motivation deriving from an organizational mission can substitute for explicit incentives, and that matching principals and agents on "mission-preferences" increases efficiency and can economize on the need for high-powered incentives. Although they incorporate a fixed wage, they do not focus on the sectorial wage differential, which is a central focus of our analysis, and they do not incorporate worker skill levels or firm-sponsored training. Although they consider the implications of labor market competition across sectors, they do not model the competitive process explicitly.

Delfgaauw and Dur (2008, 2010) consider selection of workers across private and public sectors, where workers differ in their degree of public service motivation.[6] The motivation to work in the public sector resembles the motivation to work for the NP sector in our model. Barigozzi and Burani (2014) study a model in which a mission-oriented firm and a standard firm compete to hire one worker, who is privately informed of her productive ability and intrinsic motivation. When hired by the mission-oriented firm, a motivated worker benefits from intrinsic motivation and enjoys her personal contribution to the output produced by the firm. For a wide

[6] Delfgaauw and Dur (2007) characterize optimal incentive schemes in a model in which workers privately observe their degree of intrinsic motivation. Low wages imply a lower probability of filling a job vacancy, but the expected intrinsic motivation of a new employee is high because workers with low intrinsic motivations are dissuaded from applying for a low-wage job.

range of parameterizations, a compensating wage differential emerges, where the total salary gained by a motivated type of worker in the mission-oriented firm is lower than the salary that the same worker type would gain in the standard firm.

## III. THEORETICAL MODEL AND ANALYSIS

Consider an NP organization seeking to hire a worker who is intrinsically motivated by the unique social mission of the organization. There is a distribution of potential workers in the population who vary by a parameter, $\theta$, that reflects the degree to which a worker is intrinsically motivated by the mission.[7] Let $\theta$ be a random variable with a known density function g(.) with support $(0,\infty)$, where $g(\theta) > 0$ for all $\theta \in (0,\infty)$. High-$\theta$ workers are highly motivated by the NP's social mission. Nature takes a draw from the distribution of $\theta$, which represents one worker, and simultaneously draws a worker skill level (high or low), with the realizations of both random variables publicly observed. The NP competes against a market of FP firms for the worker's services. For simplicity, we assume that market consists of two FP firms. All four economic agents are risk neutral. Once employed by one of the three organizations, the worker can exert revenue-increasing effort (denoted $e_R$) and mission-enhancing effort (denoted $e_M$), by incurring convex effort costs $C_R(e_R)$ and $C_M(e_M)$.

Before exerting effort the worker may receive an amount of training, y, for which the employer incurs a convex cost of t(y) per worker. Let $y^{NP}$ and $y^{FP}$ denote the levels of training that the NP and the FPs provide the worker in equilibrium. In our one-period model, no opportunity for worker mobility exists after the training is received, so the distinction between firm-specific and general training is not meaningful. We rely on a single-period model for simplicity, because our focus is not on worker mobility, and our data cannot speak to questions concerning mobility. At the end of the section we highlight some considerations that would arise if our model were extended to multiple periods.

Let $\pi_N(e_R, y)$ denote the profit generated by the worker if employed by the NP, and let $w_0^{NP}$ denote the fixed base wage that the NP offers the worker. The NP cannot offer incentive pay for reasons explained in the Introduction. We assume

[7] In Delfgaauw and Dur (2008), there are three types of workers (lazy, regular, and dedicated) and two sectors (public and private) where dedicated workers experience intrinsic motivation from working in the public sector. Note that we treat the NP's mission as being pre-determined and, therefore, exogenous. The organizational mission, like explicit incentives, is chosen by the firm, presumably with incentive implications in mind. However, organizational missions apply (obviously) to entire organizations and, once chosen, tend to remain for a long time. In contrast, compensation is malleable and subject to adjustment both over time and across worker groups (or even across individual workers) within the organization. So it is natural to treat the mission as pre-determined.

$\pi_N(e_R, y) = S_{RN}R_N(e_R, y) - t(y) - w_0^{NP}$, where

$R_N(e_R, y) = R_{N1}(e_R) + R_{N2}(y)$, $R_{N1}(0) = 0$, $S_{RN} = L_{RN}$ (>0) for a low-skilled worker, and $S_{RN} = H_{RN}$ (>$L_{RN}$) for a high-skilled worker. The worker's labor advances the organizational mission to a degree determined by the worker's mission-enhancing effort, the level of training the NP gives the worker, and the profit generated by the worker. More precisely, let $M(e_M, y, \pi_N(e_R, y))$ denote the degree to which the NP's mission is advanced by the worker. For simplicity, we focus on the following additively separable specification:

$M(e_M, y, \pi_N(e_R, y)) = S_M(M_1(e_M) + M_2(y)) + K\times\pi_N(e_R, y)$, where $S_M = L_M$ (> 0) for a low-skilled worker, $S_M = H_M$ (> $L_M$) for a high-skilled worker, and K (> 0) is a parameter that captures the degree to which profit contributes to the mission.

Our model incorporates the non-distribution constraint by assuming that the NP maximizes $M(e_M, y, \pi_N(e_R, y))$ subject to $\pi_N(e_R, y) \geq 0$. The NP is not barred from earning a profit, that is, $\pi_N(e_R, y)$ can be positive, but all the profit must be used to contribute to the NP's mission.

Both FPs maximize profit, have no social mission, and do not face a non-distribution constraint.[8] If employed by an FP, the worker generates revenue for the firm in an amount determined by the worker's revenue-increasing effort and by the amount of training received. The FPs offer a combination of a fixed wage, $w_0^{FP}$, and a bonus, B. The FPs' profit generated by the worker, denoted by $\pi_F(e_R, y)$, is $\pi_F(e_R, y) = S_{RF}(R_{F1}(e_R) + R_{F2}(y)) - t(y) - w_0^{FP} - B$, where $S_{RF} = L_{RF}$ (> 0) for a low-skilled worker and $H_{RF}$ (> $L_{RF}$) for a high-skilled worker, and the bonus B is contingent upon $R_{F1}(e_R)$.[9]

If c denotes cash compensation (i.e. $c = w_0^{FP} + B$ in an FP, and $c = w_0^{NP}$ in the NP), the worker's utility, $U_W$, is $U_W = c + U_I - C_R(e_R) - C_M(e_M)$, where $U_I$ (intrinsic utility) $\equiv \theta S_M M_1(e_M)$. Thus, the worker's intrinsic motivation is proportional to the amount by which the worker's mission-enhancing effort actually enhances the mission, which is captured by $S_M M_1(e_M)$.

All organizations face uncertain demand for their outputs, so revenue is stochastic. More precisely, letting $e_R \in [0, 1]$, we assume $R_{F1}(e_R) = 1$ with probability $e_R$ and 0 with probability $1 - e_R$, whereas $R_{N1}(e_R)$ is a positive number with probability $e_R$ and 0 with probability $1 - e_R$. All employers face a diminishing marginal revenue product of training; $R_{F2}(y)$ is twice-continuously

[8] FPs can also have social missions, though those missions generally lack the prominence and motivating potential seen in NPs.

[9] In practice, firms hire many workers and over time learn the return from training, $R_{F2}(y)$. Thus, by observing $R_{F1}(e_R) + R_{F2}(y)$, the firm can infer $R_{F1}(e_R)$.

differentiable, with $R_{F2}'(y) > 0$ and $R_{F2}''(y) < 0$ for all $y \geq 0$, and $R_{N2}(y) = \psi R_{F2}(y)$, where $\psi$ ($> 0$) is a parameter that captures the effectiveness of training in generating revenue in the NP relative to the effectiveness in FPs. We assume unique solutions to the following four maximization problems: Max $[S_{RF}e_R - C_R(e_R)]$ with solution $e_R'$, Max $[S_{RF}R_{F2}(y) - t(y)]$ with solution y', Max $[S_{RN}R_{N2}(y) - t(y)]$ with solution y'', and Max $[\theta S_M M_1(e_M) - C_M(e_M)]$ with solution $e_M'$. Concerning the second and third of these maximization problems, note that y' > y'' (i.e. the profit-maximizing level of training is greater in the FPs than in the NP) if and only if $S_{RN}\psi < S_{RF}$.

The timing is as follows. Nature takes a single draw from the distribution of $\theta$ representing one job applicant whose skill level (high or low) and degree of intrinsic motivation ($\theta$) become common knowledge, and four stages follow. In stage 1, the three organizations simultaneously and independently make take-it-or-leave-it compensation offers to the worker; the FPs' offers combine a base wage and a revenue-contingent bonus, whereas the NP's offer is only a base wage. In stage 2, the worker accepts an offer. In stage 3, the employer provides an amount of training, y, and the worker exerts efforts ($e_M$, $e_R$). In stage 4, the worker's employer pays compensation based on the offer, the organization's profit and (in the case of the NP) mission are realized, and the game ends.

*Results and Analysis*

If the worker is employed by an FP in equilibrium, the firm's cash compensation offer is $c = w_0^{FP} + B$, where $w_0^{FP} = S_{RF}R_{F2}(y') - t(y')$, $B = S_{RF}$ if $R_{F1} = 1$, and $B = 0$ otherwise. The equilibrium training level, $y^{FP}$, equals the profit-maximizing training level, y'. Because the worker is risk neutral, the firm maximizes profit by choosing a bonus that makes the worker the full residual claimant. This implies that $B = S_{RF}$ if $R_{F1} = 1$ and $B = 0$ otherwise. Then the worker exerts effort level $e_R'$, and the firm's equilibrium profit is $\pi_F(e_R', y') = S_{RF}(R_{F1}(e_R') + R_{F2}(y')) - t(y') - w_0^{FP} - B$, where $B = S_{RF} \times R_{F1}(e_R')$. Equilibrium expected profit is zero as a consequence of Bertrand wage competition. Hence $E[\pi_F(e_R', y')] = 0$, implying $w_0^{FP} = S_{RF}R_{F2}(y') - t(y')$.

Given the preceding, the NP hires the worker in equilibrium if and only if the following two conditions hold:

(1) $w_0^{NP} + \theta S_M M_1(e_M') - C_M(e_M') = S_{RF}R_{F2}(y') - t(y') + S_{RF}e_R' - C_R(e_R')$

(2) $\pi_N(0, y'') = S_{RN}(R_{N1}(0) + R_{N2}(y'')) - t(y'') - w_0^{NP}$

$= S_{RN}R_{N2}(y'') - t(y'')$

$$- [S_{RF}R_{F2}(y') - t(y') + S_{RF}e_R' - C_R(e_R') - (\theta S_M M_1(e_M') - C_M(e_M'))] \geq 0.$$

Condition (1) determines $w_0^{NP}$. It says that the worker's net utility in equilibrium (where "net" refers to effort costs), $w_0^{NP}$ + intrinsic motivation – effort costs (LHS of the equation), must be equal to the expected net utility that the worker would enjoy if employed by an FP, namely $w_0^{FP}$ + expected bonus – effort costs (RHS of the equation).

Condition (2) says that the NP must make non-negative profit by employing the worker at the wage of $w_0^{NP}$ determined by (1), which is the term in square brackets in (2). Note that $e_R = 0$ in equilibrium because the NP cannot offer incentive pay, and that y" denotes the NP's profit-maximizing level of training. Then $\pi_N(0, y") \geq 0$ must hold. If $\pi_N(0, y") > 0$, the NP may choose $y > y"$, where $\pi_N(0, y) \geq 0$ holds, to maximize the extent to which the mission is enhanced. We find this is indeed the case in equilibrium.[10]

Proposition 1

*i) There exists $\theta'$ ($\geq 0$) such that, in equilibrium, the worker is hired by the NP if $\theta \geq \theta'$ and by an FP if $\theta < \theta'$. Furthermore, there exists $S_{RF}' \in (0, \psi S_{RN})$ such that $\theta' > 0$ if $S_{RF} > S_{RF}'$ and $\theta' = 0$ otherwise, where $\theta'$ is strictly increasing in $S_{RF}$ for all $S_{RF} > S_{RF}'$.*

*ii) Suppose $S_{RF} > S_{RF}'$. Equilibrium base wages and the expected sectorial wage differential are as follows:*
*$w_0^{FP} = S_{RF}R_{F2}(y') - t(y')$ for $\theta < \theta'$,*
*$w_0^{NP} = S_{RF}R_{F2}(y') - t(y') + S_{RF}e_R' - C_R(e_R') - (\theta S_M M_1(e_M') - C_M(e_M'))$ for $\theta \geq \theta'$, and*
*$E[w_0^{FP} | \theta < \theta'] - E[w_0^{NP} | \theta \geq \theta'] = - [S_{RF}e_R' - C_R(e_R') - E[\theta S_M M_1(e_M') - C_M(e_M')/\theta \geq \theta']]$.*

*iii) Suppose $S_{RF} > S_{RF}'$. There exists $S_{RF}"$ ($\geq S_{RF}'$) and $S_M'$ ($> 0$) with the following properties:*
*$E[w_0^{FP} | \theta < \theta'] - E[w_0^{NP} | \theta \geq \theta'] > 0$ if $S_{RF} > S_{RF}"$,*
*$E[w_0^{FP} | \theta < \theta'] - E[w_0^{NP} | \theta \geq \theta'] = 0$ if $S_{RF} = S_{RF}"$, and*
*$E[w_0^{FP} | \theta < \theta'] - E[w_0^{NP} | \theta \geq \theta'] < 0$ if $S_{RF} < S_{RF}"$,*
*where $S_{RF}" \in (S_{RF}', \psi S_{RN})$ if $S_M < S_M'$, and $S_{RF}" = S_{RF}'$ otherwise.*

Point ii) of Proposition 1 states equilibrium wages, and point i) can be understood as follows. The worker sorts across sectors based on preferences, such that in equilibrium, a worker with sufficient intrinsic motivation will be employed by the NP, and otherwise the worker will be employed by an FP. The fact that the NP has a mission valued by the worker is a source of advantage for the NP (relative to the FP) because it allows the NP to depress the worker's base wage. The larger is θ, the more the NP can depress the wage, increasing the NP's advantage relative to the FP. However, unlike the FPs, the NP cannot use incentive pay, which

[10] All proofs are in Appendix A.

disadvantages the NP relative to the FPs. Since the NP's advantage is increasing in $\theta$, if $\theta$ is sufficiently high (i.e. if $\theta \geq \theta'$) the NP wins in Bertrand competition.

If the FP's effectiveness of revenue-increasing effort and training is relatively small (i.e. $S_{RF} \leq S_{RF}'$), the worker joins the NP regardless of the value of $\theta$, so that $\theta' = 0$. This is because the NP's disadvantage associated with incentive pay is sufficiently small in this case that the NP can win in Bertrand competition even for a worker with small $\theta$. In contrast, if $S_{RF}$ is larger than $S_{RF}'$, then $\theta$ must be sufficiently high for the worker to join the NP, so that $\theta' > 0$. The threshold $\theta'$ is increasing in $S_{RF}$ because, as the FP's effectiveness of revenue-increasing effort and training increases, the NP needs a higher level of intrinsic motivation to win in Bertrand competition. Henceforth, we focus on the case of $S_{RF} > S_{RF}'$, so that $\theta' > 0$, which is the interesting case since it allows the worker to join either sector depending on the value of $\theta'$.

Point iii) is a central result, which provides an explanation for the inconclusive sign of the FP-NP wage differential, by identifying conditions under which the expected value of the differential in base wages, $E[w_0^{FP}|\theta < \theta'] - E[w_0^{NP}|\theta \geq \theta']$, is positive or negative. The logic is as follows. As the effectiveness of revenue-increasing effort and training increases in the FPs relative to the NP, the average $\theta$ of the workers hired by the NP in equilibrium increases. This is because an increase in the FPs' relative effectiveness leads to an increase in the wage offers FPs make in equilibrium. Matching these compensation offers (as is required to win in Bertrand competition) while still maintaining non-negative profit requires that the NP compensation package rely heavily on the non-pecuniary value the worker places on the mission; this can happen only when $\theta$ is high, which in turn means the NP can pay a low wage. Hence, the expected FP-NP wage differential increases as the FPs' effectiveness of revenue-increasing effort and training increases. Since $S_M$ represents the efficiency of the worker's mission-enhancing effort, an increase in $S_M$ increases the NP's advantage relative to the FPs in terms of intrinsic motivation. Hence, the larger is $S_M$, the more the NP can depress the wage. The expected differential thus always favors the FPs when $S_M$ is relatively large. When $S_M$ is relatively small, the expected wage differential favors the FPs when the FPs' effectiveness of revenue-increasing effort and training is relatively high, and it favors the NP otherwise.

Proposition 2 describes how the sectorial wage differential varies by worker skill level.

Proposition 2:

*i) There exists a value $H_{RF}$' ($\geq L_{RF}$) such that $E[w_0^{FP} \mid \theta < \theta'] - E[w_0^{NP} \mid \theta > \theta']$ increases as skill level increases if and only if $H_{RF} > H_{RF}$'. Furthermore, there exists a value $H_{RN}$' ($\geq L_{RN}$) such that $H_{RF}$' > $L_{RF}$ if and only if $H_{RN} > H_{RN}$', where $H_{RF}$' is increasing in $H_{RN}$ for all $H_{RN} > H_{RN}$'.*

*ii) There exists a value $H_M$' ($\geq L_M$) such that $E[w_0^{FP} \mid \theta < \theta'] - E[w_0^{NP} \mid \theta > \theta']$ increases as skill level increases if and only if $H_M > H_M$'. Furthermore, there exists a value $H_{RN}$" ($\geq L_{RN}$) such that $H_M$' > $L_M$ if and only if $H_{RN} > H_{RN}$", where $H_M$' is increasing in $H_{RN}$ for all $H_{RN} > H_{RN}$".*

Proposition 2 can be explained as follows. As the worker's skill level increases, the effectiveness of training (and of revenue-increasing effort) increases for all employers, though perhaps to differing degrees for the FPs versus the NP. If effectiveness increases (sufficiently) more strongly in the FPs than in the NP, point i) says that the expected FP-NP wage differential increases with skill level, based on the following logic. When training and revenue-increasing effort become highly effective in the FPs (relative to the NP), the only way the NP could ever successfully hire is if the worker has very strong intrinsic motivation. Thus, in equilibrium the average θ of NP workers increases as skill levels increase. This increases the expected FP-NP wage differential, because a higher θ allows the NP to depress the base wage by more.

The expected wage differential might also increase in the skill level for a different reason, as stated in the first sentence of point ii). This happens when an increase in skill level implies a particularly strong increase in the effectiveness of mission-enhancing effort in the NP, which increases the NP worker's intrinsic motivation and, therefore, reduces the NP base wage. If the aforementioned effect is sufficiently strong, the expected FP-NP wage differential will rise with skill level. To understand the second sentence of point ii), recall that an increase in training effectiveness in the NP increases the NP base wage, which would obviously shrink the aforementioned (positive) FP-NP wage differential and perhaps even reverse its sign. Thus, the condition described in point i) becomes harder to meet in the wake of an increase in the NP's training effectiveness. Hence, as $H_{RN}$ increases, a stronger increase in the effectiveness of mission-enhancing effort is required for an increase in skill level to increase the FP-NP wage differential. The result, as stated in point ii)'s second sentence, is that the threshold for mission-enhancing effort, $H_M$', is increasing in $H_{RN}$.

Concerning training, recall from condition (2) that $\pi_N(0, y'') \geq 0$ holds if the NP hires the worker in equilibrium. If $\pi_N(0, y'') > 0$, the NP's equilibrium level of training, $y^{NP}$, satisfies $y^{NP} > y''$ and $\pi_N(0, y^{NP}) \geq 0$. The logic for this "over-investment" in training in the NP is as follows. Starting from $y = y''$ in the NP, as y is increased beyond y", the NP's profit decreases, and the lower profit detracts from the NP's mission. At the same time, increasing y beyond y" directly enhances the NP's mission because $\partial M/\partial y = S_M M_2'(y) > 0$. The second effect dominates the first effect when y is relatively close to y". As y increases, the second effect is eventually dominated by the first effect if $\pi_N(0, y'')$ is sufficiently positive. Starting from $y = y''$, the NP increases y as long as positive profit is made, up to the point where these two effects are counterbalanced.

Thus, the NP "burns profit" by providing more than the profit-maximizing level of training. However, the NP may not burn all the profit on training, because some of it may be invested directly to enhance the mission. This implies the following proposition concerning sectorial differences in training.

Proposition 3

*Comparing $E[y^{NP}(\theta)/\ \theta \geq \theta']$ and $y^{FP}$ yields:*

*i) If $S_{RF} \leq \psi S_{RN}$, then $E[y^{NP}(\theta)/\ \theta \geq \theta'] > y^{FP}$.*

*ii) If $S_{RF} > \psi S_{RN}$ , then there exists values $S_{RF}^{**}$ and $S_{RF}^{*}$, where $S_{RF}^{**} \geq S_{RF}^{*} > \psi S_{RN}$, such that $E[y^{NP}(\theta)/\ \theta \geq \theta'] > y^{FP}$ if $S_{RF} < S_{RF}^{*}$, and $E[y^{NP}(\theta)/\ \theta \geq \theta'] < y^{FP}$ if $S_{RF} > S_{RF}^{**}$.*

The intuition for Proposition 3 is as follows. Regarding point i), if the NP has a training advantage, then surely the NP (which already has a tendency to over-invest in training, relative to the FPs) is expected to train more than the FPs. Regarding point ii), if the FPs have a training advantage, there are competing effects. The FPs' training advantage suggests the FPs should train more than the NP, but the NP's tendency to over-invest in training suggests the opposite. If the FPs' training advantage is sufficiently small, the second effect dominates, so that the NP continues to be expected to train more than the FPs, whereas the first effect dominates if the FPs' training advantage is sufficiently large.[11]

[11] Since θ' depends on $S_{RF}$, $E[y^{NP}(\theta)|\ \theta \geq \theta'] - y^{FP}$ is not necessarily monotonically decreasing in $S_{RF}$, and hence we cannot rule out the possibility of $S_{RF}^{**} > S_{RF}^{*}$.

Corollary 1, which follows from Propositions 1 and 3, describes the possible ways in which FP-NP differences in training and wage levels are related.

Corollary 1

*(A) Suppose $S_M < S_M'$. Then $S_{RF}^* > S_{RF}$", which implies: (i) holds if $S_{RF} > S_{RF}^{**}$, (ii) holds if $S_{RF}$" $< S_{RF} < S_{RF}^*$, and (iii) holds if $S_{RF} < S_{RF}$". If $S_{RF}^* < S_{RF} < S_{RF}^{**}$, then (i) or (ii) holds.*

*(B) Suppose $S_M \geq S_M'$. Then (i) holds if $S_{RF} > S_{RF}^{**}$ and (ii) holds if $S_{RF} < S_{RF}^*$. If $S_{RF}^* < S_{RF} < S_{RF}^{**}$, then (i) or (ii) holds.*

*(i)* $E[w_0^{FP} \mid \theta < \theta'] - E[w_0^{NP} \mid \theta > \theta'] > 0$ *and* $E[y^{NP}(\theta) / \theta > \theta'] < y^{FP}$

*(ii)* $E[w_0^{FP} \mid \theta < \theta'] - E[w_0^{NP} \mid \theta > \theta'] > 0$ *and* $E[y^{NP}(\theta) / \theta > \theta'] > y^{FP}$

*(iii)* $E[w_0^{FP} \mid \theta < \theta'] - E[w_0^{NP} \mid \theta > \theta'] < 0$ *and* $E[y^{NP}(\theta) / \theta > \theta'] > y^{FP}$

Thus, the signs of the differentials in base wages and in training vary with parameter values, and a number of different observed configurations of compensation and training would be consistent with the model. However, the model can be rejected empirically if a pattern of evidence is observed such that $E[w_0^{FP} \mid \theta < \theta'] - E[w_0^{NP} \mid \theta > \theta'] < 0$ and $E[y^{NP}(\theta) \mid \theta > \theta'] < y^{FP}$. To see why, notice that $E[y^{NP}(\theta) \mid \theta > \theta'] < y^{FP}$ implies that training is less effective in the NP than in the FPs. This is because, despite the tendency to over-investment, the NP provides a lower level of training, on average, than the FPs do. Additionally, the NP is disadvantaged in that it cannot use incentive pay. It can only successfully hire the worker if intrinsic motivation is high, which allows the NP to hire the worker at a lower base wage than the FPs would offer. Hence, the NP's base wage must be below the FPs' base wage, so
$E[w_0^{FP} \mid \theta < \theta'] - E[w_0^{NP} \mid \theta > \theta'] < 0$ cannot hold.

*Discussion*

In practice, FPs are subject to income taxes on profit, whereas NPs face reduced taxes.[12] Incorporating a profit tax for FPs into the model, while allowing the NP to be exempt, would not change the main results. To see this, suppose that the FPs maximize after-tax profit, $(1 - \tau)\pi_F(e_R,$

[12] For example, U.S. federal law exempts NPs with the 501(c)(3) designation (about three-quarters of NPs in the U.S.) from federal taxes on income generated by activities related to their social mission but not income generated from activities unrelated to that mission. Some states provide further exemptions for NPs (for example, from property, sales, and use taxes) whereas others do not (for example, California provides a property tax exemption for NPs, with regional variations in how and when it is applied).

y) where $\tau \in (0, 1)$ denotes the tax rate. The FPs' compensation offers and their training decisions in equilibrium would remain unchanged because $(1 - \tau)\pi_F(e_R, y)$ is maximized if and only if $\pi_F(e_R, y)$ is maximized.[13] This implies that the NP's compensation offer and its training decision would also remain unchanged. Alternatively, under the assumption that the NP is subject to a profit tax that is positive (but less than $\tau$), our model would yield another prediction that, as the NP's tax rate decreases (and hence its tax advantage relative to the FPs increases), the level of its training investment decreases. As the tax rate decreases, the NP can more effectively use its profit to directly further the social mission, and hence it reduces the amount of money it pours into training investments.

Although a one-period model is sufficient for addressing our questions of interest and evaluating them using the CHES data, other questions would require a multiple-period model. An example would be questions involving sectorial differences in turnover. A key determinant of turnover is the portion of a worker's training that is general (versus firm-specific). In our one-period model the distinction between general and firm-specific training is not meaningful, because workers do not leave the organization after training. In a multi-period model, additional predictions could be developed concerning mobility of workers within and across sectors and the wage changes arising from those transitions, though the CHES data could not test such predictions empirically.[14] A multi-period setting would also have implications for the model's training results. Although the sign of the sectorial training differential is theoretically ambiguous, the model suggests a tendency for NPs to over-invest in training, which has implications for future sectorial wage differentials in a multi-period model. In particular, if case (ii) of Corollary 1 prevails (as we find in the CHES data), then in a multi-period model the wage differential favoring FPs should be muted (and possibly reversed) in periods beyond the first, as training increases the relative productivity of NP workers. Consequently, a wage differential favoring FPs should be easier to detect for *starting* wages (which do not yet reflect the productivity-enhancing effect of training) than for current wages. Our empirical work uses starting wages.

If there are multiple NPs with similar social missions, then competition among NPs for workers becomes relevant along with competition between NPs and FPs. Consider an extreme

[13] FPs pay zero tax because their equilibrium profits are zero in the model. Their tax burden would be positive if heterogeneous productivity shocks randomly hit the two FPs. The qualitative nature of the results would remain unchanged under this alternative modeling.

[14] If job hierarchies are incorporated along with multiple periods, questions concerning differential career advancement across the two sectors might also be addressed. See DeVaro and Brookshire (2007) for empirical evidence that promotion rates are lower in NPs than FPs.

case in which there are two NPs with exactly the same mission. Then our result that NPs tend to "over-invest" in training relative to FPs would disappear, because the equilibrium and profit-maximizing training levels would coincide for the NPs, and they would both make zero profit in equilibrium. What makes the assumption of a single NP reasonable is that the mission is likely to be at least partially organization-specific.[15] If there are multiple NPs with distinct (or related but different) missions, then our analysis based on a single NP is relevant.[16]

## IV. EXTENSION: FRINGE BENEFITS

The preceding model abstracts from fringe benefits (i.e. compensation "in kind" rather than in cash), which represent a large component of most compensation packages – typically a quarter to more than a third of a worker's total compensation. We now briefly summarize an extension in which we allow employers in both sectors to include fringe benefits as part of the compensation plan, which has implications for sorting and match quality.[17]

Benefits can be tailored to fit the tastes of a class of workers the firm wishes to attract, thereby serving as a sorting mechanism.[18] Given that different types of workers optimally sort into the two sectors in our model (see point i of Proposition 1) it might be expected that the sectors will pursue different strategies with respect to benefits offerings. Securing high-quality matches is of interest to employers in both sectors but is arguably of particular importance in NPs, where "motivated agents" (in the parlance of Besley and Ghatak 2005) are sought.[19] Benefits represent another type of investment (in addition to training) that employers in either sector can make to enhance expected future worker productivity. In the case of an NP, this investment represents another avenue by which the employer can advance the social mission.

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[15] For example, even two NPs that have the same stated mission might differ in their organizational cultures and therefore in their approaches to interpreting and pursuing that mission.

[16] Even in the extreme case of a zero-profit equilibrium with multiple NPs, a tendency for more training in NPs than FPs may be expected if NPs use training to inculcate workers in the mission (increasing their knowledge of it and strengthening their commitment to it). If the model were to incorporate this additional mechanism, our qualitative results should remain unchanged, but the result concerning training would strengthen.

[17] The supplementary note contains more details.

[18] See Eriksson and Kristensen (2014) for recent empirical evidence on the role of fringe benefits in inducing sorting. Evidence suggesting sorting can be found in a survey of attitudes of graduate students in business at Vanderbilt University that reveals clear differences between workers who end up in NPs and those who end up in FPs, with the former claiming to place less emphasis on economic wealth (Rawls, Ullrich, and Nelson 1975). Alternative motivations for offering benefits arise from legal mandates, tax advantages, and nonlinear pricing of health insurance that allows employers to purchase insurance at a lower cost than workers would face individually.

[19] The value of good matches is a central focus in Besley and Ghatak (2005), which distinguishes between "mission-oriented" NPs and "profit-oriented" conventional firms. Handy and Katz (1998) suggest that lower wages in NPs may generate trust by inducing positive selection in managerial workers; they also suggest that fringe benefits, when combined with low wages, may induce sorting that increases managerial quality in NPs.

The presence of the non-distribution constraint in the NP (but not the FP) sector suggests a reason why benefit investments may differ between the two sectors. To the extent that benefit offerings are more generous, equilibrium wages will be lower due to the usual compensating differentials argument, which points to the importance of incorporating benefits into the model.

Let b denote some quantity of fringe benefits, where $b \geq 0$. At the outset of the game, before Nature draws $\theta$, all employers choose a value of b with the knowledge that a cost $\Upsilon(b)$ must be paid upon hiring the worker, where $\Upsilon$ is strictly convex. For the NP, b enters the M function both directly and indirectly through its (direct) effect on profit. For the FPs, b enters the profit functions directly. We assume that b always enters in additively separable fashion and that $\lambda b$ enters the worker's utility function directly, and additively, where $\lambda > 0$. If $\lambda < 1$, the parameter $\lambda$ can be interpreted as deadweight loss, such as would occur if, for example, the worker is unmarried and if the fringe benefit in question is spousal health insurance. Reductions in $\lambda$ imply reductions in the employers' equilibrium choices of b.

The results for fringe benefits parallel those for training. Intuitively, training and fringe benefits represent two alternative ways in which employers can invest in enhancing productivity and, in turn, the social mission. The difference is that fringe benefits enter the worker's utility function directly, whereas training does not. Analogous to the parameter $\psi$ that relates to the training effectiveness in the NP relative to the FPs, the parameter $\psi_b$ relates to the effectiveness of fringe benefits (in improving match quality) in the NP relative to the FPs.

Analogous to Proposition 3 of the main model, there exist values $S_{RF}^{bb}$ and $S_{RF}^{b}$, where $S_{RF}^{bb} \geq S_{RF}^{b} > \psi_b S_{RN}$, such that the NP is expected to provide a higher (lower) level of fringe benefits than the FPs if $S_{RF} < S_{RF}^{b}$ ($S_{RF} > S_{RF}^{bb}$). When $S_{RF} > \psi_b S_{RN}$, the effectiveness of fringe benefits in the FPs is higher than in the NP. Nevertheless, the NP is still expected to provide more fringe benefits than the FPs if $S_{RF} < S_{RF}^{b}$ because the NP tends to over-invest in fringe benefits. Also, analogous to Corollary 1, we find that the signs of the differentials in base wages and in fringe benefits vary with parameter values, and a number of different observed configurations of compensation and fringe benefits would be consistent with the model. However, the model can be rejected empirically if a pattern of evidence is observed such that $E[w_0^{FP} \mid \theta < \theta'] - E[w_0^{NP} \mid \theta > \theta'] < 0$ and $E[b^{NP}(\theta) \mid \theta > \theta'] < b^{FP}$, where $b^{NP}(\theta)$ and $b^{FP}$ are defined for fringe benefits analogously to $y^{NP}(\theta)$ and $y^{FP}$, respectively, for training.

## V. EMPIRICAL EVIDENCE

The theoretical model and its extension allow the existing empirical evidence on base wages, incentive pay, and fringe benefits to be interpreted simultaneously in a unified framework. The present section is structured in two parts. The first summarizes existing empirical evidence, and the second presents new evidence from the CHES.

### A. Prior Empirical Evidence

The bulk of the prior empirical literature focuses on sectorial differences in wages. There is also evidence concerning incentive pay and fringe benefits, though to our knowledge there has been no prior work on sectorial differences in training.

#### *Sectorial Wage Differentials*

The NP sector's widespread voluntarism is consistent with high levels of intrinsic motivation, and the NP worker's empathy for the social mission of the organization is an important source of that intrinsic motivation and allows NP employers to pay their workers less. This compensating differentials argument is sometimes called the "donative labor hypothesis", meaning that NP workers "donate" labor by accepting lower wages.[20] Preston (1989) introduces this terminology and argues, as follows, that the compensating differential should differ by skill level. Within the organization, the intrinsic motivation deriving from the mission should be strongest for those whose work is most closely related to the organizational mission. Typically those would be the high-skilled workers who run the organization and whose decisions affect its direction. In contrast, the work of mailroom workers and custodians has little direct connection to the mission, and intrinsic motivation should therefore be weaker for such workers.[21]

Overall, the empirical literature is inconclusive concerning the sign of the wage differential. Some studies find no sectorial wage differential. For example, Leete (2001) uses the 1990 Census and finds no evidence of an economy-wide differential, though she finds differentials (some favoring NPs, others favoring FPs) in particular industries. Ruhm and Borkoski (2003) use CPS data and find no evidence of labor donations to NP employers. DeVaro and Brookshire (2007) use a cross section of employers in four metropolitan areas of the U.S.

[20] Some authors, e.g. Hallock (2011), draw a distinction between compensating differentials and labor donations, but the ideas are similar and are probably indistinguishable from an empirical standpoint.

[21] See also Young (1983), Handy and Katz (1998), and DeVaro and Brookshire (2007).

and find no differential starting or current wages, and Ben-Ner, Ren, and Paulson (2011) find no wage differential in two samples of Minnesota establishments from selected industries.

Other empirical evidence supports labor donations. Mirvis and Hackett (1983) find a wage differential favoring FPs, though without any controls. Weisbrod (1983) finds support for lawyers, though Goddeeris (1988) uses the same data to show that the result disappears after accounting for selection and choice-based sampling. In a study of hospitals, Roomkin and Weisbrod (1999) find higher pay in FPs than NPs. In an analysis of 300 white collar workers spanning many occupations and industries, Preston (1989) finds about a 20 percent differential favoring FPs for managers and professionals but only about a 5 percent differential for clerical and sales workers.[22] This result is consistent with Preston's argument that the higher-skilled workers in the organization are more likely to do work that relates closely to the organizational mission, so intrinsic motivation should be higher for these workers, and the compensating differential larger. Similarly, to explain their finding of a difference in promotion rates (favoring FP workers) for high-skilled occupations but no difference for low-skilled occupations, DeVaro and Brookshire (2007) argue that intrinsic motivation in the high-skilled occupations obviates the need for NPs to rely on promotions as incentive mechanisms. However, Leete (2001) does not find that the wage differential varies by skill level; for that and other reasons she interprets her analysis as generally unsupportive of labor donations.

In contrast to the supply side emphasis of the donative labor hypothesis, the demand-side "property rights hypothesis" predicts a wage differential favoring NPs. Because the "non-distribution constraint" allows surpluses to be reinvested in the organization, kept as an endowment, or used for other charitable purposes but not distributed to those who run the organization, NPs might inflate wages or fringe benefits as an indirect way of redistributing profit. This idea is consistent with evidence from matched employer-employee data on child care workers (Mocan and Tekin 2003), from the U.S. nursing home industry (Borjas et al. 1983) , and from the less competitive segment of the day care center industry (Preston 1988).[23]

Our model captures the idea of the donative labor hypothesis by analyzing a worker who derives intrinsic motivation from the social mission if employed by the NP. The model also captures the idea behind the property rights hypothesis through the NP's provision of firm-sponsored training. That is, instead of inflating wages or fringe benefits, the NP in our model

[22] Preston (1989) also corroborates her results using CPS data, though without a direct measure of NP status.

[23] Borjas et al. (1983) finds that FP nursing homes pay the lowest wages, except perhaps for religious NP nursing homes. The other two types of organizations in the sample are publics and secular NPs.

provides a level of training higher than its profit-maximizing level to maximize the degree to which the worker enhances the organizational mission. By incorporating both ideas in a single framework, our model can explain the inconclusive sign of the FP-NP wage differential.

*Sectorial Differences in Incentive Pay*

Empirical work has consistently found a lower incidence of incentive pay based on either individual-level or organization-level performance measures in NPs than FPs, consistent with the presence of the non-distribution constraint, as Hallock (2011) argues.[24] Consider that 69 Houston NPs do not tie pay to organizational performance (Werner and Gemeinhardt 1995); bonuses are higher (in absolute terms and relative to base pay) in FP than NP hospitals (Roomkin and Weisbrod 1999); NPs are less likely than FPs to use commission on sales, bonuses, piece rates, and (obviously) profit sharing and stock options (DeVaro and Brookshire 2007); FPs are more likely than NPs to use incentive pay for CEOs but not lower-level workers (Erus and Weisbrod 2003); and the link between economic performance and pay for top managers is weak in NP hospitals (Bertrand, Hallock, and Arnould 2005).

Although legal restrictions prohibiting profit-sharing rewards for NPs can explain some of the preceding evidence, Erus and Weisbrod (2003) note that the law does not prevent NPs from tying pay to performance measures other than profit. Other explanations must also apply. One common argument is that output is harder to measure in NPs than in FPs, at both the organizational and individual level (Weisbrod 1988, 1989, Cleverley and Mullen 1982, Oster 1996, Hallock 2000, and Erus and Weisbrod 2003). Indeed, Easley and O'Hara (1983) argue, based on reasoning from Hansmann (1980), that NPs arise as the solution to an optimal contracting problem when organization-level output is hard to measure, while Rose-Ackerman (1996) references the "difficulty of monitoring charitable work" and measuring service quality. Another explanation is that, absent intrinsic motivation, FPs must rely on extrinsic incentives.[25] That is consistent with arguments that FPs create incentives via promotions (DeVaro and Brookshire 2007), NP managers receive a smaller share of their compensation in bonuses than do FP managers (Frey 1997), and NPs (when well matched with principals based on mission preferences) have increased efficiency and less need for incentive pay (Besley and Ghatak 2005).

[24] Furthermore, Hallock (2001) finds in a large panel of NPs that organizational size (as measured by assets) is the only performance-related variable that has a statistically significant positive relationship to managerial pay.

[25] This argument requires qualification because the organizational mission, like explicit incentives, is chosen by the firm, presumably with incentive implications in mind. However, as we discussed earlier, it is natural to treat the mission as pre-determined.

*Fringe Benefits*

A number of prior empirical studies have considered fringe benefits. Preston (1989) finds (at the worker level) that pensions and health insurance appear more common in FPs than NPs and that the wage differential is largely unchanged when including binary indicators for those benefits in the model as controls. DeVaro and Brookshire (2007) find (at the establishment level) differences between the two types of organizations in many benefits on a list of 17.[26] Using information on total expenditures on benefits at child care centers, Mocan and Tekin (2003) infer a measure of hourly benefits compensation, which in turn allows them to consider wage plus benefits compensation as a dependent variable rather than wages alone. Whether the dependent variable is wages or wages plus benefits, they find a compensating differential favoring NPs.

B. New Empirical Evidence from the CHES

We use data from the California Health and Employment Survey (CHES) to provide new empirical evidence of establishment-level differences between the NP and FP sectors in base wages (for different worker skill levels), output-contingent compensation (bonuses, tips and commissions), training, and fringe benefits. The CHES is a cross section of 1427 establishments in 27 Northern California counties surveyed from Fall 2005 to Fall 2006 (Maxwell 2007).[27] Government agencies (federal, state, city or county) and establishments with fewer than five workers were excluded from the sampling frame, and large establishments (51 or more employees) were oversampled. We use inverse probability sampling weights throughout the analysis to ensure results are representative of establishments within California with respect to size and industry.

[26] Those results were omitted from the published version but are as follows. Unconditional differences in means reveal that NPs are more likely to provide health insurance for their employees and for their employees' families, dental and vision coverage, paid sick or personal days, life insurance, disability insurance, day care, maternity/paternity leave, and contributions to pension plans. FPs are more likely to offer paid vacations and holidays, and savings (401K) plans. No statistically significant differences between the two types of organizations are found for supplemental unemployment benefits, tuition reimbursement and flexible hours for parents. However, most of the preceding differences disappear in the presence of controls for establishment characteristics and industry. In the presence of those controls, NPs are more likely to offer pension plan contributions (in contrast to the result in Preston 1989), day care, and supplemental unemployment benefits, whereas FPs are more likely to offer paid vacation, savings plans, stock options and flexible hours for parents.

[27] The response rate was 67 percent. Counties were selected on the basis of the U.S. Department of Agriculture 9-category scale based on the degree of rurality in the county (U.S. Department of Agriculture, Economic Research Service 2006) to obtain a balance of urban versus rural areas that approximate the mix in the U.S. Proportionate random sampling of establishments within each county ensured an appropriate balance of rural and urban establishments (if a county only had 5 percent of the establishments, for example, within the 27 county area, only 5 percent of the establishments in the random sampling of establishments came from that county).

The CHES offers several advantages for our study. First, it includes information on FP and NP status (as opposed to government agencies, which are not included in the data set). The treatment of government agencies is inconsistent across studies in this literature; sometimes they are grouped with NPs, and sometimes they are dropped. The CHES NP measure allows a clean contrast between the NP and FP sectors.[28]

Second, it contains a relatively large sample of establishments while restricting the sampling frame to the northern part of one state. The relatively small geographic scope eliminates variation in state-level institutions, such as the tax treatment of NPs, and reduces heterogeneity in certain regional factors (e.g. differences in local labor market conditions) that could otherwise complicate a wage analysis. Some states exempt NPs from sales, use, and property taxes, whereas other states do not. But in our analysis the tax treatment of NPs is the same for all organizations in the sample.

Third, the CHES contains wage information for three skill classes for each establishment: "entry level" (requiring a worker starting in the position to have no more than a high school education and no more than one year of work experience), "mid-level" (requiring some college and/or one to three years of work experience), and "high-level" (requiring at least a college degree and/or at least five years of work experience). The distinction in skill categories allows us to estimate three wage regressions for distinct skill categories *using the same set of employers*. In most worker-level data sets, partitioning the sample into three skill groups would instead require estimating on three different subsamples of employers.

Fourth, the wage observed is the average nominal *starting* wage in the typical job in each of the three skill levels.[29] Compared to current wages, which are typically used in studies using worker-level data, starting wages are less influenced by "post-hire" factors like learning-by-doing, job tenure, and employer learning about worker productivity that could differ between the two sectors and make a compensating differential harder to detect. Moreover, our theoretical model pertains to hiring, which makes starting wages the relevant measure.

Finally, the CHES contains key dimensions of HRM systems that can be used to assess FP-NP sectorial differences. The measures include wages, whether tips and commissions are

[28] The CHES question is, "Are you a for-profit or nonprofit company?" Answer choices are "For profit", "Nonprofit (501(c)(3))", "Government (Federal, state, city, county)", "Other", with a response of "Government" ending the survey. The CHES sample contains only "For profit" and "Nonprofit (501(c)(3))" responses.

[29] We converted responses to the average starting wage question, "$____ per _____" (e.g. $9.85 per hour), to hourly wages. We assume full-time work when computing hourly wages (e.g., annual salary is divided by 2080, monthly salary is divided by 173, and weekly is divided by 40).

offered, whether bonuses are offered, whether each of various fringe benefits is offered, and whether training is offered. Only wages (and tips and commissions) are available for each of the three skill categories. The other measures are only available at the establishment level, though it should be understood that organizations often have establishment-wide policies governing these components of compensation (e.g. fringe benefits). Establishment characteristics in the CHES include establishment size, firm size, industry, whether the establishment operates in a rural or urban area, and collective bargaining status (in each skill group).[30]

Respondents are asked to identify the "typical position" at each skill level in the establishment, which was used to determine the occupational classification of the job at each skill level. Table 1 displays the distribution of occupations by skill level, which differs considerably between the sectors. The frequency of management, quantitative and professional occupations increases in skill level in both sectors, and the frequency of support; office and sales; and production, construction, and transportation decreases in skill level for both sectors. A higher proportion of NP jobs are in management, quantitative and professional occupations at each skill level: 91 percent in high-skilled jobs, 45 percent in mid-skilled jobs, and 23 percent in low-skilled jobs. Corresponding numbers for FPs are 75, 28 and 5 percent. In contrast, a greater proportion of FP jobs are in the production, construction, and transportation occupations at each skill level: 8 percent for high-skilled jobs, 22 percent for mid-skilled jobs, and 30 percent for low-skilled jobs. Corresponding numbers for the NP sector are 2 percent, 8 percent and 10 percent.

We estimate the following regression by ordinary least squares to assess FP-NP differences in HRM systems, controlling for establishment characteristics:

$$(3)\ HRM_j^s = \alpha + \beta FP_j + \boldsymbol{O}_j\boldsymbol{\gamma} + \boldsymbol{X}_j\boldsymbol{\delta} + \varepsilon_j$$

where *HRM* is a measured component in establishment *j*'s HRM system (for skill level *s* for variables – such as base wages – that have within-establishment variation across skill levels); $O_j$ is a series of binary indicators for management, quantitative, professional, support, office and sales, and other occupations; and $\boldsymbol{X_j}$ is a vector of controls for other establishment characteristics. The occupation dummies describe the "typical" job represented in skill level *s* at establishment *j*;

[30] Establishment size and firm size are available as categorical variables, each in eleven categories: (5-9 workers, 10-19, 20-50, 51-99, 100-299, 300-499, 500-999, 1000-1999, 2000-4999, 5000-9999, and 10,000+). The firm size measure includes all workers on the firm's payroll in any of its establishments, including part time workers, full time workers, temporary workers, and permanent workers, with establishment size observed based on the first eight of those categories (i.e. the top category is 1000+).

these are also the jobs to which the wage measure applies. Appendix B (Table B1) defines all variables used in the analysis.

When *HRM* represents base wages, we estimate models in wage levels rather than logs, consistent with the theoretical model, although we demonstrate that results do not change when logs are used (Appendix B, Table B2). As a robustness check, we re-estimate equation (3), each time dropping the observations associated with a particular occupation to assess whether that occupation might be driving the results.

Table 2 displays means or percentage distributions for all variables (both overall and by sector) and reveals that 85 percent of observations are in the FP sector. It also shows sectorial differences in HRM components. In both sectors the average starting wage increases markedly in skill level. There is no FP-NP wage differential for low-skilled jobs. However, a wage differential favoring FPs emerges for mid-skilled jobs and is even larger for high-skilled jobs.[31]

Consistent with an assumption of our theoretical model, Table 2 reveals a large differential favoring FPs in output-based pay such as bonuses, or tips and commissions.[32] It also reveals that the probability of providing training is higher in NPs than FPs and that differentials favor NPs for each of a list of fringe benefits. Apart from the different occupational distributions by sector (documented in Table 1), Table 2 reveals differences in other characteristics of FP and NP establishments that could underlie the differences in HRM components. A larger proportion of FP establishments is large and in retail and wholesale trade, business services, construction, manufacturing, and the transportation/communication/public utility sectors, while a larger proportion of NP establishments is in rural areas and services and the education/medical sectors. Regression estimates of equation (3) show that the unconditional FP-NP differences in monetary compensation remain after controlling for sectorial differences in establishment characteristics. Column 1 of Table 3 reveals that the unconditional wage gap is \$7.16 (\$3.30) [\$0.04] per hour, favoring FPs, in high-skilled (mid-skilled) [low-skilled] jobs, and the result for low-skilled jobs is statistically insignificant. .

These results change little in the presence of controls for establishment size, rural area, collective bargaining (for position), manufacturing and service industry dummies, and dummies

[31] The differential in shift premiums also favors FPs. Shift premium pay refers to extra compensation that is paid in exchange for working non-standard (and therefore generally undesirable) hours, such as the night shift. Such pay is not output-contingent, so it does not correspond to the revenue-based bonuses in our theoretical model, but it can be interpreted as part of the "base wage" in the theoretical model because it does not vary directly with performance.

[32] Tips and commissions occur with negligible frequency in the NP subsample, whereas bonuses are more common (though still under 20 percent, which is less than half the rate at which they occur in FPs).

for occupation categories (at each skill level), as seen in Table 3, column 2. The FP advantage is $6.68 ($3.27) and statistically significant at the 5 percent level in high-skilled (mid-skilled) jobs but insignificant in low-skilled jobs. The results reveal similar unconditional and conditional differences when the dependent variable is measured as the presence of tips or commission in the job at each skill category. All FP-NP differences are estimated with high precision (statistically significant at $p \leq 0.001$). A significant difference favoring FPs also exists in the likelihood of a bonus (observed only at the establishment level) and is of the magnitude 24.7 (20.7) percentage points for the univariate (multivariate) case (Table 4).

To assess whether the FP advantage in wages and tips or commissions appears only in a specific occupation, we re-estimate equation (3) repeatedly, each time dropping observations in a particular occupation (Table 3, columns 3 to 8). Results suggest that the wage advantage might be confined to professional occupations: the FP wage advantage in high and mid-skilled jobs disappears (that is, the coefficient becomes statistically insignificant at $p \leq 0.05$) when the sample excludes professional occupations. Results also suggest that management occupations might be the source of the FP advantage in offering tips or commissions in high-skilled jobs, as the coefficient becomes statistically insignificant at $p \leq 0.05$.

The unconditional 17 percentage point difference in training (significant at $p \leq 0.001$) diminishes to 13 percentage points in the presence of establishment characteristics (Table 4). The likelihood of offering each of 10 fringe benefits is higher in NPs than FPs both in univariate and multivariate analyses, with all differences statistically significant ($p \leq 0.05$) and, for most benefits, large in magnitude even with controls for establishment characteristics.

In sensitivity analyses (available upon request) we consider a wide range of additional controls for employer and worker characteristics, none of which change the main pattern of results. We consider a more detailed set of industry indicators based on the NAICS codes; an indicator for whether the firm's (not the establishment's) workforce increased or decreased during the last year and during the past 5 years; how long the firm has been in business (less than 5 years or more than 20 years); and whether the multi-establishment firm had establishments located only in California, regionally, nationally, or multi-nationally. We also include as regressors an indicator of whether more than 33 percent of workers in the job were temporary or part time and demographic characteristics of workers in the establishment (i.e., if more than 33 percent of the workforce was female, aged under 26 or between 55 to 64, or married, and the

average number of dependents including a spouse).[33] These questions were asked only in firms with 50 or fewer workers, so we interact these variables with a "size 50 or less" indicator to preserve observations.

Because our unit of analysis is jobs and does not control for worker productivity that might vary across sectors, an estimated wage differential favoring FPs might mistakenly be interpreted as a compensating differential instead of as a consequence of selection. For example, Lazear (2000) finds that higher-productivity workers sort into an FP (Safelite Glass Corporation) that switches from time rates to piece rates, and a similar result could hold across sectors given the evidence that NPs are less likely than FPs to use incentive pay. Such sorting is potentially relevant for the measurement of wage differentials: Goddeeris (1988) shows that the wage differential favoring FPs that was found in Weisbrod (1983) disappears after accounting for self selection.

Few empirical studies have convincingly accounted for selection, particularly in broad, economy-wide samples. The extent to which it matters that unobserved sectorial differences (in worker ability and other characteristics) are typically unaccounted for in empirical work is an open question. The literature has, however, noted observable, systematic differences between NP and FP workers.[34] For example, Mirvis and Hackett (1983) and Preston (1989) find that NP workers have higher levels of education, work fewer hours, and are more likely to be female, black, and unionized than FP workers. In contrast, DeVaro and Brookshire (2007) casts doubt on the notion that NPs attract lower-productivity workers by showing that average worker performance is slightly higher in NPs than FPs, though this difference becomes statistically insignificant in the presence of detailed controls for worker and employer characteristics.

## VI. INTERPRETING THE EVIDENCE

The empirical evidence from the preceding section can be interpreted through the lens of our theoretical model. Because our result that the likelihood of training is higher in NPs than FPs is new, we investigated whether it applies beyond the CHES. The result is strongly supported for

[33] Women are historically over-represented in the NP sector. Preston (1990) investigates the reason why and finds evidence that the structure of NP compensation is an important factor that attracts women to the sector.

[34] Goddeeris (1988) and Mocan and Tekin (2003) pay particular attention to selection in narrow samples of lawyers and child care workers, respectively. The latter part of Preston (1989) applies the methods of Heckman (1978, 1979) and Lee (1978) and finds that results of these corrections are inconclusive concerning the hypothesis of whether lower-productivity workers self-select into NPs.

multiple dimensions of training reported in the British Household Panel Survey (BHPS).[35] One might interpret the result to mean that training efficiency is higher in NPs than in FPs, but the logic of Proposition 3 reveals that this is not necessarily the case. Even if FPs are more efficient in training, NPs may still provide higher levels of training if the FP training advantage is sufficiently small, because NPs have tendency to "over-invest" in training.

For the lowest skill group, we find no statistically significant difference between NPs and FPs in the average starting wage in the CHES. Our model suggests that training efficiency is higher in NPs than in FPs for the lowest skill group, because Proposition 1 iii) says that $E[w_0^{FP}|\theta < \theta'] - E[w_0^{NP}|\theta \geq \theta'] = 0$ if $S_{RF} = S_{RF}$" ($< \psi S_{RN}$). That is, the NP's disadvantage associated with incentive pay should be more than offset by its relative efficiency in training for the NP to profitably hire the worker at an average base wage that is same as the FP base wage. In addition to higher training efficiency, the NP's tendency for over-investment further increases its incentives for training provision. The empirical finding for the lowest skill group can be explained neither by the donative labor hypothesis nor by the property rights hypothesis because the former predicts a positive sign and the latter predicts a negative sign. By capturing the link between the provision of training and the sign of FP-NP wage differential, our model offers an explanation for this result.

We have found that the FP-NP wage differential is positive for the mid-skill group and that it is larger for the high-skill group. This result is consistent with Preston (1989). Proposition 2 offers two possible reasons for this result: as the skill level increases, (i) the relative effectiveness of training in NPs deceases, and/or (ii) the effectiveness of mission-enhancing effort in NPs increases more than the effectiveness of revenue-increasing effort and training in the FPs. If instead these effects cancel each other out (for example, if the relative effectiveness of training in NPs increases as the skill level increases and this effect is roughly offset by (ii)), the FP-NP base wage differential would not increase in skill level, which provides a theoretical rationale for the results in Leete (2001).

The new theoretical explanation in the preceding paragraph differs from the conventional explanation (e.g. Preston 1989, Handy and Katz 1998, DeVaro and Brookshire 2007) that the compensating differential favoring FPs increases with skill level because the work becomes more closely tied to the organizational mission. Preston (1989, p. 443) writes, "…the further removed

[35] We are grateful to Eduardo Melero for generously conducting this empirical analysis for us. Although the BHPS results strongly confirm our new finding concerning training, we could not have used the BHPS as our primary data set. Our analysis hinges on employer joint decisions concerning multiple components of compensation and HRM systems, so establishment-level data are preferable to a household survey.

the worker is from the generation of social benefits, the less likely he will be to 'donate' his labor at a reduced wage. Therefore, a negative nonprofit wage differential is most likely to occur in managerial and professional occupations ..." This argument requires that the lower-skilled workers are the ones whose work is "further removed … from the generation of social benefits". But it is not hard to imagine, particularly in NPs where services are directly provided, cases in which the lower-skilled workers (rather than the managers) are the ones whose work most directly generates social benefits. Anecdotally, some managers lament the fact that promotion to the managerial ranks removes them from "the field" and from direct connection with the customers served by the NP.

Our theoretical explanation can describe such cases and, therefore, complements the conventional explanation. Suppose that the effectiveness of mission-enhancing effort in the NP decreases as skill level increases. Our model suggests that the wage differential can still increase in favor of FPs if the effectiveness of revenue-increasing effort in the FPs decreases more, and/or the relative effectiveness of training in NPs decreases sufficiently strongly. The former would be true if the "contractible" portion of revenue-enhancing effort decreases as the skill level increases.

Our evidence that bonuses, tips, and commission are higher in FPs than NPs is consistent with both the previous literature and with the assumption of our theoretical model that the FPs can pay a revenue-contingent bonus whereas the NP cannot. Consistent with an extension of the model, we find evidence that the probability of offering fringe benefits is higher in NPs than in FPs (see Table 2). Benefits represent an investment channel through which the employer can positively influence sorting of workers into the applicant pool, and the "over-investment" logic that guides NPs in other areas applies to benefits too. Similarly, the results in Mocan and Tekin (2003) are consistent with the intuition from our model that NPs tend to over-invest in fringe benefits.

## VII. CONCLUSION

We have proposed a theoretical model to describe a nonprofit organization's quest to hire a worker in the face of labor market competition from for-profit firms. Our model incorporates the non-distribution constraint and a social mission that provides intrinsic motivation to workers, both of which are fundamental features of the nonprofit organizational form. Equally important, it incorporates firm-sponsored training and a clear distinction between base wages and incentive pay to study the link between the process of wage determination and the provision of firm-

sponsored training. The value of the theoretical contribution is in providing a unified analytical framework for interpreting an array of empirical facts -- including a new training result -- concerning differences between the nonprofit and for-profit sectors. In the empirical literature, these facts are typically studied in isolation, and their interrelationships are not explored. In contrast, their interrelationships are central in this study. Specifically, wage levels, incentive pay, fringe benefits, and training are all incorporated into the theoretical framework and analyzed simultaneously.

Three empirical patterns are illuminated by the theoretical model. First, the inconclusive evidence in the literature concerning the sign of the sectorial wage differential can be explained by our theoretical model, and the explanation is driven by interrelationships in the employer choice variables just noted and by labor market competition across sections. Second, the analysis clarifies the conditions under which the magnitude of the FP-NP wage differential increases with skill level. Third, the presence of the non-distribution constraint in our model leads to a tendency of the NP to "over-invest" in training (and also in fringe benefits).

The empirical contribution of the study is to provide new evidence from a novel data set of Northern California establishments, which allows us to compare sectorial differences in (starting) base wages for different skill groups within the same sample of employers. The main result that is new to the literature is that, consistent with the "over-investment" implication of the non-distribution constraint in the theoretical model, training is more likely in NPs than in FPs. Other empirical results corroborate findings from earlier studies (e.g. the FP-NP wage differential is absent at the lowest job levels but increases at the higher job levels, incentive pay is less often used in nonprofits than in for-profits, and each of an array of fringe benefits is more common in nonprofits than in for-profits), but with two important differences. First, the nature of our data allows us to examine the firm's key choice variables simultaneously in the same data set, whereas previous studies have not had all of this information in the same sample. Second, much of the literature is based on worker samples rather than establishment samples, and the latter is preferable when considering systems of HRM components chosen jointly by employers.

We hope that this analysis stimulates future theoretical work on differences in organizational decisions between the NP and FP sectors. Future work on sectorial wage differentials should appreciate the fact that the two sectors differ starkly on (non-wage) dimensions like training, fringe benefits, and incentive pay which, as our theoretical work demonstrates, has important implications for wage differentials. As new data become available, within-industry analysis in samples larger than the CHES would be of interest and would

mitigate concerns about unobserved establishment-level heterogeneity. Furthermore, since our result concerning training is new, it should be corroborated beyond the CHES and the BHPS data. Finally, although our theoretical and empirical work has focused only on the FP and NP sectors, our approach could be applied to other types of organizations (e.g. those in the public sector) for which a social mission applies and profit is not the central focus.

# Appendix A

**Proof of Proposition 1**

Suppose that the worker is employed by an FP in equilibrium. The joint surplus of the FP and the worker is

$\pi_F(e_R, y, c) + c - C_R(e_R) - C_M(e_M)$

$= S_{RF}(R_{F1}(e_R) + R_{F2}(y)) - t(y) - C_R(e_R) - C_M(e_M)$.

Given the definition of $e_R$' and y', we have that $(e_R, y) = (e_R', y')$ maximizes the joint surplus, and that the FP chooses y = y' in equilibrium. The risk-neutral worker chooses $e_R = e_R'$ under the revenue-contingent bonus of $B = S_{RF}$ if $R_{F1}(e_R) = 1$, and 0 otherwise. This is the bonus that the FP offers in equilibrium given that the firm is also risk neutral. The worker chooses $e_M = 0$ in equilibrium because $U_I = 0$ when the worker is employed by the FP. Bertrand wage competition implies that the FP's equilibrium expected profit is zero. Hence, $S_{RF}(e_R' + R_{F2}(y')) - t(y') - w_0^{FP} - S_{RF}e_R' = 0$, which implies that (A1) holds in equilibrium.

(A1) $w_0^{FP} = S_{RF}R_{F2}(y') - t(y')$

Then the worker's expected equilibrium utility is given by (A2).

(A2) $U^F \equiv S_{RF}R_{F2}(y') - t(y') + S_{RF}e_R' - C_R(e_R')$.

Now suppose that the worker is employed by the NP in equilibrium. The worker then chooses $e_R = 0$, because a bonus contingent upon $R_{N1}(e_R)$ is prohibited, and he chooses $e_M = e_M'$ to maximize $U_I - C_M(e_M) = \theta S_M M_1(e_M) - C_M(e_M)$. The worker's equilibrium utility is $w_0^{NP} + \theta S_M M_1(e_M') - C_M(e_M')$. Bertrand wage competition implies that the worker's equilibrium fixed wage is defined by (A3), which implies (A4).

(A3) $w_0^{NP} + \theta S_M M_1(e_M') - C_M(e_M') = U^F$

(A4) $w_0^{NP} = S_{RF}R_{F2}(y') - t(y') + S_{RF}e_R' - C_R(e_R') - (\theta S_M M_1(e_M') - C_M(e_M'))$

Given that the NP's profit-maximizing level of training is y = y" (which maximizes $S_{RN}R_{N2}(y) - t(y)$) and that its profit must be non-negative, $\pi_N(0, y", w_0^{NP}) \geq 0$ must hold at the equilibrium level of $w_0^{NP}$. This condition is equivalent to (A5).

(A5) $\pi_N(0, y", w_0^{NP}) = S_{RN}R_{N2}(y") - t(y") - (S_{RF}R_{F2}(y') - t(y')) - (S_{RF}e_R' - C_R(e_R'))$

$+ \theta S_M M_1(e_M') - C_M(e_M') \geq 0$.

Condition (A5) is necessary and sufficient for the worker to be employed by the NP in equilibrium. Let $h(S_{RF}) \equiv S_{RN}R_{N2}(y") - t(y") - (S_{RF}R_{F2}(y') - t(y')) - (S_{RF}e_R' - C_R(e_R'))$, so that condition (A5) becomes $h(S_{RF}) + \theta S_M M_1(e_M') - C_M(e_M') \geq 0$.

Claim 1: There exists a value $S_{RF}' \in (0, \psi S_{RN})$ such that $h(S_{RF}) > 0$ if $S_{RF} < S_{RF}'$, $h(S_{RF}) = 0$ if $S_{RF} = S_{RF}'$, and $h(S_{RF}) < 0$ if $S_{RF} > S_{RF}'$.

[Proof] We have that $h(0) = S_{RN}R_{N2}(y'') - t(y'') > 0$, $h(\psi S_{RN}) < 0$, $h(S_{RF})$ is continuous and strictly decreasing in $S_{RF}$ for all $S_{RF}$, and $h(S_{RF}) \to -\infty$ as $S_{RF} \to +\infty$. This implies the result. *Q.E.D.*

We have $\theta S_M M_1(e_M') - C_M(e_M') (> 0)$ is continuous and strictly increasing in $\theta$ for all $\theta > 0$, where $\theta S_M M_1(e_M') - C_M(e_M') \to 0$ as $\theta \to 0$ and $\theta S_M M_1(e_M') - C_M(e_M') \to +\infty$ as $\theta \to +\infty$. Claim 1 then implies that there exists $\theta' (\geq 0)$ such that $\pi_N(0, y'', w_0^{NP}) \geq 0$ if $\theta \geq \theta'$ and $\pi_N(0, y'', w_0^{NP}) < 0$ otherwise, where $\theta' > 0$ if $S_{RF} > S_{RF}'$ and $\theta' = 0$ otherwise, and $\theta'$ is strictly increasing in $S_{RF}$ for all $S_{RF} > S_{RF}'$. This implies i), and (A1) and (A4) together imply ii).

To prove iii), let $\Delta(S_{RF}) \equiv -[S_{RF}e_R' - C_R(e_R') - E[\theta S_M M_1(e_M') - C_M(e_M')|\theta \geq \theta']]$ and establish Claim 2.

Claim 2: $\Delta(S_{RF})$ is strictly increasing in $S_{RF}$ for all $S_{RF} > S_{RF}'$, and $\Delta(S_{RF}) \to +\infty$ as $S_{RF} \to +\infty$.

[Proof] For any given $S_{RF} > S_{RF}'$, by the definition of $\theta'$ we have (A6).

(A6) $S_{RN}R_{N2}(y'') - t(y'') - (S_{RF}R_{F2}(y') - t(y')) - (S_{RF}e_R' - C_R(e_R')) + \theta' S_M M_1(e_M') - C_M(e_M') = 0$.

We have that $S_{RN}R_{N2}(y'') - t(y'') - (S_{RF}R_{F2}(y') - t(y'))$ is continuous and strictly decreasing in $S_{RF}$ and it approaches $-\infty$ as $S_{RF}$ approaches $+\infty$. We then have that $-(S_{RF}e_R' - C_R(e_R')) + \theta' S_M M_1(e_M') - C_M(e_M')$ is continuous and strictly increasing in $S_{RF}$ and it approaches $+\infty$ as $S_{RF}$ approaches $+\infty$. We also have that $E[\theta S_M M_1(e_M') - C_M(e_M')|\theta \geq \theta']$ is continuous and strictly increasing in $\theta'$ and it approaches $+\infty$ as $\theta'$ approaches $+\infty$. Then, since $\theta'$ is strictly increasing in $S_{RF}$ for all $S_{RF} > S_{RF}'$, we have the desired result. *Q.E.D.*

Finally, let $\Delta_0(S_M) \equiv -[S_{RF}'e_R' - C_R(e_R') - E[\theta S_M M_1(e_M') - C_M(e_M')|\theta \geq 0]]$ so that $\Delta(S_{RF}) \to \Delta_0(S_M)$ as $S_{RF} \to S_{RF}'$, and establish Claim 3.

Claim 3: There exists $S_M' > 0$ such that $\Delta_0(S_M) > 0$ if $S_M > S_M'$, $\Delta_0(S_M) = 0$ if $S_M = S_M'$, and $\Delta_0(S_M) < 0$ if $S_M < S_M'$.

[Proof] We have that $E[\theta S_M M_1(e_M') - C_M(e_M')|\theta \geq 0]$ is continuous and strictly increasing in $S_M$, it approaches 0 as $S_M$ approaches 0, and it approaches $+\infty$ as $S_M$ approaches $+\infty$. Then $S_{RF}'e_R' - C_R(e_R') > 0$ implies the result. *Q.E.D.*

Claims 2 and 3 together imply iii) except for the property that $S_{RF}" < \psi S_{RN}$ if $S_M < S_M'$. To prove this, notice that, if $S_{RF} = \psi S_{RN}$, then $-(S_{RF}e_R' - C_R(e_R')) + \theta' S_M M_1(e_M') - C_M(e_M') = 0$, which implies $\Delta(S_{RF}) > 0$. Then, Claim 2 implies $S_{RF}" < \psi S_{RN}$ must hold if $S_M < S_M'$ because $\Delta(S_{RF}") = 0$ by the definition of $S_{RF}"$. This completes the proof of Proposition 1. *Q.E.D.*

**Proof of Proposition 2**

Recall that we focus on the case of $S_{RF} > S_{RF}'$. From (A6), we have that $\theta'$ is determined by (A7).

(A7) $\Delta(S_{RF}, S_{RN}) \equiv -(S_{RF}e_R' - C_R(e_R')) + \theta' S_M M_1(e_M') - C_M(e_M')$

$= -(S_{RN}R_{N2}(y") - t(y")) + (S_{RF}R_{F2}(y') - t(y'))$

Claim 1: $E[\Delta(S_{RF}, S_{RN}) \mid \theta \geq \theta']$ is continuous and strictly increasing in $S_{RF}$.

[Proof] We have that (i) $\Delta(S_{RF}, S_{RN})$ is continuous and strictly increasing in $S_{RF}$ because $S_{RF}R_{F2}(y') - t(y')$ is strictly increasing in $S_{RF}$, and (ii) $\theta'$ is continuous and strictly increasing in $S_{RF}$ because $S_{RF}R_{F2}(y') - t(y') + S_{RF}e_R' - C_R(e_R')$ is strictly increasing in $S_{RF}$. (i) and (ii) together imply the result. *Q.E.D.*

Claim 2: $E[\Delta(S_{RF}, S_{RN}) \mid \theta \geq \theta']$ is strictly decreasing in $S_{RN}$.

[Proof] We have that $\theta'$ is continuous and strictly decreasing in $S_{RN}$ because $-(S_{RN}R_{N2}(y") - t(y"))$ is continuous and strictly decreasing in $S_{RN}$. This implies the result. *Q.E.D.*

Notice that $E[\Delta(S_{RF}, S_{RN}) \mid \theta \geq \theta'] = -[S_{RF}e_R' - C_R(e_R') - E[\theta S_M M_1(e_M') - C_M(e_M')|\theta \geq \theta']]$ $= E[w_0^{FP}|\theta < \theta'] - E[w_0^{NP}|\theta \geq \theta']$, and that $E[\theta S_M M_1(e_M') - C_M(e_M')|\theta \geq \theta']$ is continuous and strictly increasing in $S_M$. Claims 1 and 2 then together imply the result. *Q.E.D.*

**Proof of Proposition 3**

We establish Claims 1 and 2.

Claim 1: For all $\theta \geq \theta'$, $y^{NP}$ is a continuous function of $\theta$, denoted $y^{NP}(\theta)$, with the following property: There exists a value $\theta"$ ($> \theta'$) such that $y^{NP}(\theta)$ is strictly increasing in $\theta$ for all $\theta < \theta"$ and a fixed number for all $\theta \geq \theta"$. Also, for all $\theta < \theta'$, $y^{FP}$ is a fixed number.

[Proof] Suppose $\theta < \theta'$. Then an FP employs the worker and chooses $y^{FP} = y'$ in equilibrium. Now suppose $\theta \geq \theta'$ so that the NP employs the worker in equilibrium. We have that $e_R = 0$ and

$e_M = e_M$' hold in equilibrium, and the equilibrium fixed wage, $w_0^{NP}$, is given by (A4). In equilibrium, the NP chooses $y = y^{NP}$ to maximize $M(e_M', y, \pi_N(0, y, w_0^{NP}))$ subject to $\pi_N(0, y, w_0^{NP}) \geq 0$, where

(A6) $M(e_M', y, \pi_N(0, y, w_0^{NP})) = S_M(M_1(e_M') + M_2(y)) + K[S_{RN}(R_{N1}(0) + R_{N2}(y)) - t(y) - w_0^{NP}]$.

Define $\tilde{y}$ ($\geq$ y") by $\pi_N(0, \tilde{y}, w_0^{NP}) = 0$ so that $\tilde{y} =$ y" when $\theta = \theta'$. We have that $S_{RN}R_{N2}(y) - t(y)$ is continuous and strictly decreasing in y for all y > y", and it approaches $-\infty$ as y approaches $+\infty$. This implies that $\tilde{y}$ is continuous and strictly increasing in $\theta$ for all $\theta > \theta'$ and $\tilde{y} \to +\infty$ as $\theta \to +\infty$. Recall that $y = \hat{y}$ is the unique solution to Max $S_M M_2(y) + K(S_{RN}R_{N2}(y) - t(y))$, where $\hat{y} >$ y" holds. We then have that $y^{NP} = \min\{\tilde{y}, \hat{y}\}$. Given the property of $\tilde{y}$, there exists a value $\theta$" ($> \theta'$) such that $\tilde{y} < \hat{y}$ if $\theta < \theta$", $\tilde{y} = \hat{y}$ if $\theta = \theta$", and $\tilde{y} > \hat{y}$ if $\theta > \theta$". *Q.E.D.*

Claim 2: Comparing $y^{NP}(\theta)$ and $y^{FP}$ yields:

(a) Suppose $S_{RF} \leq \psi S_{RN}$. Then $y^{NP}(\theta) \geq y^{FP}$ holds for all $\theta \geq \theta'$, where $y^{NP}(\theta) > y^{FP}$ holds unless $S_{RF} = \psi S_{RN}$ and $\theta = \theta'$.

(b) There exists a value $S_{RF}^{+} > \psi S_{RN}$ such that $\hat{y} = y^{FP}$ if $S_{RF} = S_{RF}^{+}$ and $\hat{y} > y^{FP}$ if $S_{RF} > S_{RF}^{+}$.

[Proof] By the definitions of y' and y", we have that y" > y' if $S_{RF} < \psi S_{RN}$ and y" = y' if $S_{RF} = \psi S_{RN}$. Note that $y^{NP} = \tilde{y} =$ y" when $\theta = \theta'$, and that $y^{FP} =$ y'. Claim 1 then implies Claim 2 – (a). We have that $y^{FP} =$ y' is continuous strictly increasing in $S_{RF}$ and y' $\to +\infty$ as $S_{RF} \to +\infty$, whereas $\hat{y}$ is independent of $S_{RF}$. This implies Claim 2 – (b). *Q.E.D.*

Claims 1 and 2 together imply that $E[y^{NP}(\theta) | \theta \geq \theta'] > y^{FP}$ for all $S_{RF} \leq \psi S_{RN}$, and $E[y^{NP}(\theta) | \theta \geq \theta'] < y^{FP}$ for all $S_{RF} \geq S_{RF}^{+}$. $y^{FP}$ is a continuous function of $S_{RF}$. Also, since $\theta'$ is a continuous function of $S_{RF}$, $E[y^{NP}(\theta) | \theta \geq \theta']$ is also a continuous function of $S_{RF}$. Intermediate Value Theorem then implies Proposition 3. *Q.E.D.*

**Proof of Corollary 1**

Suppose $S_M < S_M'$. Suppose $S_{RF} = \psi S_{RN}$ so that y' = y" holds. Then from (A6) we have that $-(S_{RF}e_R' - C_R(e_R')) + \theta' S_M M_1(e_M') - C_M(e_M') = 0$, and this implies $-[S_{RF}e_R' - C_R(e_R') - E[\theta S_M M_1(e_M') - C_M(e_M') | \theta \geq \theta']] > 0$. Claim 2 in the proof of proposition 1 then implies $S_{RF}$" $< \psi S_{RN}$ where $S_{RF}$" is as defined in Proposition 1. We then have $S_{RF}^{*} > S_{RF}$" since $S_{RF}^{*} > \psi S_{RN}$. Propositions 1 and 3 then imply (A).

Next suppose $S_M \geq S_M$'. By Proposition 1 iii), $E[w_0^{FP} \mid \theta < \theta'] - E[w_0^{NP} \mid \theta > \theta'] > 0$ for all $S_{RF} > S_{RF}$' in this case. Propositions 1 and 3 then imply (B).

*Q.E.D.*

# Appendix B

**Table B1: Definition of Variables**

| Variable | Definition |
|---|---|
| **At each skill level** | |
| Starting wages | Average starting wage in the typical position at the skill level. |
| Tips/commissions | A 1, 0 variable with 1 indicating that workers in the typical position at the skill level can get things like commissions or tips to augment their wage. |
| **Establishment wide** | |
| Monetary compensation | A series of 1, 0 variables with 1 indicating that the establishment offers a particular category of monetary compensation. Categories include bonuses and supplemental pay. |
| Training | A 1, 0 variable with 1 indicating that the establishment provides formal training. |
| Paid time | A series of 1, 0 variables with 1 indicating that the establishment offers a particular category of paid time off work. Categories include vacation, holidays, and sick leave. |
| Insurance | A series of 1, 0 variables with 1 indicating that the establishment offers a particular category of benefits related to insurance. Categories include health, dental, life, vision, disability, and mental health insurance. |
| Pension | A 1, 0 variable with 1 indicating that the establishment offers a defined benefit or defined contribution retirement plan. |
| For profit | A 1, 0 variable with 1 indicating a for-profit establishment. |
| Small | A 1, 0 variable with 1 indicating an establishment with 50 or fewer employees. |
| Rural area | A 1, 0 variable with 1 indicating an establishment located in a rural area. |
| **Industry** | |
| Agriculture | A 1, 0 variable with 1 indicating the establishment has a North American Industry Classification System (NAICS) code of 100000 to 150000. |
| Construction | A 1, 0 variable with 1 indicating the establishment has a NAICS code of 150000 to 180000. |
| Manufacturing | A 1, 0 variable with 1 indicating the establishment has a NAICS code of 200000 to 399999. |
| Trade, communication, public utilities | A 1, 0 variable with 1 indicating the establishment has a NAICS code of 400000 to 499999. |
| Wholesale trade | A 1, 0 variable with 1 indicating the establishment has a NAICS code of 500000 to 519999. |
| Retail trade | A 1, 0 variable with 1 indicating the establishment has a NAICS code of 520000 to 599999. |
| Finance, insurance, real estate | A 1, 0 variable with 1 indicating the establishment has a NAICS code of 600000 to 679999. |
| Education and medical | A 1, 0 variable with 1 indicating the establishment has a NAICS code of 800000 to 809999 or 820000 to 829999. |
| Business services | A 1, 0 variable with 1 indicating the establishment has a NAICS code of 730000 to 739999 or 870000 to 879999. Category includes engineering, accounting, research, and management services. |
| Services | A 1, 0 variable with 1 indicating the establishment has a NAICS code of 700000 to 709999 or 720000 to 729999 or 750000 to 799999 or 810000 to 819999 or 830000 to 869999 or 880000 to 899999. |
| **Jobs in Establishment** | |

| Variable | Definition |
|---|---|
| High-skilled jobs | Percentage of jobs in the establishment that require at least a college degree and/or extensive (about 5 years) work experience at the time of hire. |
| Mid-skilled jobs | Percentage of jobs in the establishment that require some college and/or some (about 1 to 3 years) work experience at the time of hire. |
| Low-skilled jobs | Percentage of jobs in the establishment that require no more than a high school education and one year of work experience at the time of hire. |
| Collective bargaining | A 1, 0 variable with 1 indicating that wages in the typical position at the skill level are covered by collective bargaining. |
| **Occupation** | |
| Management | A 1, 0 variable with 1 indicating that the 2-digit Standard Occupational Code (SOC) is 11. |
| Business and financial operations | A 1, 0 variable with 1 indicating that the 2-digit SOC is 13. |
| Computer and mathematical | A 1, 0 variable with 1 indicating that the 2-digit SOC is 15. |
| Architecture and engineering | A 1, 0 variable with 1 indicating that the 2-digit SOC is 17. |
| Life, physical, and social science | A 1, 0 variable with 1 indicating that the 2-digit SOC is 19. |
| Community and social services | A 1, 0 variable with 1 indicating that the 2-digit SOC is 21. |
| Legal | A 1, 0 variable with 1 indicating that the 2-digit SOC is 23. |
| Education, training, and library | A 1, 0 variable with 1 indicating that the 2-digit SOC is 25. |
| Arts, design, entertainment, sports, and media | A 1, 0 variable with 1 indicating that the 2-digit SOC is 27. |
| Healthcare practitioners and technical | A 1, 0 variable with 1 indicating that the 2-digit SOC is 29. |
| Healthcare support | A 1, 0 variable with 1 indicating that the 2-digit SOC is 31. |
| Protective service | A 1, 0 variable with 1 indicating that the 2-digit SOC is 33. |
| Food preparation and serving related | A 1, 0 variable with 1 indicating that the 2-digit SOC is 35. |
| Building and grounds cleaning and maintenance | A 1, 0 variable with 1 indicating that the 2-digit SOC is 37. |
| Personal care and service | A 1, 0 variable with 1 indicating that the 2-digit SOC is 39. |
| Sales and related | A 1, 0 variable with 1 indicating that the 2-digit SOC is 41. |
| Office and administrative support | A 1, 0 variable with 1 indicating that the 2-digit SOC is 43. |
| Farming, fishing, and forestry | A 1, 0 variable with 1 indicating that the 2-digit SOC is 45. |
| Construction and extraction | A 1, 0 variable with 1 indicating that the 2-digit SOC is 47. |
| Installation, maintenance, and repair | A 1, 0 variable with 1 indicating that the 2-digit SOC is 49. |
| Production | A 1, 0 variable with 1 indicating that the 2-digit SOC is 51. |
| Transportation and material moving | A 1, 0 variable with 1 indicating that the 2-digit SOC is 53. |
| High-skilled positions | |
| Management | A 1, 0 variable with 1 indicating that the 2-digit SOC is 11. |
| Quantitative | A 1, 0 variable with 1 indicating that the 2-digit SOC is from 13 to 19. |
| Professional | A 1, 0 variable with 1 indicating that the 2-digit SOC is from 20 to 29. |
| Office and sales | A 1, 0 variable with 1 indicating that the 2-digit SOC is from 41 to 43. |
| Other | A 1, 0 variable with 1 indicating that the 2-digit SOC is from 31 to 55, but not 41 to 43. |
| Mid-skilled positions | |
| Management | A 1, 0 variable with 1 indicating that the 2-digit SOC is from 11 to 29. |
| Support | A 1, 0 variable with 1 indicating that the 2-digit SOC is from 31 to 39. |
| Office and sales | A 1, 0 variable with 1 indicating that the 2-digit SOC is from 41 to 43. |
| Other | A 1, 0 variable with 1 indicating that the 2-digit SOC is from 45 to 55. |
| Low-skilled positions | |
| Management | A 1, 0 variable with 1 indicating that the 2-digit SOC is from 11 to 39. |

| Variable | Definition |
|---|---|
| Office and sales | A 1, 0 variable with 1 indicating that the 2-digit SOC is from 41 to 43. |
| Other | A 1, 0 variable with 1 indicating that the 2-digit SOC is from 45 to 55. |

## Appendix Table B2: For-Profit Advantage in Compensation in Positions at Different Skill Levels: Log Wages

| | Baseline | | Removing a Single Occupation from Estimations | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | Univariate | Multivariate | Management | Quantitative | Professional | Support | Office and Sales | Other |
| Wages | | | | | | | | |
| High-skill | 0.145*** | 0.114** | 0.391*** | 0.115** | -0.032 | included in other | 0.117** | 0.100** |
| Mid-skill | 0.117*** | 0.109*** | 0.040 | | | 0.116*** | 0.174*** | 0.097** |
| Low-skill | -0.030 | -0.065 | -0.060 | | | | -0.072 | -0.062 |

Note: Numbers are the coefficients on the for-profit variable from ordinary least squares estimations with starting wages or tips/commissions in the typical position at each skill level as the dependent variables. The univariate baseline estimation contains only the for profit variable as an independent variable. The remaining estimations (columns 2 to 8) also contain small, rural area, collective bargaining (for position), manufacturing and service industries, and occupational binaries (at each skill level) with office and sales as the omitted variable. The estimations *Removing a Single Occupation from Estimations* exclude the records for the occupation designated in the column heading. The *Other* column excludes occupations not listed in columns 3 to 8. The management variable is the omitted variable in the estimation removing office and sales positions. Table 1 provides characteristics of the variables and Table 4 provides definitions.

**** $p \leq 0.001$

*** $p \leq 0.01$

** $p \leq 0.05$

* $p \leq 0.10$

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**Table 1: Occupational Differences between For-Profit and Nonprofit Organizations**

| | Typical Position at Each Skill Level | | | | | |
|---|---|---|---|---|---|---|
| | High | | Mid | | Low | |
| | For Profit | Non Profit | For Profit | Non Profit | For Profit | Non Profit |
| Management | 48.8 | 55.9 | 9.1 | 9.8 | 0.4 | 1.7 |
| Quantitative | | | | | | |
| Business and financial operations | 6.6 | 2.4 | 3.8 | 2.2 | 1.0 | 1.4 |
| Computer and mathematical | 1.5 | 0.0 | 1.9 | 0.2 | 0.4 | 0.0 |
| Architecture and engineering | 4.3 | 0.4 | 3.6 | 0.4 | 0.8 | 0.0 |
| Life, physical, and social science | 1.2 | 0.9 | 0.8 | 0.0 | 0.0 | 0.0 |
| Professional | | | | | | |
| Community and social services | 0.3 | 5.8 | 0.2 | 5.2 | 0.0 | 6.6 |
| Legal | 3.7 | 3.7 | 2.0 | 2.8 | 0.4 | 1.8 |
| Education, training, and library | 0.2 | 14.1 | 0.9 | 18.9 | 0.4 | 10.5 |
| Arts, design, entertainment, sports, and media | 2.7 | 2.9 | 2.6 | 3.7 | 1.1 | 0.0 |
| Healthcare practitioners and technical | 5.8 | 4.9 | 2.7 | 1.9 | 0.3 | 0.7 |
| **Subtotal** | **75.1** | **91.0** | **27.6** | **45.1** | **4.8** | **22.7** |
| | | | | | | |
| Support | | | | | | |
| Healthcare support | 0.3 | 0.0 | 2.4 | 4.0 | 1.8 | 0.2 |
| Protective service | 0.6 | 1.1 | 0.3 | 0.0 | 0.5 | 10.5 |
| Food preparation and serving related | 1.5 | 0.0 | 5.8 | 0.2 | 11.6 | 4.0 |
| Building and grounds cleaning and maintenance | 0.4 | 0.1 | 1.0 | 0.3 | 8.9 | 2.4 |
| Personal care and service | 1.9 | 0.1 | 4.0 | 2.3 | 4.0 | 4.9 |
| **Subtotal** | **4.7** | **1.3** | **13.5** | **6.8** | **26.8** | **22.0** |
| | | | | | | |
| Office and Sales | | | | | | |
| Sales and related | 5.8 | 0.6 | 11.7 | 8.4 | 10.0 | 9.9 |
| Office and administrative support | 6.3 | 5.0 | 25.3 | 32.1 | 28.1 | 35.3 |
| **Subtotal** | **12.1** | **5.6** | **37.0** | **40.5** | **38.1** | **45.2** |
| | | | | | | |
| Production, construction, and Transportation | | | | | | |
| Farming, fishing, and forestry | 0.4 | 0.0 | 0.7 | 0.0 | 1.1 | 0.2 |
| Construction and extraction | 3.9 | 0.0 | 6.9 | 0.0 | 8.7 | 1.9 |
| Installation, maintenance, and repair | 2.0 | 1.0 | 7.6 | 4.0 | 9.3 | 3.3 |
| Production | 1.9 | 0.0 | 4.4 | 0.4 | 6.3 | 3.0 |
| Transportation and material moving | 0.1 | 1.3 | 2.6 | 3.3 | 4.9 | 1.8 |
| **Subtotal** | **8.3** | **2.3** | **22.2** | **7.7** | **30.3** | **10.2** |
| | | | | | | |
| Sample size | 1035 | 206 | 1,008 | 195 | 928 | 168 |

Note: Cell entries are percentages.

**Table 2: Characteristics of For-Profit and Nonprofit Organizations**

| | Total | For Profit | Non Profit |
|---|---|---|---|
| **At each skill level** | | | |
| Starting wages | | | |
| High-skilled position | 31.1 | 32.3 | 25.2 |
| Mid-skilled position | 19.2 | 19.7 | 16.4 |
| Low-skilled position | 11.6 | 11.6 | 11.5 |
| Tips/commissions | | | |
| High-skilled position | 20.3 | 22.9 | 3.3 |
| Mid-skilled position | 23.9 | 27.2 | 1.7 |
| Low-skilled position | 33.6 | 37.8 | 1.6 |
| **Establishment wide** | | | |
| Training | 51.5 | 49.5 | 66.0 |
| Monetary compensation | | | |
| Bonuses | 38.5 | 41.3 | 18.4 |
| Shift premium | 18.2 | 19.0 | 12.2 |
| Paid time | | | |
| Vacation | 82.1 | 80.3 | 95.6 |
| Holidays | 79.7 | 77.7 | 94.6 |
| Sick leave | 66.8 | 63.3 | 91.8 |
| Insurance | | | |
| Health | 77.6 | 76.0 | 90.4 |
| Dental | 51.3 | 48.0 | 76.8 |
| Life | 33.3 | 29.9 | 58.0 |
| Vision | 28.8 | 26.5 | 47.0 |
| Disability | 28.8 | 25.4 | 53.6 |
| Mental health | 13.8 | 12.9 | 20.2 |
| Pensions | 65.0 | 60.4 | 100.0 |
| For profit | 88.2 | 0.0 | 100.0 |
| Small | 86.0 | 87.3 | 76.3 |
| Rural area | 13.2 | 12.8 | 16.4 |
| Industry | | | |
| Services | 29.5 | 25.2 | 60.5 |
| Retail trade | 18.0 | 19.9 | 3.7 |
| Business services | 10.0 | 11.1 | 2.0 |
| Finance, insurance, real estate | 9.0 | 9.2 | 7.6 |
| Construction | 8.1 | 9.1 | 1.1 |
| Education and medical | 7.1 | 5.7 | 17.7 |
| Manufacturing | 6.7 | 7.3 | 2.2 |
| Wholesale trade | 6.2 | 6.8 | 2.3 |
| Trade, communication, public utilities | 5.1 | 5.4 | 2.8 |
| Agriculture | 0.3 | 0.3 | 0.0 |
| Jobs in establishment | | | |
| High-skilled jobs | 37.2 | 36.3 | 43.4 |
| Mid-skilled jobs | 33.0 | 32.8 | 35.0 |
| Low-skilled jobs | 29.8 | 30.8 | 21.6 |
| Collective bargaining | | | |
| High-skilled position | 3.2 | 3.3 | 3.2 |
| Mid-skilled position | 3.8 | 3.7 | 4.8 |
| Low-skilled position | 4.9 | 4.8 | 5.3 |
| Sample size | 1427 | 1206 | 220 |

Note: Numbers are percentages, except for starting wages. Item-specific nonresponse lowers sample sizes in some cells.

**Table 3: For-Profit Advantage in Compensation in Positions at Different Skill Levels**

| | Baseline | | Removing a Single Occupation from Estimations | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | Univariate | Multivariate | Management | Quantitative | Professional | Support | Office and Sales | Other |
| Wages | | | | | | | | |
| High-skilled | 7.155*** | 6.676** | 17.341*** | 6.799** | 0.707 | included in other | 6.915** | 6.157** |
| Mid-skilled | 3.298*** | 3.274*** | 1.765* | | | 3.418*** | 4.307*** | 3.150** |
| Low-skilled | 0.036 | -0.438 | -0.417 | | | | -0.529 | -0.414 |
| Tips/commissions | | | | | | | | |
| High-skilled | 0.196**** | 0.128**** | 0.102* | 0.124**** | 0.182**** | included in other | 0.126**** | 0.104*** |
| Mid-skilled | 0.255**** | 0.241**** | 0.248**** | | | 0.230**** | 0.268**** | 0.269**** |
| Low-skilled | 0.362**** | 0.425**** | 0.289**** | | | | 0.544**** | 0.435**** |

Note: Numbers are the coefficients on the for-profit variable from ordinary least squares estimations with starting wages or tips/commissions in the typical position at each skill level as the dependent variables. The univariate baseline estimation contains only the for profit variable as an independent variable. The remaining estimations (columns 2 to 8) also contain small, rural area, collective bargaining (for position), manufacturing and service industries, and occupational binaries (at each skill level) with office and sales as the omitted variable. The estimations *Removing a Single Occupation from Estimations* exclude the records for the occupation designated in the column heading. *Included in other* means that jobs in the support category were included in the *Other* group for high-skilled jobs because few jobs in this group were in high skilled (Table 2). The *Other* column excludes occupations not listed in columns 3 to 8. The management variable is the omitted variable in the estimation removing office and sales positions. Table 1 provides characteristics of the variables and Table 4 provides definitions.

**** $p \leq 0.001$

*** $p \leq 0.01$

** $p \leq 0.05$

* $p \leq 0.10$

**Table 4: For-Profit Advantage in Establishment-wide Compensation and Training Measures**

| | Univariate | Multivariate |
|---|---|---|
| Training | -0.165**** | -0.127*** |
| Monetary compensation | | |
| Bonuses | 0.247**** | 0.207*** |
| Shift premium | 0.082** | 0.053 |
| Paid time | | |
| Vacations | -0.153**** | -0.143**** |
| Holidays | -0.169**** | -0.155**** |
| Sick leave | -0.285**** | -0.264**** |
| Insurance | | |
| Health | -0.086*** | -0.126**** |
| Dental | -0.238**** | -0.266**** |
| Life | -0.281**** | -0.246**** |
| Vision | -0.188**** | -0.176**** |
| Disability | -0.281**** | -0.258**** |
| Mental health | -0.058* | -0.062** |
| Pensions | -0.349**** | -0.386*** |

Note: Benefits are only included if at least 10 percent of establishments offer them. Numbers are coefficients on the for profit variable from ordinary least squares estimations with formal training, bonuses, or a specific benefit offered in the establishment as the dependent variables. The univariate baseline estimations contain only the for profit variable as an independent variable. The multivariate baseline estimations also contain small, rural area, presence of collective bargaining in the establishment, manufacturing and service industries, and the percentage employed in low-skilled positions and the percentage employed in high-skilled positions. Appendix Table A1 provides a definition of the variables and Table 1 shows their means in each sector.

**** $p \leq 0.001$

*** $p \leq 0.01$

** $p \leq 0.05$

* $p \leq 0.10$