Labor Facing Capital in the Workplace: The Role of Worker Representatives

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Abstract

The paper studies how the personal career of union (or worker) representatives is tied to the conditions in which revenues are shared between labor and capital at the firm-level. We argue that employers can have a strategic interest in either favoring or discriminating against union representatives in order to lower workers' bargaining power. The behavior of union representatives during firm negotiations and the stake of those negotiations influence employers' willingness to use one or the other of those strategies. We formalize this theory with a model and provide evidence to support it using a rich survey for France in 2017 combined with administrative data on earnings and firm performance. Together, the results show that employers' capacity to affect representatives' careers can impair the quality of workers' representation and workers' ability to organize collectively in order to take part in the firm decision-making process.

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Introduction

Since the famous book by Freeman and Medoff (1984), the effects of unions on firms and workers outcomes (e.g. wages, employment, productivity, working conditions, turn over) have been studied extensively. Less attention has been paid, however, to how these effects may be obtained, and in particular to the role played by union representatives in the interactions between labor and management at the workplace even they are likely to be a central actor during collective bargaining. Union representatives can indeed coordinate and motivate other workers to participate in collective action (Boudreau, Macchiavello, Minni, & Tanaka, 2021), transfer them key information on the firm's financial health, amplify or curb their demands, organize strikes (Ashenfelter & Johnson, 1969), etc. They have margins to adopt different bargaining positions, from very lenient to very vindictive.

The objective of this paper is to clarify the interactions between the representatives of capital (employers hereafter) and those of workers within the firm, as well as the consequences that these interactions can have for collective bargaining, the quality of worker representation, and the ability of workers to organize collectively. We do so in a context—widespread across the globe—where worker or union representatives at the firm- or workplace-level are elected or designated workers within the firm. This feature is crucial because it implies that union representatives wear two hats: they are both under the authority of the employer as salaried workers and their bargaining partner during firm negotiations. This "double status" of worker representatives implies that an employer can take advantage of the leverage she has on a worker and her career to affect her bargaining position. In fact, the asymmetry between the employer and the worker in the employment relationship (due to the personal consequences of losing a job, or exercising it in difficult conditions) implies that the employer has considerable margin to exert pressure on worker representatives during negotiations in order to curb their bargaining position.

To analyze such a setting, we develop a theory of "strategic discrimination" of union representatives by employers, which we formalize in a model.[1] We assume that the reason why employers may be willing to influence worker representatives by affecting their career is strategic: they do so in order to lower workers' bargaining power and therefore maximize their profits. The strategic motive is simple: it can be much less costly to target one (or a few) worker representative than to give a larger share of profits or rents to the whole workforce.[2] The model also allows us to study how the career of union representatives depends on the way they exercise their mandate of representation and, in turn, workers' incentives to run for representation

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[1] The concept of "strategic discrimination" has already been used to describe the behavior of participants in the game "the weakest link" (Levitt, 2004). While the context here is very different, our interpretation of discrimination is actually very similar to this earlier conceptualization.

[2] Strategic discrimination targets (through its holder) a representation mandate and the way it is exercised. Hence, contrary to usual discrimination, it is not the person and her immutable traits (gender, ethnicity) or social group that trigger the discrimination. The reasons leading to discrimination are also different than in existing economic theories: while we do not reject that discrimination against union representatives could sometimes also be taste-based (or information-based when productivity is hard to observe), this is not our main interpretation.

mandates.

To lower workers' bargaining power, employers have in fact two possible polar strategies: they can either try to favor union representatives or discriminate against them. The first strategy (favoritism) amounts to "buying social peace" and can only be implemented with a willing union representative in the context of a more or less tacit agreement. The large media coverage given to examples of union leaders abusing of their position or being more or less directly bribed by employers provides anecdotal evidence that this first strategy does exist.[3] The second strategy (discrimination) can be implemented in all cases. It may not immediately discourage the union representative in place. However, it may discourage other workers to join unions or become representatives themselves, which can in turn lower workers' bargaining power in the long run. This second strategy has also been documented, notably by several ethnographic studies and actual facts.[4] The paper main contribution is to formalize why and when such situations can occur, to examine their consequences for collective bargaining, and to provide empirical evidence to confirm theoretical insights.

Our model of collective bargaining at the firm level features both an endogenous decision on the worker side to run for being a union negotiator and the possibility for the employer to bribe or discriminate against the union negotiator. The game is sequential: workers first decide to run to be a union negotiator, second they may be offered a bribe by the employer and are free to accept or refuse it, third a negotiation takes place if the union negotiator is not bribed, and fourth the employer can discriminate the negotiator at a cost. Workers are heterogeneous in their taste for being a representative, which is also a proxy for their radicalism, i.e. the extent of their anti-firm positioning during the negotiations. Their bargaining power as a negotiator depends on how many workers support her, which itself is a function of their centrality in the distribution of workers' types.

In such a game, employers may offer bribes but they always prefer not to discriminate in the last period because it is costly and it has no influence on the outcome: there is no interest to discriminate a union representative that cannot be bribed and that has already bargained. We show that without discrimination, there will typically be many workers willing to run to be a union negotiator and the elected or selected one is likely to be well representative of the workforce and therefore to get a lot of bargaining power.

We then extend the game to allow the four steps described above to be repeated infinitely, a setting more in line with reality: each couple of years, new workers can run for being union representative, be selected for the job, getting more or less support from the workforce depending on their representativeness, being potentially bribed or discriminated, and bargain more or less

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[3]See for example the movie "The Irishman" by Martin Scorsese featuring the life of Jimmy Hoffa, who was the corrupted president of the Teamsters union in the 1970s.

[4]See for example union-busting activities in the U.S. that date back to the 1940s, with some firms hiring professional anti-union consultants in order to avoid certification elections (Logan, 2002). See also Amossé and DENIS (2016) for analyses of anti-union strategies in France, Dundon (2002) for the U.K. and Amossé and Denis (2016) for other countries. The French press also regularly reports legal procedures at the labor courts for anti-union discrimination, such as the one occurring against the multinational firm IKEA. See `https://www.challenges.fr/entreprise/ikea-la-cgt-depose-une-nouvelle-plainte-pour-discrimination_264103`.

actively. In that case, discrimination can be an optimal strategy for employers as it reduces *ex ante* the expected utility of union representatives. It therefore implies that only the most radical (or least representative) workers who get the highest utility from being a representative will be willing to become one. These "extreme" workers get limited support from the rest of the workforce. Discrimination, as a way of selecting the least representative workers in the long run, can therefore decrease workers' bargaining power. This is all the more true that it also increases the incentive for union negotiators to accept bribes. This second equilibrium illustrates how non-cooperative employment relations can be sustained within the firm. The anticipation that they might have to sacrifice their professional career if they become a union representative steers away most workers from taking such mandates, leaving only those that have the strongest anti-employer positions willing to do so. These workers suffer from a lack of legitimacy which in turn lowers the reputation cost incurred by employers when they discriminate against them and therefore further encourages discrimination.

We provide evidence for the theory by validating four key predictions of the model using on a rich survey of French workplaces in 2017 combined with administrative data on workers and firms. *Union delegates* (the union representatives in charge of the official negotiations with the employer) are paid on average 5% less than their colleagues in the same workplace (conditional on educational, age and tenure) and they are also a third less likely to have been promoted to a higher-level occupation over the period 2015-2017. These gaps are not observed among union delegates who just took a representation mandate, showing that they do not reflect selection based on the career trajectory before the mandate. They are also unrelated to the number of delegation hours (i.e. the paid contractual hours a delegate is allowed by law to devote to representation activities). This discards the idea that the time spent working directly for the union rather than the firm is a main determinant of union delegates' lower wages.

The first prediction is that strategic discrimination induces a selection of more vindictive or active workers in representation mandates. We test it using several proxies for union delegates' investment in the defense of worker interests. Union delegates' wages appear systematically lower relative to their colleagues' when they take part to annual negotiations, organize meetings with coworkers, participate to strikes, or spend extra time on their representation activities outside working hours. Union delegates from the most radical unions (e.g. anti-capitalist unions) are also those with the worst career outcomes. The key general pattern is that the variables driving the heterogeneity in union delegates career paths are directly related to their involvement in their mandate and the bargaining context itself, rather than to factors that could directly impact their productivity at work.

The second set of predictions is that discriminated union delegates get less support from their coworkers (because they are less representative) and that bribed delegates get no support at all. As a consequence, these delegates extract a smaller share of firm surplus. To test these predictions, we use the firm-level unionization rate as a proxy for the support granted to the union and firms' labor share or AKM firm fixed-effects (relative to the industry average) as

proxies for workers' share of the surplus. We validate model predictions by showing that the relationship between the wage penalty incurred by union delegates and either the unionization rate or our proxies for workers' share of the surplus is inverted U-shaped.

The third prediction that we confirm is that discrimination is more likely in larger firms because the cost of bribing or discriminating one union delegate gets smaller relative to sharing firm surplus with the whole workforce. To test it, we show that wage penalties for union delegates increase with firm size and that union coverage varies with firm size in a way consistent with a larger probability to observe discrimination in larger workplaces.

The fourth prediction we test stipulates that discrimination discourages some workers to be willing to become a representative and also potentially to support unions. To do so, we exploit original data on the reasons that workers give for not joining a union, and observe that in workplaces where union delegates are paid worse or promoted less, their non-unionized coworkers are more likely to declare that they did not join a union because they fear the negative consequences this could have on their career. This shows that paying union delegates less than their colleagues can be an effective way to discourage other workers from participating to collective action.

The rest of the paper is organized as follows. The next section presents the related literature. Section 2 provides a model of collective bargaining with endogenous decision to become a union delegate for workers and the possibility for employers to bribe or discriminate against the elected or designated delegates. The model shows that both bribing strategies and discrimination can emerge. The latter is however only observed in a repeated-game setting. Section 3 provides the institutional context for France and describes to what extent it is likely to foster the type of strategic interactions we are describing. Section 4 describes the data. Section 5 presents first evidence on the career differentials between various worker representatives and their colleagues. Section 6 focuses more specifically on union delegates and tests the four key model predictions. Section 7 briefly discusses the link between multi-unionism and strategic discrimination and section 8 concludes.

1   Literature

A large literature in corporate finance and governance is dedicated to the study of the means to align CEOs or directors' interests with those of the shareholders (see Tirole (2010), for a review). This literature studies the governance or agency problems implying that the objectives of shareholders may not be appropriately represented within the firm and it tries to offer solutions. Our study of worker representation is in the same spirit: we are interested in the conditions under which the interests of workers will be appropriately defended by their representatives. The strategic incentives of employers described in the introduction imply that in turn workers' interests may not be optimally represented, and studying these behaviors is a first step in building a more developed theory on the conditions to solve governance problems on the employee side (see discussion).

While there is currently little economic research on governance issues among labor unions or workers, our approach can be traced back to early debates in the field of industrial relations between Dunlop (1944) and Ross (1948). Dunlop tended to conceptualize unions as any economic agent maximizing an objective function while Ross recognized the political nature of unions and conceived them as organizations including several members with various interests that could not always be easily reconciled. Economic analysis of unions has been later on very much influenced by Dunlop, with in particular a lot of attention dedicated to studying the objective function of unions and their effects. Our work is in contrast more closely related to Ross' approach, and follows a thin line of research trying to understand the role of union leaders.[5] This research has faced two main limitations. First, the early pieces of work were lacking a good theoretical apparatus to study agency problems within unions, and in particular repeated game theory or the kind of principal-agent approaches that were developed to study CEOs incentives in corporate governance. Second, data on union representatives or leaders was lacking.

Beyond these general limitations, the existing literature was mostly focused on the role of union leaders in shaping the union objective function—which has been the topic of extensive debates in the union literature, see for example Atherton (1973)—and organizing strikes (Ashenfelter & Johnson, 1969; Besancenot & Vranceanu, 1999). To the best of our knowledge, none of the existing work has attempted to model explicitly the fact that employers can have the opportunity to bribe or discriminate against union representatives, and studied these strategies empirically.[6] This is the key contribution of the paper, both from a theoretical and empirical point of view. In our model, union leaders' utility can be directly affected by employers and we show that this feature can be used strategically in some circumstances to curb union demands. In contrast to the existing literature, rank and file union members preferences are not inadequately represented because leaders' objectives differ from theirs (e.g. leaders are more interested in their own survival and increasing total membership than increasing the wage bill, see Ashenfelter and Johnson (1969); Kremer and Olken (2009)). Instead, it is the trade off between individual losses and gains that the employer may inflict to union leaders depending on their bargaining behavior that affects both *ex ante* workers willingness to run for union leadership, and *ex post* their behavior during wage negotiations. To our knowledge, these phenomenons arising from strategic interactions between the management and union leaders have not been studied yet.

On the empirical side, our contribution is to use original data including rich information on both union representatives and their behaviors and the reasons why workers do not join unions. This allows us to highlight for the first time how the career of union representatives is tied to the general conditions of the rent-sharing process in the firm, and the consequences this can have for

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[5]See Ashenfelter and Johnson (1969); Atherton (1973); Berkowitz (1954); Besancenot and Vranceanu (1999); Faith and Reid Jr (1987); Jones (1989); Kremer and Olken (2009); Pemberton (1988).

[6]A possible explanation for this is that in the U.S. institutional context, which has inspired most of the literature, bargaining and union organization are largely externalized, limiting the scope for within-firm strategic interactions, in particular discrimination (bribing local union leaders is still possible). We discuss this point in detail in Section 3.

the bargaining power of workers. This paper is actually extending and confirming with better data former work by some of the authors (Breda (2011); Breda (2014); Bourdieu and Breda (2016)). These former papers introduced the concept of strategic discrimination and suggested, based on a combination of different data sources, that the union delegates were paid between 5 and 10% less than their colleagues in 2004 and 2011.[7] They were however not providing a formal theoretical model and they could not directly identify union delegates in their data, limiting the scope of the analyses they could perform.[8] More recently, Brébion (2021) also draws on the concept of strategic discrimination to study worker representatives (work council members) in German firms. He finds a wage premium for representatives in the Manufacturing sector, where unions are well established, recognized, and where unions can be useful partners to opt out from strongly binding industry-level agreements. On the contrary, he finds a penalty in the services sector, where the legitimacy of worker representation is much less established. These differences across sectors are exacerbated for representatives that belong to a union or are politicized.

2 A stylised model

This section develops a model of collective bargaining at the firm level with two distinctive features: an endogenous decision on the worker side to run for being a union negotiator and the possibility for the employer to bribe or discriminate against the union negotiator in certain circumstances. The objective is to formalize the main intuitions presented in the introduction, notably the fact that employers may use discrimination or bribery strategically to lower the probability of facing collective bargaining and limit the representativeness and bargaining power of union delegates when such bargaining takes place.

2.1 Environment

General setup. We consider a firm with n employees. The players of the game are the employer and each employee i, who is described by a type $\theta_i \in R$ drawn from a distribution with cdf $F(\cdot)$ and pdf $f(\cdot)$. Employee types are i.i.d. θs are the key parameters in the model. They capture how much utility workers get from being a (non-corrupted) Union Delegate (UD). They may get utility for example because they are altruist, like this type of job, or think it is useful for them and for others. Importantly, we assume that workers' willingness to be a UD also depends on their political or general opinion regarding capitalism or rent-sharing: workers that strongly believe that firms' profits should be shared with workers (or even that firms should be owned by workers) get more utility from being a UD and bargaing with the employer. They are likely to adopt tougher bargaining positions but may not be successful in doing so. To keep

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[7]Former work was published in French journals and an expected value-added of the present paper is also to convey this research to a more international audience. For this paper we use a survey for 2017. This survey is done every six years. Breda (2011, 2014) was exploiting the 2004 wave of the survey. Bourdieu and Breda (2016) used the subsequent wave in 2011.

[8]Both between 2004 and 2011 and between 2011 and 2017, we worked in relationship with the statistical institute of the Ministry of Labor (Dares) in charge of the survey to include additional questions on union representatives and unionization, allowing for the improvements provided in the present analysis.

the model simple and avoid introducing two correlated parameters, we simply consider θ_i as capturing both worker i taste for being a UD and her latent activism or willingness to defend strong pro-worker positions.

Importantly, we assume that the distribution of θ has a single mode $\theta_m > 0$ and is symmetric around that mode (e.g. a normal distribution). This means that there are more workers with intermediate pro-worker views (and utility gains from becoming a UD) than there are workers with either extreme pro-worker or pro-employer views (Figure D1). This is true in the general population of workers but not necessarily in each and every firm. Indeed, there is a random sampling of workers' types in each given firm, and firms may differ in, e.g., their share of workers with large or low types.

Actions and Timing. The game includes three sequential steps which are repeated infinitely. In practice, the time span between two games might be thought as being 4 years, which is the standard mandate duration for UDs. We assume that workers' types are redrawn from $f(\cdot)$ and unobserved at the beginning of each sequence of three steps.[9]

In step 1, workers decide if they want to run to become a UD who will be legally entitled to bargain wages and working conditions with the employer for all workers in the firm (see Figure 1). If more than one worker runs, one UD is randomly drawn among candidates[10] and her type is revealed.

Steps 2 and 3 are then played only when there is a UD in the firm. By default, the UD will engage in bargaining with the employer for all workers in the firm as she is mandated to do so. However, in step 2, just after the beginning of negotiations, the employer may try to "buy social peace" and, depending on the UD type, offer her to reduce her bargaining effort in exchange of a personal benefit b that we call "bribe". This benefit can take various forms: a promotion, better working conditions, a wage bonus, or even an illegal cash transfer. While we model it as a one-off transfer for simplicity, the "bribe" might take the form of a tacit arrangement between the employer and the UD building on during the official negotiation: the employer makes clear to the UD that her career conditions will be better if she does not bargain too strongly and the UD may decide to reduce her effort during bargaining in exchange of the promised career advantages.[11] The UD that enters such an arrangement with the employer also experiences a utility loss due to not representing her coworkers as expected. The loss for worker i is simply set to θ_i and could capture the social cost of facing colleagues or simply a pure moral cost.[12]

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[9]This assumption is consistent with the idea that most workers will not want to reveal their type during the game and that workers' types may vary over time. It also makes sense if there is turnover among the workforce. In Appendix A, we relax it in the case $n = 3$ and show that model predictions are similar.

[10]This assumption follows from the fact that types are assumed to be initially unobserved. Alternative appointment mechanisms and multi-unionism (i.e. firms with more than one UD) are discussed in Section **??**.

[11]One way to model formally such a "tacit arrangement" is to assume a large number of repeated interactions between the Employer and the UD after the UD has been appointed. Just like in the repeated prisoners' dilemma, each party has an immediate interest in deviating from the collusion equilibrium by which the employer offers a bribe and the UD does not put effort in the bargaining, but punishment in subsequent periods makes such deviations unprofitable. For simplicity, we model instead collusion between the employer and the UD as a one-off transaction.

[12]Note that the model allows for $\theta_i < 0$, even if this case should be rare in practice. A pro-employer UD with

If the UD has refused the bribe or if the employer has not offered it, the UD exerts effort during the bargaining. In the final step of the game, the employer may decide to "punish" the UD and reduce her utility by a fixed amount d ("discrimination" strategy).[13] We assume that such a strategy can be costly for the employer. Specifically, she incurs a cost $c(s(\theta_{UD})) > 0$ which is increasing with the support $s(\theta_{UD})$ provided to the UD by her coworkers (see definition below). This cost captures the fact that discrimination may entail legal or reputation costs, especially when a UD is largely supported by the workforce.[14]

Bargaining. We denote Π the surplus that is bargained and $\pi = \Pi/n$ the surplus per worker. The surplus can be firm's profits but may potentially also include other matters which are harder to observe and for which a bargaining might also take place (e.g. working conditions, mass layoff).

When a UD has accepted a bribe, we simply assume that she reduces her effort so that her bargaining power is null. In contrast, in case of active bargaining, the UD bargaining power in a given firm j depends on the support $s_j(\theta_{UD})$ she gets from her coworkers in the firm. Specifically, workers get a fraction $s_j(\theta_{UD})$ of the total surplus Π that they will share equally.

"Supporting a UD" can mean joining the union of the UD and/or be willing to go on strike if needed. We assume that workers support "UDs that are like them", that is UDs that have similar views on how rents should be shared and the type of bargaining position that should be taken. We formalize this idea by assuming that a worker i supports a UD if and only if $\theta_i - \theta_{UD} \leq \bar{s}$, for a given positive $\bar{s}$. This implies that in any firm j, the expected support a worker of type θ will get if she runs for UD is

$$s_E(\theta) = \frac{1}{n} \sum_{i=1}^{n} P(\theta_i \in [\theta - \bar{s}, \theta + \bar{s}]) = \int_{\theta - \bar{s}}^{\theta + \bar{s}} f(x) dx$$

Since $f(\cdot)$ is symmetric around its mode θ_m, $s_E(\theta)$ is a positive inverted U-shaped function which reaches its maximum at θ_m and converges to zero when θ goes to $-\infty$ or $+\infty$.

The actual support $s_j(\theta_{UD})$ a UD receives in firm j varies depending on workers' types in the firm. It is revealed only when bargaining takes place, so that workers' decisions to run for UD or to accept bribes and employers' decision to offer a bribe only depend on $s_E(\theta)$.

Payoffs. Payoffs for a given worker i and the employer in the three-steps game are summarized in Figure 1.[15] In absence of effective bargaining, the payoffs of workers who are not UD and of

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$\theta_i < 0$ would actually gain utility if she shirks during the firm negotiations.

[13]Taking d as fixed assumes that there is a limit to the cost employers can impose and they will reach it if they choose to discriminate.

[14]For example, coworkers supporting the UD may simply not accept that the former is discriminated against and strongly reduce their effort at work or go on strike if this occurs. Note that the employer may be able to recoup d (e.g. if d takes the form of a wage cut for the UD): we assume that d is always smaller than $c(s)$ and we subsum it in the latter.

[15]We abstract from any future payoffs because, for each player, they are the same for any action today, so that they do not affect present choices.

the employer are normalized to 0 and $n\pi$, respectively. For workers who become UD and the employer, payoffs then directly follow from the hypotheses described above.

For a worker i who does not become UD, we denote s_{-i} the expected share of the surplus per worker she obtains. This is an equilibrium object that depends on the unfolding of the bargaining game in that case, with possibly other workers appointed UD and that could also be bribed or discriminated. As workers' share of the surplus is zero if there is no UD or if the UD is bribed, s_{-i} can be written as the probability that there is a UD that is not bribed times her expected support. Importantly, as workers' types are initially unobserved, s_{-i} is identical for all workers. It however depends on the type of equilibrium happening in the game. We therefore denote it s_e, with $e \in \{nd, d\}$ depending on the occurrence of discrimination at equilibrium (see below). We have $s_e \in [0, s_E(\theta_m)]$: the expected payoff for a worker who is not UD lies somewhere between zero and what the most supported worker could obtain in case of bargaining.

2.2 Equilibrium solutions

We now show that there exists both an equilibrium without discrimination and another one with discrimination. The former one is always possible while the latter one can only occur under conditions that we elicit. Bribes are possible in both cases, but are more likely under discrimination.

We assume that $\theta + (s_E(\theta) - s_e)\pi \geq 0$ if $\theta > \theta_m$ for $e \in \{nd, d\}$ (Assumption 1), and that $2\theta + s_E(\theta)\pi$ is increasing for all θ (Assumption 2).[16] These assumptions ensure that the values of θ such that workers are willing to run for UD or to be bribed are convex sets. They are not necessary to solve the model but simplify the resolution.

No discrimination equilibrium. In the non-repeated three-steps game, the employer has no interest to discriminate in step 3 (since it is costly) and will not do so at equilibrium. The game can then be solved by backward induction. In step 1, workers know that if they become a UD, they can always refuse a bribe and get their payoff under bargaining with no discrimination. All workers i such that $\theta_i + s_E(\theta_i)\pi \geq s_{nd}\pi$ are therefore willing to run for UD as they will get a higher payoff if they are drawn. Assumption 1 implies that there exists $\bar{\theta}_{nd} < \theta_m$ such that workers with $\theta \geq \bar{\theta}_{nd}$ (and only them) are willing to run for being a UD and bargain.[17]

Workers i such that $\theta_i \leq b - s_{nd}\pi$ may be willing to run for UD in order to get a bribe. They will favor the bribe over effective bargaining in absence of discrimination if and only if $2\theta_i + s_E(\theta_i)\pi \leq b$. Assumption 2 implies that there exists $\underline{\theta}_{nd} \leq b - s_{nd}\pi$ such that all workers with $\theta \leq \underline{\theta}_{nd}$ (and only them) are willing to run for UD in order to get a bribe and will accept it if offered.

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[16]Both of these conditions are satisfied for example if $\frac{ds_E(\theta)}{d\theta} > -1/\pi$. Assumption 1 is verified in θ_m by property.

[17]This is because $g(\theta) = \theta + (s_E(\theta) - s_{nd})\pi \xrightarrow{\theta \to -\infty} -\infty$, $g(\theta_m) > 0$ and g is increasing for $\theta \leq \theta_m$. This ensures that g has a unique zero on $[-\infty, \theta_m]$. The assumption $g(\theta) = \theta + (s_E(\theta) - s_{nd})\pi \geq 0$ if $\theta > \theta_m$ further ensures that all workers with $\theta > \theta_m$ will be willing to run for UD.

Offering a bribe in step 1 is profitable for the employer if and only if $s_E(\theta_i) \geq \frac{b}{n\pi}$. Basically, as long as a UD is expected to get enough support from her coworkers, the employer is willing to offer her a bribe. Provided that $s_E(\theta_m) \geq \frac{b}{n\pi}$ (the employer has interest to bribe the worker with the largest expected support) and since s_E is inverted U-shaped, there exist $\theta_{nd}^b \leq \theta_{nd}'^b$ such that the employer will only offer bribes to UDs with $\theta \in [\theta_{nd}^b, \theta_{nd}'^b]$.

The solution of the game depends on the ordering of $\bar{\theta}_{nd}$, $\underline{\theta}_{nd}$, θ_{nd}^b and $\theta_{nd}'^b$. We illustrate the case with $\theta_{nd}^b < \underline{\theta}_{nd} < \theta_{nd}'^b$ in Figure 2a. In that configuration, workers with $\theta \in [\theta_{nd}^b, \underline{\theta}_{nd}]$ are willing to run for UD and accept the bribe that the employer will offer. If $\underline{\theta}_{nd} < \bar{\theta}_{nd}$, there is a set of workers between the two that does not run for UD. Otherwise, all workers, except those with $\theta < \theta_{nd}^b$ will run for UD, and those with $\theta > \bar{\theta}_{nd}$ will effectively bargain.

From Figure 2a, it is easy to understand what are the other possible configurations when parameter values vary. For example, if b gets larger, all workers might be willing to run for UD, either to get a bribe or to bargain, and the segment $[\underline{\theta}_{nd}, \bar{\theta}_{nd}]$ no longer exists. In contrast, if b is low, bribes become impossible because the employer has no interest to offer a bribe to the few workers that would accept it since their support is limited. Note finally that no matter the assumptions made on parameters and payoff functions, a worker of type θ_m is always willing to run for UD since her payoff under bargaining in that case is greater than the what she could get if another worker bargains.

By property, any Nash equilibrium in the three-step sequential game is also a subgame-perfect Nash equilibrium in the infinitely-lived game in which those steps are repeated. This implies that the game has a first equilibrium with no discrimination and possible bribe of some UDs only (for reasonable parameter values). In this equilibrium, there is typically a large number of workers who are willing to be UD, and the type of a randomly drawn (or elected) UD among all workers running for the position is expected to be close to θ_m on average. Such a UD is rarely willing to be bribed. She is also expected to be well representative of the workforce and therefore to be well supported and obtain a significant share of the profits during the bargaining. Hence, the no-discrimination equilibrium in our stylised model is synonymous in most firm configurations of a well-functioning social dialogue at firm level: representatives are supported by their colleagues and they are therefore more legitimate to bargain with the employer. This likely goes hand-in-hand with more cooperative labor-management relations.

Discrimination equilibrium: three-steps game. What would happen if the employer were able to commit herself to discriminate in step 3? Under such commitment, we can show that under assumptions 1 and 2 there exists a threshold $\bar{\theta}_d$ above which workers are willing to run for UD and bargain, another threshold $\underline{\theta}_d$ below which workers are willing to run for UD if offered a bribe and would accept it. There also exists a bracket $[\theta_d^b, \theta_d'^b]$ within which the employer does offer a bribe.

How do these thresholds compare to their counterparts in absence of discrimination? Simple calculations show that $[\theta_{nd}^b, \theta_{nd}'^b] \subset [\theta_d^b, \theta_d'^b]$. Indeed, the employer is more willing to offer a bribe when this spares her the cost of discrimination.

For workers, if the discrimination is large enough, it can discourage many of them to run for UD and bargain. Specifically, if d is larger than the difference in expected payoffs $(s_{nd} - s_d)\pi$ between the discrimination and the non-discrimination case, fewer workers are willing to run for UD and bargain under discrimination and $\bar{\theta}_d > \bar{\theta}_{nd}$. This result follows from example from assuming $d \geq s_E(\theta_m)\pi$. It is the key result that can make discrimination profitable to the employer (when it is large enough).

The relative position of the thresholds for running for UD and accepting a bribe finally depends on how s_d compares to s_{nd}. In Figure 2b, we consider a reasonable case with $\bar{\theta}_d > \theta_m$. In that case, one can immediately show that $\underline{\theta}_d > \underline{\theta}_{nd}$: more workers are willing to run for UD and to take a bribe if offered one since both the discrimination and the lower payoffs when not running for UD make the bribe relatively more interesting.

In order to illustrate the possible consequences of discrimination, Figure 2b shows the solution of the three-steps game when d is large enough to imply $\bar{\theta}_d > \theta_m$. In such case, the most representative workers are not willing to run for UD and bargain. Accepting bribes also becomes a less marginal phenomenon, with some workers having intermediate pro-worker views eventually drawn to accept them. Additionally, if there is a UD that bargains, she will get limited bargaining power because she will have too extreme positions for the rest of the workforce to support her.[18]

Discrimination equilibrium: repeated game.   Repeating steps 1 to 3 infinitely is a simple way of making discrimination from the employer a credible threat. Formally, consider the following strategies in the three-steps game repeated infinitely:

- **Worker (θ):**
  In period 1, and at each subsequent period providing that in the past periods there were no UD or the employer always discriminated UDs that were not bribed: run for UD iif $\theta > \bar{\theta}_d$ or $\theta < \underline{\theta}_d$ and accept bribe if $\theta < \underline{\theta}_d$. If there was a UD neither bribed nor discriminated in the past, run for UD iif $\theta > \bar{\theta}_{nd}$ or $\theta < \underline{\theta}_{nd}$ and accept bribe if $\theta < \underline{\theta}_{nd}$.

- **Employer:**
  In period 1, and at each subsequent period providing that in the past periods the employer always discriminated UDs that were not bribed: offer a bribe to UDs with $\theta \in [\theta_d^b, \theta_d'^b]$ and discriminate all UDs that have either refused or not been offered a bribe. If there has been a UD neither bribed nor discriminated in the previous period, bribe UDs with $\theta \in [\theta_{nd}^b, \theta_{nd}'^b]$ and do not discriminate any UD.

These strategies are such that both the employer and the workers play as if the employer could commit herself to discriminate in step 3 of each period, but switch to the no-discrimination equilibrium as soon as the employer has been observed not discriminating a UD that is not bribed in the past.

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[18]In that case, the lower likelihood of having a UD and the lower support in case of UD together imply that s_{nd} is indeed lower than s_{nd} as assumed on the Figure.

Theorem 1. *The strategies above constitute a subgame-perfect Nash equilibrium if and only if*

$$c(1) < \frac{\delta}{1 - \delta}(s_{nd} - s_d)n\pi \tag{1}$$

with δ the discount factor and $c(1)$ the cost of discriminating a UD who is supported by all her coworkers.

Proof. The possible subgames can be partitioned in two groups: those in which the employer has not discriminated a UD that was not bribed at some point in the past, and those in which she has always discriminated UDs that were not bribed. In the first group of subgames, both the employer and the workers play the no-discrimination equilibrium described in the previous section and none of them has interest to deviate from the equilibrium strategies.

In the second group of subgames, workers have no interest to deviate from their equilibrium strategy when the employer plays hers. Indeed, workers' strategies are such that only those that are willing to run for UD for a bribe or to bargain under discrimination do so; hence any deviation would lead to a lower expected payoff in the current period since the employer discriminates at equilibrium. It would also have no incidence on payoffs in future periods. It is therefore not profitable.

The employer may, however, have an interest to deviate in step 3 to recoup the cost of discrimination $c(s(\theta_{UD}))$. In that case, her expected profits will move to those in the no-discrimination game in all future periods. Hence the deviation is profitable if and only if $c(s(\theta_{UD})) \geq \frac{\delta}{1-\delta}\big((1 - s_{nd})n\pi - (1 - s_d)n\pi\big)$. It will never happen if equation 1 is satisfied. In that case, the equilibrium strategies above are a Nash equilibrium in every subgame. To the contrary, if equation 1 is not satisfied, the employer will eventually face a UD that will be supported by all her coworkers. This is because workers' types are drawn again at the beginning of each three-steps game and there will eventually be a UD supported by all her coworkers. It will be too costly to discriminate such a UD and the employer will want to deviate from the discrimination equilibrium. □

Theorem 1 shows that the employer may have an interest to discriminate UDs even in a context where it is immediately costly to do so. This is because discrimination can dissuade many workers to become a UD in the future, in particular those that may get a large support from their coworkers; hence it can increase future profits. In the model, discrimination appears as a way to marginalize UDs and it makes them less representative of their colleagues. Theorem 1 is our key result: it illustrates how conflicting employment-labor relations can emerge at firm-level, with non-representative and very vindictive UDs, other workers not feeling well represented, and employers discriminating against UDs.

2.3   Predictions

The model and the outcomes of the game can be used to derive a series of predictions to be tested in our empirical section.

Prediction 1: The most (least) vindictive UDs are more likely to have worse (better) career outcomes than their colleagues. Because discrimination deters employees with moderate types θ fro; running, a direct consequence of the model is that UDs in firms that discriminate are characterized by higher values of θ on average. Conversely, bribed UDs are characterized by lower values. Since in our framework θ captures UDs' willingness to defend pro worker positions, we will test these predictions empirically by investigating the correlation between an array of proxy measures for the vindictiveness of UDs and wage or career gaps between UDs and their colleagues (in the same workplace).

Prediction 2: Discrimination and bribes are associated with lower levels of unionization and lower wage premiums for the whole workforce. By preventing employees with central types θ from running, the employer that discriminates ensures herself of preventing a large fraction of workers to support their UD. Similarly, UDs that are bribed will not be supported by their colleagues. We consider that employee support to their UDs is correlated with their probability to unionize so that discrimination or bribes result in lower unionization rates. Assuming that discrimination and bribes are partly captured by UDs' wages, we will investigate empirically the correlation between the unionization rate inside firms and the wage gaps between UDs and their colleagues.

A direct consequence of a lower rate of support in the model is a lower share of the surplus bargained by UDs for employees. This lower share of the surplus is in our framework the reason motivating the existence of bribes and discrimination on the employer side. We examine if there is evidence for such a relationship by looking at the correlation between the career outcomes of UDs and firms' wage premiums.

Prediction 3: Discrimination is more likely to be observed in larger firms. Under the assumption that profits per worker π are constant, the larger the firm size, the easier it is to satisfy condition (1) under which the equilibrium with discrimination is possible. The intuition behind this result is simple: the larger the number of workers with whom the employer may have to share profits, the larger the incentive to discriminate the UD in order to avoid bargaining. Empirically, we should therefore observe that UDs are more likely to have bad career outcomes relative to their colleagues' in larger firms.

An alternative way to test this prediction is to estimate an aggregate model of the probability to have a UD by firm size. The probability to have a UD in a firm of size n can be expressed as one minus the probability that none of the workers has a type such that she is willing to run for UD.[19] Denoting P_n^d and P_n^{nd}, these probabilities with or without discrimination, we have for $i \in \{d, nd\}$:

$$P_n^i = 1 - (1 - \mathbb{P}(\theta \in [\bar{\theta}_i, +\infty[\cup [\theta_i^b, \theta_i]))^n \tag{2}$$

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[19]Here, we assume that there will be unions in a firm provided that at least one worker is willing to run for UD. In other words, the appointment rule of workers running for UD does not allow to avoid unions. This is in contrast with the system of certification elections prevailing in the U.S. (see section 3).

P_n^i grows exponentially with firm size n, and, for all $n > 0$, we have $P_n^d < P_n^{nd}$. This is because the set of θs such that workers willing to run for UDs is smaller under discrimination.[20]

In addition, we should observe that the probability $g(n)$ to be in a discrimination equilibrium increases with firm size. To check this prediction, we note that the probability of having a union in a firm of size n can be expressed as a mixture of two exponential curves:

$$P(UD|n) = g(n)P_n^d + (1 - g(n))P_n^{nd} \tag{3}$$

The expressions of P_n^d and P_n^{nd} are given by equation 2 and only depend on the individual probabilities that a worker is willing to run for UD under discrimination and under no discrimination. Equation 3 is estimated empirically in Section 6 in order to recover these individual probabilities and the probability $g(n)$ to observe a discrimination equilibrium as a function of firm size.

Prediction 4: Discrimination can directly discourage unionization, eventually reducing union coverage. Equation 2 shows that, for any given firm size, discrimination lowers the probability to have unions. This is because (much) fewer workers are willing to run for UD under discrimination than without discrimination, and there can be no unions at all in some firms if none of the workers has a type θ triggering a candidacy for UD.

Discrimination can therefore be a way to discourage workers to run for UD and eventually to fully avoid unions. We do not have data on candidacies for UD but we do observe if workers are scared for their future career opportunities within the firm when joining a union. As joining a union is a first step to run for UD, we will examine if workers are more likely not to join a union because they fear for their career in workplaces where UDs have worse career outcomes. This can provide evidence that discrimination is indeed effective in deterring collective action and possibly avoiding unions.[21]

2.4 Extensions and Comments

Fully observed types. We have assumed that workers' types are unobserved at the beginning of each three-step game. This assumption is relaxed in Appendix A which shows, for the specific case of a firm with three workers, that discrimination can still occur when types are perfectly observed.[22]

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[20]The probability to have a UD that is not bribed can also be calculated as one minus the probability that all workers have $\theta < \bar{\theta}_i$, that is $1 - \mathbb{P}(\theta < \bar{\theta}_i)^n$. It is larger without discrimination than with discrimination.

[21]The relationship between the discrimination against UDs and workers' fear of joining a union due to discrimination could also be directly rationalized in a more complex model that would allow the employer to discriminate against both UDs and workers supporting them.

[22]Assuming that types are initially unobserved makes it possible to study a general case where workers' decision to run for UD not only depends on their utility if they get selected for the job, but also on their bargaining gains if they free-ride and let other workers represent them. This is because these bargaining gains can be taken in expectation and are similar in all firm-specific configurations. In contrast, if workers' types were observed, the payoff of a worker that does not run for UD would depend on the strategies adopted by all other workers, and model solutions in the general case could not be described in a simple way (the complex resolution of the case $n = 3$ in Appendix A illustrates this point). We would need to assume bounded rationality (e.g. that workers

Alternative appointment rules. The random appointment of one UD among those running for the position is credible under our assumption that types are initially unobserved: in that case, workers cannot vote for the candidate whose type is closest to theirs. However, if the types of the workers who run for UD are observed, the fact that the UD is randomly chosen may appear unrealistic. Nonetheless, alternative appointment rules would not alter significantly the model takeaways. If for example, the candidate whose type is the closest to θ_m is elected as UD, it is straightforward to check that the no-discrimination equilibrium remains. Regarding the discrimination equilibrium, the incentive for employers to discriminate can be stronger because in the no-discrimination equilibrium, they will face for sure the worker in the firm that gets the strongest support (the closest to θ_m), which is not the case when the UD is appointed randomly. Ultimately, the incentive to discriminate depends on the difference between the expected support that elected UDs will get in the no-discrimination and the discrimination equilibria. Depending on the parameters' values and the distribution of θ, this difference can be larger or smaller when UDs are not selected randomly, but it is easy to see that discrimination can still emerge for reasonable parameter values when the closest UDs to the median type θ_m are elected.

More generally, the appointment rule will not affect the main model predictions as long as the most representative workers (those with θ close to θ_m) are not penalized by the rule. Indeed, discrimination can be an equilibrium only if it prevents from running for UD, workers that would (i) get a lot of support from their coworkers, and (ii) have reasonable chances to be appointed.

Non-costly or Taste-based discrimination. Another, much straightforward way, to reach the same type of equilibrium with discrimination is to assume that discrimination has no or little cost and/or that the employer has some taste for discriminating UDs because they consider that unions are overall illegitimate organizations and that she should not be obliged to bargain with them. In that case, the same logic will take place: only the most militant workers will be willing to incur the cost of discrimination. Hence, anti-union sentiment on the employer side can in its own lead to discrimination that fuels union non-representativeness and turn into a self-fulfilling prophecy with weak but vindictive unions and limited cooperation between social partners.

Multi-unionism. The model may also be extended to allow for more than one UD to be appointed. UDs could still be randomly drawn among candidates for a predefined number of UD positions, or other appointment rules may apply. UDs' bargaining power may in that case be defined as the sum of the support obtained by each (non-bribed) UD. The employer will still have interest to bribe UDs with a sufficiently large support. She will also still have interest to avoid that the most representative workers apply for UD. The main takeaways from the model

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assume their payoff is zero if they do not run for UD) or to focus on a firm of infinite size to be able to solve the model (this latter case leading to similar payoffs and solutions than the model we have presented).

are therefore not altered by allowing multi-unionism.

Strongly supported unions. If the cost of discrimination is large enough, for example because a UD is strongly supported, the employer will never have a strategic interest to discriminate. This means that solving free-riding problems inherent to collective action on the worker side, for example by offering a large support to a charismatic UD, may be a way to avoid discrimination. Institutional or cultural features not included in the model that make discrimination costly or coordination among workers easier can be an efficient way to avoid strategic discrimination.

3 Institutional Settings

Since our empirical analysis takes place in France in 2017, we describe here the main features of the French collective bargaining system at that time and discuss to what extent it may encourage strategic interactions between employers and worker representatives. A quick comparison with other countries is also provided.

General organization of employment relations in the French private sector. In the French private sector, industrial relations are organized at three main levels: workplace/firm, industry (called branch) and national. Despite having one of the lowest union membership rate among OECD countries–around 10% in the private sector–, French unions are key players and most workers in France are covered by collective agreements.

At the national level, employer and representative worker organizations are consulted on future labor regulations and can also bargain over any relevant issues. If some large union and employer organizations reach a bilateral agreement called a "common position" or a national inter-industry agreement, the government is incited to include their propositions into the legislative process.

At the industry level, employer organizations and representative unions meet in principle a few times a year to update former agreements. They discuss all aspects of pay (e.g., the pay scales prevailing in the industry), benefits (e.g., sickness absence compensation) and working conditions (e.g, shift work). When they reach an agreement, it is extended to all firms in the industry by the government, providing that it complies with the labor law. However, they regularly fail to reach a new agreement, so that former ones apply. This implies that the provisions included in industry-level agreements can be rather limited, leaving a lot of room for additional bargaining at firm level.[23]

In firms or workplaces with more than 10 employees, three different types of worker repre-

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[23]For example, the minimum wage floor stipulated in several industry-level agreements is not updated regularly so that it is often below the national minimum wage (which is legally binding in that case, see André and Breda (2011)).

sentation mandates can coexist : works councils, worker delegations, and union delegations.[24] There is no official firm-level worker representation in smaller firms.

Firm-level representation. The different types of worker representatives have different prerogatives. In all covered workplaces/firms, the employer is required to inform *worker delegates* and collect their views concerning several specific matters. Conversely, the delegates pass on individual grievances and collective demands concerning such matters as the organization of work (e.g., health and safety), or the implementation of higher-level collective bargaining agreements. In firms or workplaces with 50 employees or more, individual problems are still dealt with by worker delegates, but collective issues are mainly the prerogative of the Works Council (*Comité d'entreprise*), which is chaired by the employer and whose functioning is more formally organized.

By contrast, formal collective bargaining is undertaken by the union delegation. When there are union delegates in a firm, only them are allowed to negotiate or sign legally binding collective bargaining agreements with the employer. Employers must negotiate with them at least once a year regarding wages, working conditions and employment.[25] These negotiations may lead to collective agreements and have to cover all workers in the workplace/firm.

The members of the Works Council and worker delegates are appointed at staff elections that occur every two, three or four years (depending on the prevailing collective agreement). These elections have two rounds and only workers endorsed by a union can be candidates at the first round. A second round is only organized if there are no (or not enough) candidates from unions in the first round to fill all available positions (whose number depends on workplace/firm size) or if the ballot turnout is below 50%. In that case, candidates not endorsed by a union can run for election and members of the Works Councils or workers' delegates may be non-union members.

Importantly, union delegates are not elected but chosen by unions among the candidates at the first round of staff elections who gather at least 10% of the vote cast on their name. This implies that there can be up to 10 unions allowed to bargain in a firm, each union having between one (firms with less than 500 employees) and five union delegates (firms with more than 10,000 employees).

Based on the institutional context, we distinguish three main types of worker representatives. First, the union delegates (UD) are of central interest to us since they are those in charge of collective bargaining. Then, we consider together the members of the Works Council and the workers' delegates but make the distinction between those that are union members (Unionized Worker Representatives–UWR) and those that are not (NUWR). This choice is motivated by the fact that unionized representatives are usually better trained for their mandate and can get

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[24]Two laws in 2016 and 2017 decentralized collective bargaining to some extent by allowing firm-level agreements to be less favorable to workers than higher-level ones on certain matters (such as working time). This was not possible before.

[25]Bargaining on other matters such as gender equality or union rights within the firm is also mandatory, but at a lesser frequency.

support from the union. Another motivation for considering them separately is that they may also channel inside the firm, demands from their union that go beyond the main specific issues that need to be discussed in the firm.

Comparison with other countries. Three features of the French bargaining system are likely to foster the type of strategic interactions highlighted in the model. First, the appointment of union delegates is only subject to mild electoral requirements: there will be unions in a firm provided that at least one worker is willing to take a mandate and workers only have limited control to appoint the UD that best represent them or to get rid off those that are putting too little effort in the representation duties. Second, and most importantly, bargaining is mandatory every year once there are UDs in a firm and it is not externalized to professional union employees; it is done by workers in the firm that carry out their mandate and bargaining duties alongside their professional career. Third, many unions can bargain or represent workers at the firm level, implying that the employer could exploit a "divide to reign" strategy, by which she would jointly favor the more lenient unions and penalize the more vindictive ones in order to make clear what type of bargaining behavior is expected.

These three features are typical of continental European countries, implying that the scope for strategic discrimination is not specific to the French context. In fact, it is hard to think of institutional rules that would fully avoid strategic discrimination. The U.S. context might be the closest to achieving this goal: multi-unionism at firm-level is very rare, union recognition is subject to stronger electoral requirements through certification elections, and bargaining or setting-up a union is largely externalized to professional union staff. On this last point, we can quote Kremer and Olken (2009): "paid organizers are often critical in obtaining the signatures required to have an election and in campaigning for union certification, because, unlike activists within firms, paid organizers are not susceptible to threats from management". Nevertheless, even in the U.S. context, our theoretical insights are likely to apply to workers that support unions or take union-related responsibilities within firms. Indeed, organizing campaigns or bargaining cannot be entirely externalized, penalties incurred by firms for dismissing union supporters are weak (Kremer & Olken, 2009), and there is evidence that union activists within firms are penalized (Weiler, 1984). In addition, the absence of repeated elections implies that unions become entrenched once elected in a firm, which may favor collusion between local unions and firms.[26]

4 Data

4.1 The REPONSE dataset.

The empirical analysis is primarily based on the French Ministry of Labor's Workplace Employment Relations Survey for 2016-2017 (REPONSE17), covering 5,948 non-agricultural business

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[26]On this matter, see Kremer and Olken (2009) for a theory of how unions may survive without optimally representing their members' interests.

establishments with more than 10 employees. REPONSE17 is one of the leading sources of data on industrial relations in France. Its main originality and strength is to collect in about three quarters of establishments, a rich set of information from a manager representative, a worker representative, and a sub-sample of employees.

Employer survey (REPONSE17-Employer). In 4,363 of the participating establishments, a management representative completed a lengthy face-to-face interview relating mainly to work organization and employment relations. The answers constitute the employers' part of the survey, from which we retrieve information on the presence of union representatives, the unionization rate, the outcome of collective bargaining, strikes or other collective actions, etc.

Worker representative survey (REPONSE17-REP). At the end of her interview, if the management representative declares that there are worker representatives in the establishment, she is asked to provide the contact details of one of them. 2,891 worker representatives are identified that way and subsequently interviewed, providing detailed information on their mandate and employment relations in the establishment.

Worker survey (REPONSE17-Workers). A random sample of 5 to 10 workers in each participating workplace receives a 2-page, 50-item questionnaire by mail or by email. The questionnaires are filled out by a core sample of 21,320 workers in the subset of 4,363 establishments that participate in the employer survey, plus an additional sample of 7,643 workers in 1,584 more establishments for which no workplace level information is available. The data includes the usual worker demographics, as well as information on work organization, job satisfaction, union membership and representation mandates. Hourly earnings for 2015 are also available. They are taken from social security records (the *Déclaration Annuelles de Données Sociales*, or DADS) and have been matched with REPONSE17 by the Ministry of Labor. These hourly earnings are constructed as annual earnings divided by the number of hours worked. They include basic wages, performance-related pay and non-performance related bonuses. They are net of employer and worker social security contributions, but gross of income tax.

4.2 Samples of analysis.

Main sample. Our main sample is based on the REPONSE17 worker survey, combined with establishment-level information retrieved from employers' interviews and firm-level information on economic performance obtained from corporate tax records (see details in Appendix C). We exclude part-time workers, apprentices and interns, as those workers are unlikely to hold a representation mandate and may bias our comparisons. The final sample comprises 20,708 workers, including 271 UDs, 645 UWR, 629 NUWR and 1,706 unionized workers with no mandate (Table 1).

Using the sampling weights provided with the survey, we start by computing statistics representative of the 7 million full-time workers having at least one year of tenure in French

business sector firms with more than 10 employees. We find that about 12.4% of them are union members, 6.4% are members of the works council or worker delegates and 1.2% are union delegates (Table 1a). With more than 600,000 individuals, worker representatives appear to be a significant share of the employed population. As shown in Table 1b, UDs are on average 5 years older and 6 years more tenured than workers that are neither unionized nor a worker representative ("base workers" hereafter). More than two thirds of them are men (compared to 54% of base workers). They are slightly more likely to hold at least an educational degree, but much less likely to be highly educated. Finally, they are distributed across broad occupation categories very similarly to base workers. The same patterns are found, but to a lesser extent, for other types of representatives: they are also older, more tenured and more likely to be male than base workers.

Auxiliary sample. We use as an auxiliary sample the 2,891 surveyed worker representatives. This sample is mostly used to investigate the link between the time representatives devote to their mandate and their wages. It has two drawbacks. First, it is not representative of the general population of worker representatives since only those suggested by the employer are interviewed. While the employer is asked to select one representative "randomly", it is likely that she will suggest those with whom relations are not too tensed, that is, those that are less likely to be discriminated against.[27] Due to this limit, we do not use the auxiliary sample to compute statistics representative of the general population, but only to check the relation between some variables, assuming that the studied relations are not (too) affected by the way the sample was selected.

The second drawback is that the survey of worker representatives cannot be directly linked to wage information using worker identifiers. We overcome this issue by matching the responding representatives with workers in the social security records using workplace identifiers and workers' age, occupation and gender. This statistical match allows us to retrieve wage information with certainty for 737 representatives and with uncertainty (two or more possible wage values) for 1,329 representatives. In Appendix C, we provide details on the matching procedure and explain how we account for multiple matches in empirical analyses.

5 Career differentials between worker representatives and their colleagues

As a starting point of our empirical analysis, we begin with a description of the career outcomes of workers representatives compared to their colleagues. We first present estimates of wage and promotion gaps based on simple Mincer equations. Second, we discuss selection issues, namely the fact that lower wages for worker representatives may reflect a selection of low-paid

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[27]We provide latter on evidence consistent with this hypothesis. Table D1 also provides descriptive statistics on these representatives surveyed in REPONSE17-REP and shows that they have higher-status occupations and are more educated than those observed in the main sample. Hence, selection also occurs on observable characteristics.

or low-effort workers into representation mandates.

Wage gaps. To investigate the wage differentials between worker representatives and their colleagues, we run a series of wage regressions of the type:

$$log(w_{i,j}) = Rep_{i,j}\beta_1 + X_i\beta_2 + Z_j\beta_3 + \epsilon_{i,j} \tag{4}$$

where $log(w_{i,j})$ is the log hourly wage of worker i in workplace j, $Rep_{i,j}$ a set of four indicator variables identifying Union Delegates (UD), other Unionized Worker Representatives (UWR), Non-Unionized Worker Representatives (NUWR) and Only-Unionized workers (OU). X_i and Z_j are worker-level and firm-level controls, respectively. We use worker sampling weights to get wage differentials that are representative of the sample population.

Table D3 shows the raw wage differential in log points between union members or worker representatives and other workers conditional on various sets of controls. When no controls are included, unionized representatives (UD and UWR) appear to be paid about 4% more than base workers, though non significantly, while non unionized representatives (NUWR) do not seem to be paid differently (column 1). When controls for workers characteristics (education, age, gender, tenure and broad occupation) along with controls for workplace characteristics (industry, size and age) are included in the regression model, all estimated wage differentials for unionized workers become negative but small and mostly not statistically significant (columns 2 to 4).

To better control for workplace unobserved characteristics, we move on to models that include workplace fixed effects instead of the workplace controls Z_j. These specifications control for example for the fact that collective bargaining may induce a workplace wage premium that implies that UD are on average working in establishments that pay more (Breda, 2015). They provide an average of the wage gaps observed between worker representatives and their colleagues in each working establishment and are therefore better suited to detect possible discrimination or favoritism at the establishment level. When such fixed effects are included, UDs appear to be paid between 3.5 and 5% less than base workers, depending on the set of controls included (columns 5 to 7 of Table D3). In our preferred model (column 6), which controls for education, age, tenure and gender on top of the workplace fixed effects, UDs are paid 5.2% less than base workers, and a smaller wage penalty of 2.8% is also observed for other unionized workers representatives and only-unionized workers. Non-unionized representatives are not penalized significantly. This main specification is reproduced in column 1 of Table 2).

In the remaining of the paper and unless otherwise specified, we will use this model and systematically include workplace fixed effects along with controls for workers' education, age, age squared, gender and tenure. Workplace fixed effects allow us to get comparisons "within workplaces", while the workers' controls allow us to account for differences in the main observable productive characteristics.[28]

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[28]We do not control for occupation systematically because such a control may prevent us from measuring

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Promotion gaps. We exploit two questions of the REPONSE17 survey measuring if workers have been promoted in the past 3 years and if they think they will be promoted in the next 3 ones. Results from specifications that include workplace fixed effects and controls for workers' gender, age, education and tenure show that UDs are much less likely to declare they have been promoted in the past three years (Table 2). The gap is quantitatively large: while 30% of the workers declare such promotions, only about 18% of UDs do so. UDs also feel less likely to obtain a promotion in the near future. Interestingly, other worker representatives do not appear significantly different from base workers on those dimensions. In contrast, just like UDs, union members with no mandate declare having been less promoted, being less likely to be promoted in the future, and being more likely to be laid off than base workers. The magnitude of these differentials are however twice to three times smaller than those between UDs and base workers.

Working conditions and feeling of discrimination. We complete our description of career differences between worker representatives and their colleagues with an analysis of declared working conditions and of representatives' own assessment regarding the effect that their mandate of representation had on their career trajectory.

We first observe that unionized representatives and other union members are more likely than baseline workers to declare having a form of staggered hours: working in the evening, at night or on Sundays. While, in contrast, non-unionized worker representatives are significantly less likely to do so (Table D5). A similar contrast appears regarding more subjective perceptions of working conditions: compared to baseline workers, UDs and other union members perceive their work as less recognized by employers, less reconcilable with their personal life, and more risky for their health (Table D6). Again, the opposite is true for non-unionized worker representatives.

The same type of contrast between non-unionized and unionized representatives is observed when looking at their own assessment regarding the effect of their mandate on their career trajectory, which we measure using the auxiliary sample. Only 2.5% of non-unionized worker representatives declare that their representation mandate was an obstacle for their career, while this is the case for 25.8% of their unionized counterparts, and more than a third of UDs (Figure D2). Interestingly, the share of UDs declaring that their mandate had a positive effect on their career is small but not negligible (10%) and it is comparable to the share of non-unionized representatives declaring a positive effect. Together, these results imply that UDs are much less likely than other representatives to declare that their mandate had no effect on their professional career, consistent with the idea that their charge of being official negotiators increases the scope for strategic interactions with employers.

To wrap up, conditional on education, age, gender, tenure and workplace fixed effects, UDs appear to be paid less than their colleagues; they are also less likely to have been promoted

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wage differences occurring through differences in promotion rates (leading to a change in occupation). We have nevertheless investigated wage gaps within occupation using a larger sample of employees (the "extended main sample", see details in Appendix C) and find that UDs are paid 2% to 3% less than their colleagues even within narrowly defined occupations (Table D4).

in the past and they assess their working conditions as being worse. Relatively similar but less pronounced patterns are observed for other unionized worker representatives and union members. In contrast, non-unionized worker representatives do not have systematically worse career outcomes. These results make clear that the worker representatives that are specifically in charge of the collective bargaining have on average worse career outcomes than both other representatives and their colleagues without mandates.

Selection into representation mandates. We now investigate selection into representation mandates according to past career outcomes, in particular wages. To do so, we use a singular feature of the REPONSE surveys, which is that the wage information it reports is anterior (2015) to the moment when respondents are surveyed (2016-2017). We thus examine how wage differentials between worker representatives and their colleagues vary depending on the time before or since they took their first representation mandate. We find that UDs or other unionized representatives that took a mandate in 2016 or early 2017 are paid in 2015 similarly to their colleagues (Table 3, panel A, columns 1 and 2).[29] In sharp contrast, workers that become a non-unionized worker representative or join a union without taking a mandate are paid on average about 8% and 6% less than their colleagues, respectively (columns 4 and 5). We then observe that UDs and other unionized worker representatives established in their mandate for some years experience significant penalties, which tend to slightly increase with time (even though differences across tenure groups are usually not significant), while this is the opposite for non-unionized representatives and union members.

Similar analyses regarding past promotions (Panel B of Table 3) show that UDs did not experience fewer promotions before taking a mandate, but do so afterwards. In total, results in Table 3 suggest that UDs and other unionized worker representatives are not initially selected according to wages or other characteristics that could be related to their productivity or skills. This is however not the case for non-unionized worker representatives and union members. As a consequence–and because our aim is to focus on workers legally in charge of collective bargaining–we focus on UDs for the remaining of the paper.

Effort at work. While UDs' lower wages or promotion rates are not explained by the fact that they are selected from the bottom of the wage distribution–which would have suggested that they are less productive–, they may reflect a reduction of their effort at work once they have taken a mandate. In fact, UDs working full-time do spend on average 10% fewer hours working directly for the firm due to their statutory delegation hours. These delegation hours are part of contractual working hours and, by law, employers have to compensate them at the same wage rate as hours that representatives dedicate to their regular job. Hence, delegation hours should not impact representatives' earnings. However, from an economic point of view,

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[29]See also column 3 where UDs and UWRs have been grouped to increase statistical power (the sample contains only 22 UDs that are about to take a mandate in 2015 versus 151 UDs with less than 8 years of tenure and 94 with more than 8 years of tenure).

employers may be less willing to reward, promote or pay bonuses to those representatives that spend a lot of time working for the union, and thus less time working directly for the firm.

To investigate this hypothesis, we exploit the large variability in statutory delegation hours across UDs[30] and use the auxiliary sample in which these hours are observed. Before this, we start by providing an estimate of UDs' wage penalty in the auxiliary sample (column 1 of Table D7). Albeit non significant, the estimate is positive, which is not surprising considering that UDs included in this sample have been designated by employer representatives (see Section 4). In column 2 of Table D7, we provide a sanity check to show that the even if it is not representative of all UDs, the auxiliary sample can still be used to make meaningful wage comparisons across groups of UDs. Namely, we verify that UDs that declare that their mandate had a negative effect on their career are paid less than their baseline colleagues, while those declared a positive or no effect are on average paid more. This is indeed the case, we measure respectively a penalty of 8% and a bonus of 5%, which is reassuring regarding both the wage information and the UDs subjective perceptions included in the auxiliary sample. Turning to the role of statutory delegation hours, we show in column (3) that the wage penalty of UDs in the auxiliary sample does not increase significantly with the share of their total working time officially spent working for the union. In fact the coefficient is even positive. This shows that UDs are not paid less because they work less directly for the firm. It also partly discards the idea that a main determinant of representatives' lower wages is their lower involvement in their primary job, even though it would be necessary to observe the effort they produce during the time spent working for the firm to fully confirm this point.

6 Testing the Predictions of the Model

6.1 The most (least) vindictive UDs are more likely to have worse (better) career outcomes than their colleagues.

The REPONSE survey offers several proxies for the degree of investment of UDs in the defense of workers' interests (the parameter θ in our model). We investigate how wage gaps correlate with these. First, we consider measures of the involvement of UDs in their job of representative: how much they commit themselves to collective actions such as meetings, strikes, and bargaining. Second, we consider the ideology of unions, which, in the French context, range from radical Marxists to more accommodating Christian unions, and can be seen as a direct proxy of UDs types.

Investment in defense of workers' interests. We consider four measures of UDs' investment in collective action: participation to bargaining, participation to strikes, participation to collective meetings, and doing overtime work for the union.

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[30]The median UD spends 38 hours per month on delegation work, 25% of them spend less than 22 hours, 25% more than 53, and the top 10% report at least 90 hours.

First, when UDs are present in a workplace, the employer must in principle negotiate with them at least once a year regarding wages and working conditions during the so-called Yearly Mandatory Bargaining (*Négociations Annuelles Obligatoires*). However, there is no external control that these negotiations indeed take place, and it appears that 5.5% of workplaces where UDs are present have actually not held negotiations during the period 2014-2016 (according to employers' responses). This could be the case either because the UD(s) did not request to negotiate, or because she tried, but the employer resisted, and the UD eventually gave up. In both cases, the absence of official bargaining shows that UDs are not doing the job which they have been mandated and it therefore signals a limited involvement in the defense of workers' interests. The first column of Table 4 shows that these UDs that did not bargain over the period 2014-2016 are not paid significantly less than their colleagues while those that did negotiate experience significant wage penalty (-6.2%).

Second, all workers in REPONSE17-Workers are asked if there has been a collective action (strike or walkout) and if there have been meetings organized by worker representatives during the 3 years preceding the survey. If this is the case, they are asked if they participated to these events. The participation rate of UDs to collective actions and meetings are high: 93.6% and 86.5%, respectively.[31] Nevertheless, a few UDs declare they have not participated to these events when they took place, producing a clear signal of a limited engagement in the defense of their colleagues' interests, which is consistent with a behavior in exchange of a bribe. Columns 2 and 3 of Table 4 shows that these UDs that do not participate to workers' meetings or strikes are actually better paid than their colleagues that do not hold a mandate (12.6% more for meetings and 8.2% for strikes). In contrast, the UDs that participated to meetings or collective actions when those events took place experience the largest wage penalties (-9.3% for the UDs that participated to collective actions), confirming that being active in the defense of workers' interest–a sign that a UD is not bought out by the employer–is associated with worse career outcomes.

Yet another indication of UDs investment in the defense of their colleagues' interests is the time they actually dedicate to it relative to the time they are granted by law. In REPONSE17-REP, surveyed representatives are not only asked how many statutory delegation hours they have, but also if they dedicate more time than these official hours to their mandate. This extra time spent is unpaid and cannot be taken on official working time. It therefore signals a high motivation and investment of UDs in their representation activities.[32] Column 4 of Table D7 shows that this investment does not seem to pay in terms of career outcomes: conditional on their other observable characteristics, those UDs that spend extra time for their mandate (about 35.7 % of UDs in the auxiliary sample) are paid about 8.5% less than other UDs.

Even if they sometimes lack statistical precision, the results based on our four proxies for

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[31]UDs who participate to collective actions or meetings are likely to have organized them. We do not observe this information in the main sample, and rely instead on questions that are not tailored to UDs only but target all workers. Nevertheless, these questions are informative about UDs behavior.

[32]For additional evidence on the time spent on representation activities outside work, their potentially time-consuming nature and their effect on personal life, see for example Lescurieux (2021).

UDs' types are all aligned with Prediction 1: the most active UDs have worse careers than their colleagues while the opposite holds for the most lenient ones.

Union ideology.   France counts seven large national and inter-branch labor unions gathering together 96% of the votes at the first round of staff elections during the period 2013-2016: CFDT, CGT, FO, CGC, CFTC, UNSA and SUD. These unions are aligned on different bargaining lines at the national level. CGT is the oldest French union and is still marxist and very radical. So is the recently created SUD. In contrast, CFDT, CFTC, UNSA and CGC are usually described as reformist, meaning that they are more willing to make concessions in the bargaining process to reach an agreement. FO stands somewhat in the middle but has originated from Mar. We provide in Appendix Table D8 more details on these unions, their full name, and their ideology to back-up our claims. France counts seven large national and inter-branch labor unions gathering together 96% of the votes at the first round of staff elections during the period 2013-2016: CFDT, CGT, FO, CGC, CFTC, UNSA and SUD. These unions are aligned on different bargaining lines at the national level. CGT is the oldest French union and is still marxist and very radical. So is the recently created SUD. In contrast, CFDT, CFTC, UNSA and CGC are usually described as reformist, meaning that they are more willing to make concessions in the bargaining process to reach an agreement. FO stands somewhat in the middle but has originated from Mar. We provide in Appendix Table D8 more details on these unions, their full name, and their ideology to back-up our claims. France counts seven large national and inter-branch labor unions gathering together 96% of the votes at the first round of staff elections during the period 2013-2016: CFDT, CGT, FO, CGC, CFTC, UNSA and SUD. These unions are aligned on different bargaining lines at the national level. CGT is the oldest French union and is still marxist and very radical. So is the recently created SUD. In contrast, CFDT, CFTC, UNSA and CGC are usually described as reformist, meaning that they are more willing to make concessions in the bargaining process to reach an agreement. FO stands somewhat in the middle but has originated from Mar. We provide in Appendix Table D8 more details on these unions, their full name, and their ideology to back-up our claims. France counts seven large national and inter-branch labor unions gathering together 96% of the votes at the first round of staff elections during the period 2013-2016: CFDT, CGT, FO, CGC, CFTC, UNSA and SUD. These unions are aligned on different bargaining lines at the national level. CGT is the oldest French union and is still marxist and very radical. So is the recently created SUD. In contrast, CFDT, CFTC, UNSA and CGC are usually described as reformist, meaning that they are more willing to make concessions in the bargaining process to reach an agreement. FO stands somewhat in the middle but has originated from Mar. We provide in Appendix Table D8 more details on these unions, their full name, and their ideology to back-up our claims. France counts seven large national and inter-branch labor unions gathering together 96% of the votes at the first round of staff elections during the period 2013-2016: CFDT, CGT, FO, CGC, CFTC, UNSA and SUD. These unions are aligned on different bargaining lines at the national level. CGT is the oldest French union and is still marxist and very radical. So is the recently created SUD.

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We identify UDs in REPONSE17-Workers but not the union they belong to. To estimate wage penalties for UDs from different types of unions, we therefore have to split the sample of workplaces depending on which unions are recognized for bargaining (those are declared by employers in REPONSE17-Employer). Column 1 of Table 5 shows that UDs in workplaces with only unions we classify as "tough" (CGT, FO or SUD) appear to be significantly more penalized (-12% wage penalty) than UDs in workplaces with only "soft" unions (CFDT, CFTC, CGC, or UNSA) where no significant penalty is measured. In cases where there are both soft and tough unions in the workplace, the UDs observed in REPONSE17-Workers could be from any of these unions, and the estimated wage penalties are intermediate (around -6%). In column 2, we distinguish UDs in workplaces where exactly one union is recognized, so that there is no ambiguity regarding which union UDs in these workplaces are affiliated to. UDs in workplaces where only CGT or only FO are recognized are the most penalized.

The auxiliary sample has the advantage to contain direct information on UDs union affiliation. We therefore reproduce as a robustness check our analysis of wage penalties by type of union on this larger (but not representative) sample of UDs with direct information on the union they belong to. Results confirm that UDs from the most confrontational unions experience the largest wage penalties.

These large penalties might be seen as a sign of a retaliation from the employer against the most vindictive UDs. By allowing for endogenous selection into union mandates, the model suggests an alternative and more subtle interpretation: firms that discriminate strategically dissuade less vindictive workers to run for becoming a UD and are left with the toughest unions only.

6.2 Discrimination and bribes are associated with lower levels of unionization and lower wage premiums for the whole workforce.

Support to the UD. Table 6, column 1, provides the wage gap between UDs and their colleagues in workplaces with different unionization rates. Consistent with model predictions, wage penalties for UDs are highest (around 10%) in workplace with low to intermediate unionization rates (1 to 10%). The wage gap between UDs and their colleagues is on average low and not statistically significant in workplaces with a high union density by French standards (above 10%)[33] and it is positive and large (but not statistically significant) in workplaces where union density is close to zero. These correlations between UDs' wage penalties and unionization are consistent with the model prediction that non-discriminated UDs get on average more support than their discriminated counterparts and that bribed UDs are not supported at all. They are also consistent with the idea that it can be harder for employers to discriminate UDs that are strongly supported by their colleagues (the cost $c(s(\theta))$ of discriminating increases with s).

Effectiveness of the bargaining. To link UDs wage outcomes to bargaining gains, we have tried to get direct measures of the possible effect of the bargaining on wages. To this aim, we first recover workplace fixed-effects from an AKM-style wage equation (Abowd, Kramarz, & Margolis, 1999) estimated using the whole DADS panel for the period 2006-2015 (see details in Appendix C.3). Estimated from the wage variations of workers moving across workplaces, these firm fixed effects capture differences in wages across workplaces that are independent from the composition of the workforce. They are therefore more likely to capture the effect of workplace-level bargaining on wages, and we use them as a proxy for bargaining wage gains.

Table 6, column 2, shows the wage penalties against UDs in each quartile of the distribution of AKM workplace fixed-effects. The penalties are highest (and only significant) in the third quartile. They are low in the first quartile and moderate in the second and fourth ones. To make sure that our estimated firm-level fixed-effects do not capture structural differences across industries, we also residualize them on 2-digit industry dummies, so that quartiles are computed "within" industries. When doing so (column 3), the penalties for UDs get largest and significant at the 10% level in the Q2 and they are also large and significant in Q3, confirming that no matter the way we compute firm wage premiums, the relationship between UDs' wage penalties and workplace-level wage premiums is an inverted U-shape.

In columns 4 and 5 of Table 6, we replace the quartiles of firm fixed effects by quartiles of firms' labor share (i.e. the ratio between firms total wage bill and firms value-added) computed using firm tax records, with the idea that a higher labor share may also reflect higher bargaining gains. As before, we consider both quartiles of the absolute labor share, or quartiles of the labor share relative to the 2-digit industry average. Although the results are less evident and the wage

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[33]Average union density in the private sector is around 10%. In our sample, 1.2% of workplaces having a UD declare a unionization rate close to zero, 37.8% a unionization rate between 1% and 5%, 29.1% a unionization rate between 6% and 10%, 16% a unionization rate between 11% and 20%, and 17% a unionization of more than 20%.

penalties are not statistically different from each other across quartiles, we still find that the largest wage penalties for UDs are observed for intermediate levels of the labor share (in Q3).

Results in Table 6 refute the idea that the UDs that obtain the largest bargaining gains are penalized in return. They are, however, consistent with the predictions of the model. Indeed, to obtain large gains, UDs need to benefit from a strong support from the workforce and these UDs are not the most penalized.[34]

6.3 Discrimination is more likely to be observed in larger firms

We test this third prediction in two different ways. We first look at wage gaps by firm size groups. Then we estimate an equation derived from the model giving the probability to have unions in a firm as a function of its size.

UDs careers as a function of firm size. If discrimination is more attractive in larger workplaces, then we should expect larger wage penalties for UDs in these workplaces. To test that, we split the sample in subgroups of workplaces according to their number of employees, using the official firm-size categories. Figure 3 reports the estimates of the wage gap between UDs and their colleagues obtained from equation 4 in each of these groups. The average UD wage penalty indeed increases with establishment size. The wage gap is not significant and positive for the smallest establishments (up to 50 employees), and hovers around -5% for workplaces between 50 and 500 employees. In larger establishments with between 500 and 1,000 employees, the average penalty stands at 10% and it is statistically different from zero. Finally, the wage penalty keeps increasing to almost 20% in workplaces with 1,000 employees or more.

Mixture Model of The Probability to Have a Union by Workplace size. In this subsection, our objective is to estimate Equation 3 of Section 2, but as a benchmark, we start by assuming that all workplaces are in the same equilibrium (discrimination or no discrimination) and determine the individual probability that a worker runs for UD ($\mathbb{P}(\theta \in [\bar{\theta}_i, +\infty[\cup [\theta_i^b, \underline{\theta}_i])$ in equation 2) by maximum likelihood. The plain curve in Figure 4a shows the resulting fitted workplace-level probability to have a union delegation. The fit is visually good, confirming that the probability to have unions in French workplaces increases exponentially with their size and is well predicted by a simple model where workers in a workplace have independent and identical probability p to be willing to represent unions. Additionally, the estimated p is 0.005; showing that the individual probability to be willing to be a UD is very low.

We then fit the more general model given by equation 3 in which firms can be either be in the discrimination or no-discrimination equilibrium. We parameterize the probability to be a discriminatory workplace as $g(n) = 1/2 + arctan(an + b)/\pi$ and also fit the model by

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[34]The positive relationship between unionization and workers' share of the surplus is an assumption of the model that could be tested empirically. Since our focus is on UDs, we do not do this here, but Breda (2015), using a former wave of the REPONSE survey, provides evidence of such a relationship.

maximum likelihood (see details in Appendix B).[35] The resulting workplace-level probability to have a union delegation fits the data even better (see Figure 4b). The individual probability for a worker to run for UD that maximizes the log-likelihood is found to be 1.4% under no discrimination and 0.027% under discrimination. In addition, the estimates of a and b are such that the fitted probability to be in the discrimination equilibrium is 50% in workplaces of 10 employees, 66% in workplaces of 100 employees, and 95 % in workplaces of 1000 employees. This probability is increasing as predicted by the model, and discrimination is prevalent in most large French workplaces.

To wrap up, the empirical probability to have unions increases with firm size exponentially. It is consistent with a very low individual probability that workers run for UD, especially in large firms where strategic discrimination is very widespread. These findings are consistent with theoretical predictions and in line with the larger wage penalties against UDs observed in larger firms.

6.4 Discrimination can directly discourage unionization, eventually reducing union coverage.

On average, UDs are present in only 22% of workplaces of the business sector with more than 10 employees (Table D2). This means that in the vast majority of these workplaces, there is simply no candidate to become a UD and therefore no collective bargaining with unions even though it is legally authorized.

The results in the previous subsection show that the scarcity of unions can be partly the effect of discrimination against UDs. Indeed, the limited number of workplaces with UDs and low individual probabilities to be willing to run for UD clearly signal that holding a mandate of representation is unattractive for most workers. This is despite the fact that representation mandates grant workers with a number of additional rights. UDs and other representatives are partly protected against layoffs as the employer needs to obtain a specific authorization by the French work inspection authority to fire them. UDs might also benefit from a more favorable socio-economic status in the firm: they get access to key information about the firm and may get extra esteem from their coworkers or acquire a higher social status. They can also learn new skills. In a nutshell, serving as a UD looks on paper like a potentially attractive task as compared to many other jobs. The fact that so few workers are willing to take a mandate therefore suggests that they may fear for their career if doing so.

In what follows, we investigate this point indirectly by examining if the career outcomes of UDs in a specific workplace can discourage other workers to *join a union*. This analysis can provide evidence that strategic discrimination is a way to immediately limit the number of workers willing to support unions. As joining a union is a first step to becoming a UD (10% of union members are UD), it can also provide suggestive evidence that discrimination can in the long run limit candidacies for UD positions and therefore reduce union coverage.

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[35]This parametrization of $g(n)$ guarantees that it varies monotonically between 0 and 1. a and b adjust the firm size at which g varies the most and the slope of the related variation.

The analysis relies on a new and original set of questions in REPONSE17-Worker inquiring about the reasons why workers who are not union members did not join a union. Five responses are possible: (1) I fear that joining a union could be detrimental to my future career, (2) Unions do not represent me well, (3) I do not need unions, (4) I cannot pay for it, and (5) there are no unions in my workplace. Appendix Figure D3 shows, for workplaces that have unions, how the four first reasons provided by non-union members vary with their age. The most frequent response, given by about 40% of non-union members, is that they do not need unions. Then comes the feeling that unions do not represent them well, which is steadily increasing with age and concerns about 25% of the workforce. Fearing a detrimental effect of joining a union on one's career comes in third position. It concerns about a quarter of non-union members below 45 year-old, and not surprisingly, a much smaller share of older workers. Finally, less than 10% of non-union members declare they cannot afford paying union dues.

To explore the link between UDs careers and workers' decisions not to join a union, we restrict the analysis to non-union members and estimate the following model:

$$Fear_{i,j} = Disc_j\beta_1 + X_i\beta_2 + Z_j\beta_3 + \epsilon_{i,j} \tag{5}$$

where $Fear_{i,j}$ is an indicator variable equal to 1 if the worker declares she does not join a union due to fear of negative consequences for her career, $Disc_j$ is a proxy capturing possible discrimination against UDs or other worker representatives in workplace j and X_i and Z_j are worker-level and firm-level controls.

We first further restrict our main sample to workplaces were a UD was interviewed in REPONSE17-Rep and use UDs' responses regarding the effect of their mandate on their career as a proxy for $Disc_j$. We observe that non-union members in workplaces where the interviewed UD in REPONSE17-Rep declares that her mandate had a negative effect on her career (rather than no effect or a positive effect) are 6% more likely to say that they did not join a union because they feared it could be detrimental for their careers (Table 7, panel A, column 1). This represents an almost 40% increase relative to the sample average, establishing clearly that in workplaces where UDs think that their mandate impacted negatively their career, workers are more afraid to join unions. This relationship is robust to controlling for workers characteristics (column 2) as well as workplace size and industry (columns 3 and 4). However, our preferred specification does not control for workplace characteristics as they are unlikely to directly affect workers' fear of discrimination but can however be determinants of firms using discrimination against UDs.

In panel B, we reproduce the same exercise on the main sample using the workplace-level wage penalties for UDs instead of their subjective assessments as a measure of $Disc_j$. These workplace-level wage penalties are obtained in two steps. First, we run a regression of log hourly wages on worker Mincer controls (age, education and gender) and workplace fixed effects using all workers in the sample. For each workplace in which we observe at least one UD in REPONSE17-Workers, we then compute the difference in residuals between UDs and employees

that are neither representatives nor unionized. The advantage of this second approach is that it relies on more objective information. The drawback is that this information is likely to be more noisy, as the wage differential between UDs and baseline workers in a specific workplace is estimated from only a handful of surveyed workers and can also reflect idiosyncratic differences in performance that do not average out on such small samples. This may explain that we find a relationship that seems quantitatively smaller than in Panel A of Table 7: when the wage penalty against UDs increases by 10 log points, workers are about 1 percentage point more likely not to have joined unions because they feared for their career. As in Panel A, this result is robust to controlling for workers characteristics and firm size, but it disappears when also controlling for industry (column 4), possibly because a lot of the identifying variation in UDs wage penalties is observed across industries.

Together, the evidence in Table 7 shows that workers are more afraid to join unions in workplaces where union representatives are either badly paid or think their mandates affected their career negatively. While this relationship—as the former ones—is not causal, it is in line with our theoretical framework, and there is no obvious alternative explanation for it. By suggesting that strategic discrimination can indeed effectively deter collective action, it provides direct justification for it and is therefore an important piece of evidence to back up the paper's main arguments.

7 Strategic discrimination and multi-unionism

We conclude the empirical analysis with a couple of additional results on multi-unionism. When more than one union is recognized for bargaining in a workplace, strategic discrimination could be a way for employers to make effective a "divide and rule" strategy. Favoring the least vindictive UDs while being at the same time tough against the others might indeed increase and make directly visible the rewards from being a compliant UD. It is also a way to stigmatize UDs that do not behave according to employers' views regarding how social dialogue should be done. In fact, in a context where employers have to negotiate with several workers representing different interests and bargaining positions, they may not need complex strategic motives to try to get an agreement with the UDs that are closest to their own position. In turn, employers may be more likely to favor the career of those UDs they manage to obtain an agreement with. In our framework, we call this strategic discrimination, and we argue it could undermine the quality of representation of workers' interests. However it could emerge quite progressively and subtly, looking almost natural.

There is however also abundant qualitative evidence that firms can use much more explicit "divide and rule" strategy in a multi-unionism context, for example by setting their own company union (so called *syndicat jaune* or *syndicat maison*) in order to avoid bargaining with labor unions having stronger claims. We are not able to provide strong direct evidence on this type of strategies but nevertheless observe that wage penalties for UDs are on average smaller in workplaces having many unions recognized for bargaining (4% against 10%, see Table **??**): this

may be because in those workplaces, it is more likely that some UDs are penalized while others are favored, whereas in single-union workplaces, negative discrimination is more systematic. To investigate this hypothesis, it is possible to go beyond the mean and examine the entire distribution of UDs wages. To do so, we have estimated an OLS regression of workers' log hourly wage on "Mincer" controls, tenure, and workplace fixed effects and plotted the residuals from such model separately for UDs and baseline workers both in single- and multi-union workplaces (see Figure 5). Visu al inspection of the distributions suggests that in multi-union workplaces, UDs' residual wages are much more dispersed than in single-union workplaces. To ease the comparisons, the bottom part of the figure plots on the same graph the difference between the density of UDs' and baseline workers' residual wages in workplace with and without multi-unionism. It clearly appears that in single-union workplaces, UDs are overrepresented (compared to baseline workers) in the distribution of residual wages slightly below 0, and underrepresented slightly above 0. In contrast, in mulit-union workplaces, UDs are overrepresented below zero and also to some extent above 0, while they are underrepresented close to zero. This pattern is consistent with the hypothesis that some UDs are discriminated while others are favored in these multi-union workplaces.[36]

8   Concluding comments

Combining administrative data on earnings with a rich survey on employment relations allowing us to identify workers representatives, we show that union delegates (UDs) who negotiate wage agreements have on average worse careers outcomes than their colleagues. In particular, they are paid about 5% less on average. This wage penalty does not reflect adverse selection on wages (UDs are not paid less before taking their mandate) nor does it reflect the number of paid contractual hours spent working for the union. Instead, it appears correlated to UDs behavior when performing their representation duties and to the context in which bargaining takes place. For example, UDs that are the most active to defend their colleagues' interests or belong to a union reputed as confrontational are the most badly paid. UDs career outcomes are finally correlated to workers decision to join a union: in workplaces where UDs are badly paid or think they have been discriminated, workers are more likely not to join a union because they fear for their careers.

To rationalize these results, we build a model of strategic discrimination that shows that in some circumstances employers may have a strategic interest in bribing UDs to avoid bargaining or discriminating against them to discourage unionization and limit the support unions could get. These strategic behaviors can deter the most representative workers to run for UDs: only those that are either willing to be bribed or ready to suffer a discrimination would still be willing to take a mandate. The model also illustrates that there can be an equilibrium with (i)

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[36]A Kolmogorov-Smirnov test of equality of the distributions confirms that the distribution of residual wages for UDs are different between single and multi-union workplaces, while this is not the case for baseline workers. A test of equality of the variances of the distribution further confirms that the variance of UDs residual wages is larger in multi-union firms.

no discrimination, (ii) limited scope for bribes, and (iii) UDs that are more representative of their colleagues and more supported by them.

Even though the data suggests that in France, the equilibrium with discrimination prevails, it might not be systematically the case. Indeed, among developed countries, France has both one of the lowest unionization rate and lowest extent of perceived cooperation between employers and employees.[37] This is in sharp contrast with the situation prevailing in countries like Denmark or Sweden, which have both high levels of unionization and declared cooperation. In a sense, our micro-level analysis of worker representatives careers illustrates how these well-known cross-country differences in the quality of employment relations may also be rooted within the firm in the career opportunities given to the workers that are engaged in the defense of their colleagues interests: in countries where union representatives are typically offered limited career prospects, it is probably harder to build trust and cooperation between social partners. Strategic discrimination—and more broadly poor career prospects for representatives— indeed paradoxically yields a situation where employers are left out with UDs that they may be the least likely to appreciate since they are the most vindictive. Hence, thinking about the institutional rules that can limit strategic discrimination and improve the career prospects of worker representatives appears a necessary step to encourage a large participation into unions and improve the quality of employment relations.

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[37]In terms of cooperation in labor-employer relations as declared by managers, France ranks 117 out of 145 countries participating to the World Economic Forum global competitiveness index in the 2016-2017.

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Figures and Tables

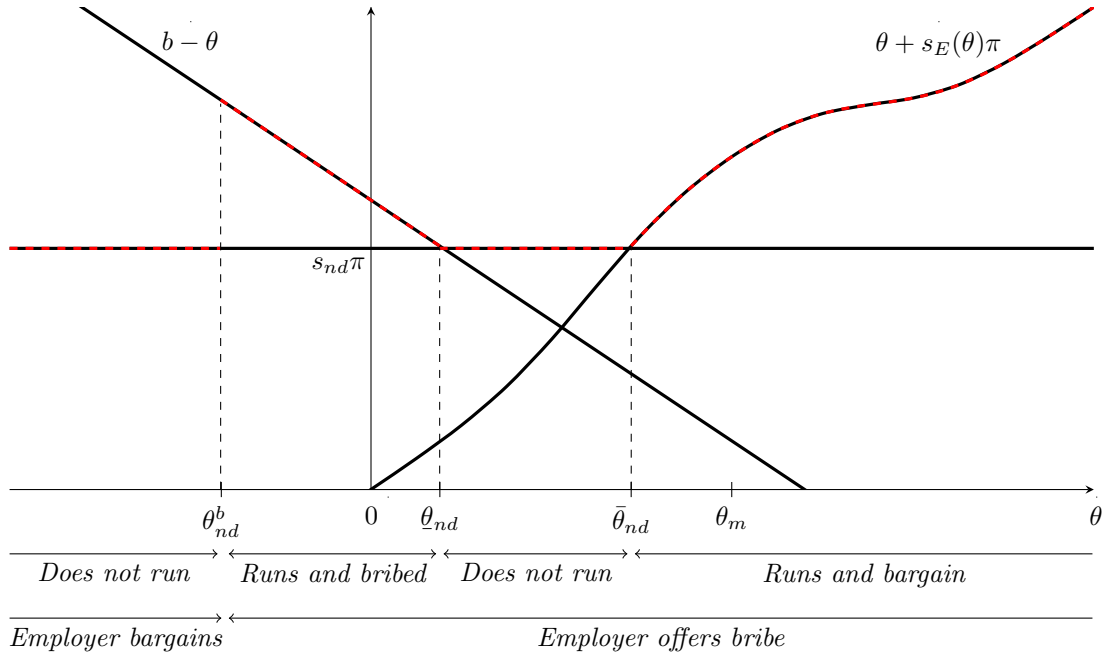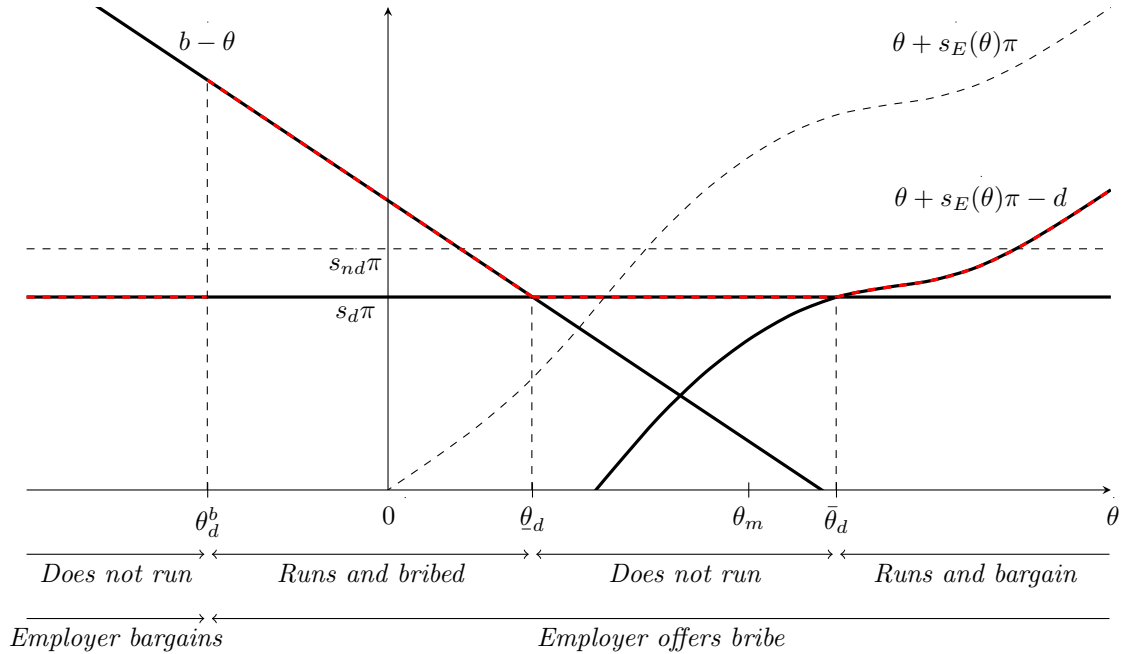Figure 1: Tree of the Period Game in Firm j
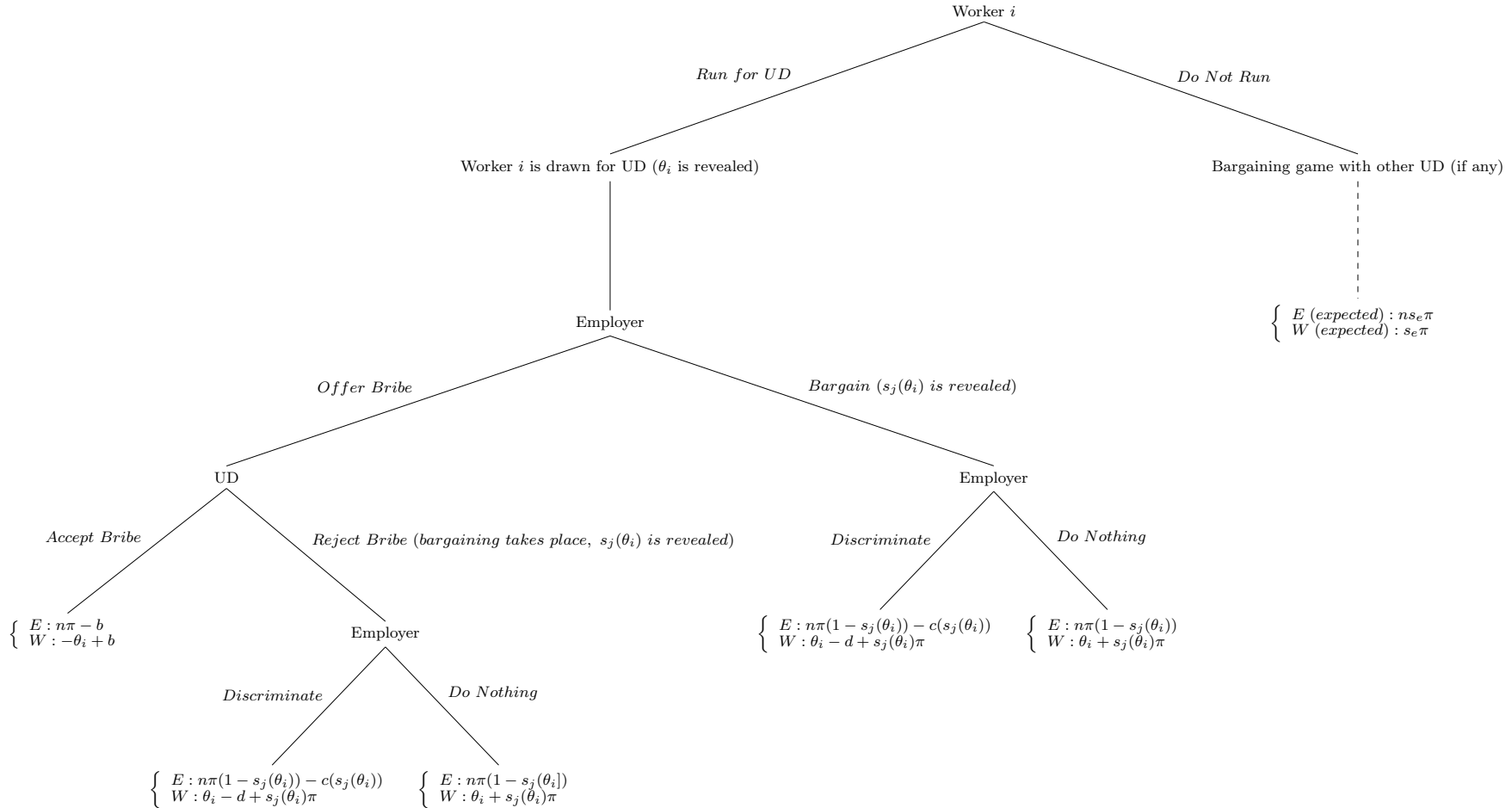
Notes: The figure represents the period game in a given firm j. Payoffs for the Employer (E) and Worker i (W) are provided. In step 1, only the choice of a given worker i is shown. The worker payoff when she runs for UD but is not drawn is not represented. It is identical to her payoff when she does not run (shown in expectation on the graph).

Figure 2: Workers Expected Payoffs and Equilibrium Solutions of the Three-step Game

(a) No Discrimination Equilibrium

$b - \theta$

$\theta + s_E(\theta)\pi$

$s_{nd}\pi$

θ_{nd}^b 0 $\underline{\theta}_{nd}$ $\bar{\theta}_{nd}$ θ_m θ

Does not run → ← *Runs and bribed* → ← *Does not run* → ← *Runs and bargain*

Employer bargains → ← *Employer offers bribe*

(b) Discrimination Equilibrium

$b - \theta$

$\theta + s_E(\theta)\pi$

$\theta + s_E(\theta)\pi - d$

$s_{nd}\pi$

$s_d\pi$

θ_d^b 0 $\underline{\theta}_d$ θ_m $\bar{\theta}_d$ θ

Does not run → ← *Runs and bribed* → ← *Does not run* → ← *Runs and bargain*

Employer bargains → ← *Employer offers bribe*

Notes: The figure represents the worker expected payoffs when she does not run for UD ($s_{nd}\pi$ in panel a), when she is bribed ($b-\theta$) and when she bargains ($\theta+s_E(\theta)\pi$ in panel a). These payoffs are shown for both the three-steps game where the employer does and does not discrimate in step 3. Worker's expected payoff depending on the outcome of the game (bribed UD, UD that bargains, not UD) is shown in red. The equilibrium solutions of the three step game in both cases follow from a comparison of payoffs in combination with the values of θ for which the employer is willing to offer a bribe. See details in section 2.

Figure 3: Average Wage Gap between UDs and their Colleagues by Workplace Size
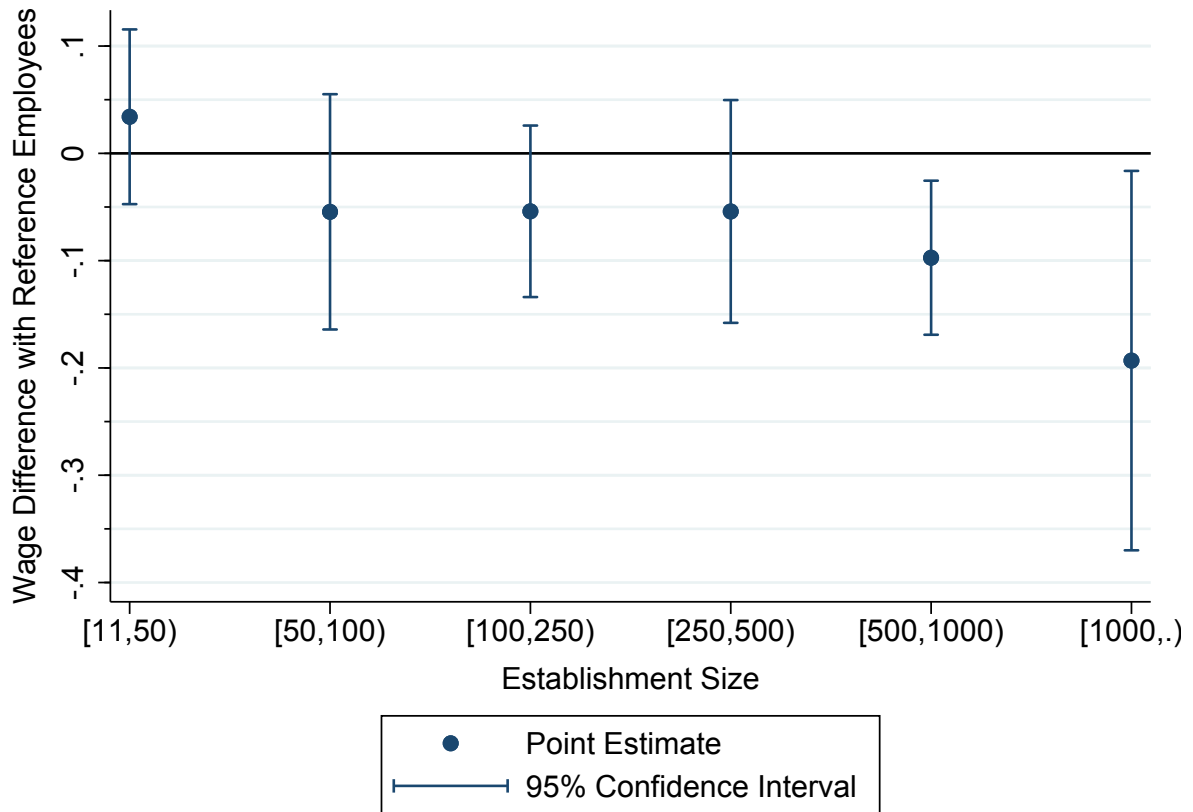
Notes: The figure displays the coefficient on the UD dummy in our preferred specification, estimated on subsamples of workplaces defined according to their number of employees.

Figure 4: Probability of Having a Union Delegate in a Workplace as a Function of Workplace Size

(a) One-Parameter Model

(b) Four-Parameters Model
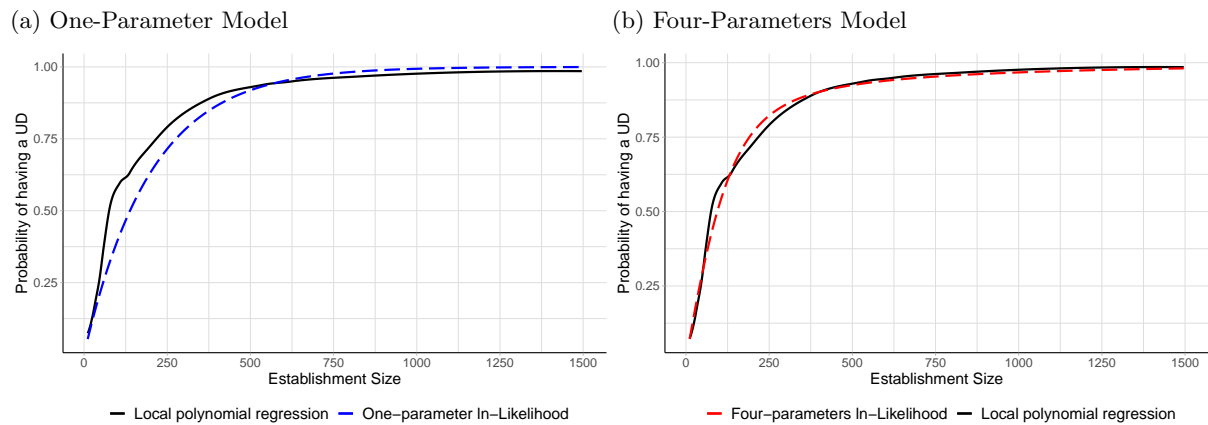
Notes: The graphs display empirical estimations of the probability of having a UD given establishment size, compared with log-Likelihood estimations of our two probability models. The empirical estimation is the result of a local polynomial regression of an indicator variable for the presence of a UD on establishment size with a bandwidth of .4. The probability models correspond to those outlined in section XXX. The left panel displays the results for the one-parameter model, maximized for $p = 0.00500$, the right panel display the results for the four-parameters model where the estimates are: $a = 0.00758$, $b = -0.1387$, $p^d = 0.000268$, and $p^{nd} = 0.0141$.

Figure 5: Distribution of Wage Residuals by Group of Employees

(a) Base Employees - One Union
$(Mean = 0.005, SD = 0.206, N = 2268)$
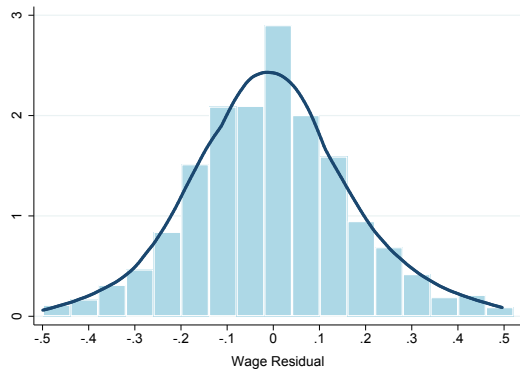
(b) Base Employees - Multiple Unions
$(Mean = 0.005, SD = 0.211, N = 6098)$
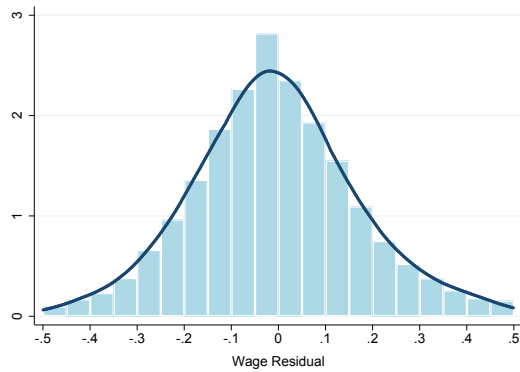
(c) Union Delegates - One Union
$(Mean = -0.064, SD = 0.12, N = 32)$
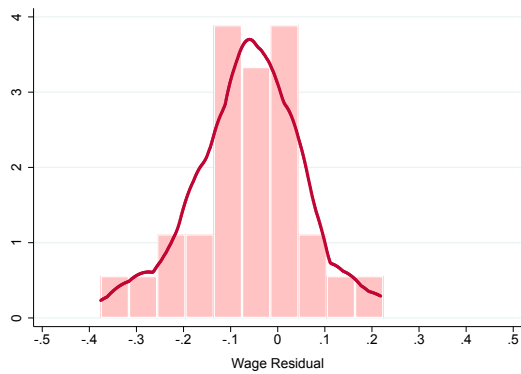
(d) Union Delegates - Multiple Unions
$(Mean = -0.034, SD = 0.177, N = 144)$
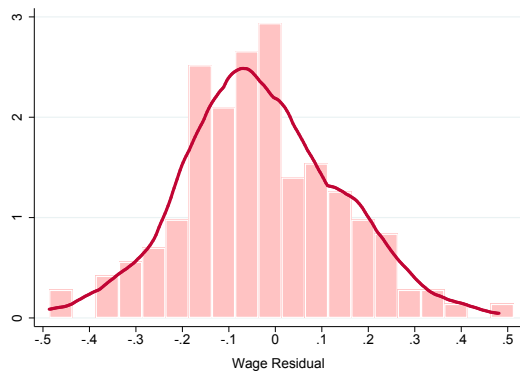
(e) Difference in Distributions (c)-(a) and (d)-(b)

Union Delegates in workplaces with one union
Union Delegates in workplaces with multiple unions
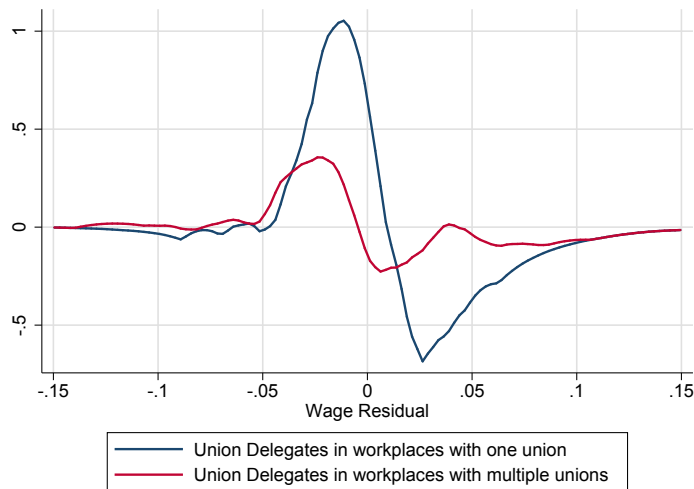
Notes: Panels (a) to (d) display the distribution of the residuals of a linear regression of the log hourly wage on Mincer Controls, Tenure, and workplace fixed effects for four different groups of employees: employees that are neither representatives nor unionized in workplaces with a unique union brand and in workplaces with multiple union brands, as well as Union Delegates in the same two groups of workplaces. Note that a Kolmogorov-Smirnov test for the equality of distributions reject that the distributions of Union delegates are the same across the two groups of workplaces, while they do not for base employees. The bottom graph (e) shows the difference in distributions between Union Delegates and base employees for the two same groups of workplaces.

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Table 1: Prevalence and characteristics of worker representatives

(a) Prevalence of worker representatives in the REPONSE17-Workers sample and in the general worker population

	Number in Sample	Percentage in Worker Population
Total	20,708	100%
Unionized Workers	2,455	11.6%
Union Delegates	271	1.2%
Unionized Worker Reps	645	3.0%
Unionized Workers not Reps	1,539	7.4%
Non Unionized Worker Reps	629	3.4%

(b) Characteristics of Worker Representatives in REPONSE17-Workers

	Base Workers	Union Delegates	Unionized Worker Reps	Non Unionized Worker Reps	Unionized Workers
Gender					
% Female	0.46	0.29	0.36	0.46	0.38
% Male	0.54	0.71	0.64	0.54	0.62
Age (years)					
Mean	43.79	49.05	47.16	44.68	46.98
Median	44.00	50.00	48.00	45.00	47.00
Tenure (years)					
Mean	13.27	19.73	18.47	14.95	17.06
Median	11.00	18.00	16.00	13.00	15.00
Education level					
% No diploma	0.08	0.07	0.09	0.05	0.09
% Lower than Bac	0.28	0.38	0.32	0.28	0.32
% Baccalaureate	0.18	0.16	0.22	0.20	0.18
% Two-year graduate	0.17	0.21	0.17	0.20	0.16
% Bachelor or higher	0.29	0.19	0.20	0.27	0.25
Occupation category					
% Laborers	0.27	0.29	0.32	0.25	0.32
% Employees	0.27	0.27	0.24	0.25	0.23
% Intermediate	0.22	0.21	0.24	0.28	0.25
% White collars	0.23	0.23	0.20	0.22	0.20

Notes: Weighted statistics using our Main sample that represent about 7 millions full-time workers in workplaces of more than 10 employees. Statistics are representative over this population. Survey Weights are at the employee-level. Base workers are workers who are neither unionized nor a worker representative.

Table 2: Differences Between Worker Representatives or Union Members and their Colleagues in Terms of wages and promotions.

	(1)	(2)	(3)
	Log Hourly Wage	Promoted over past 3 years	Chances of Promotion over next 3 years
Union Delegate	-0.0518** (0.0231)	-0.125*** (0.0417)	-0.186** (0.0922)
Unionized Worker Rep	-0.0280** (0.0135)	-0.0214 (0.0284)	-0.0838 (0.0557)
Non-Unionized Worker Rep	-0.0131 (0.0135)	0.0230 (0.0264)	0.0299 (0.0565)
Unionized Worker	-0.0283*** (0.00884)	-0.0420** (0.0196)	-0.0862* (0.0469)
Sample average	–	0.305	-
Observations	19,449	18,850	16,523
R-squared	0.760	0.365	0.424
Employee Controls	Mincer +Tenure	Mincer +Tenure	Mincer +Tenure
Workplace Controls	FE	FE	FE

Notes: The sample is REPONSE17-Workers. The table shows the results from linear regression models akin to those described by equation 4 weighted using workers sampling weights. The dependent variables are respectively log hourly wages, a dummy taking the value one when employees report having been promoted over the past 3 years, and a demeaned and standardized variable taking four values for the self-reported likelihood that the employee is promoted over the next 3 years. Controls systematically include a dummy for the individual's gender, education (in 8 groups), a third order polynomial in workers age, a dummy for whether the individual has been unionized in the past, and a third order polynomial in tenure. Part-time workers and apprentices are excluded from the sample of analysis. Standard errors (in parenthesis) are clustered at the workplace level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3: Wage Differentials Depending on Tenure in the Mandate

	(1)	(2)	(3)	(4)	(5)
	Union Delegates	Unionized Worker Reps	Unionized Reps	Non Unionized Worker Reps	Unionized Workers
A. Dependent variable : Hourly Wage Gap					
About to take on a mandate	-0.0192	0.00905	0.00481	-0.0837**	-0.0626**
	(0.0466)	(0.0731)	(0.0580)	(0.0329)	(0.0303)
Up to 8 years	-0.0518	-0.0301*	-0.0334**	-0.0191	-0.0341***
	(0.0322)	(0.0160)	(0.0147)	(0.0139)	(0.0107)
More than 8 years	-0.0476	-0.0438**	-0.0427**	0.0498	-0.0238*
	(0.0291)	(0.0198)	(0.0168)	(0.0499)	(0.0133)
Observations: 19,410; R-squared: 0.761					
B. Dependent variable : Promoted over the last three years					
About to take on a mandate	-0.0173	-0.0891	-0.0736	-0.0800	-0.0828*
	(0.0598)	(0.0836)	(0.0680)	(0.0688)	(0.0481)
Up to 8 years	-0.160***	-0.0203	-0.0542**	0.0219	-0.0725***
	(0.0535)	(0.0298)	(0.0269)	(0.0282)	(0.0240)
More than 8 years	-0.106*	-0.0182	-0.0498	0.0425	-0.00520
	(0.0541)	(0.0660)	(0.0476)	(0.0777)	(0.0341)
Observations: 18,939; R-squared: 0.366					

Notes: The table shows the results from linear regression models akin to those described by equation 4. The indicator variables for the different groups of representatives have been divided according to the time they have spent in their mandate (representatives "about to take a mandate" are those with less than one year of tenure). For Unionized Workers we consider the time spent since joining a union instead of the time spent since taking a mandate. Each horizontal panel presents the results of the same regression and the estimates are staggered for clarity. All regressions are weighted using survey weights, and include the following controls: a dummy for the individual's gender, education (in 8 groups), a third order polynomial in workers age, a dummy for whether the individual has been unionized in the past, and a third order polynomial in tenure. Part-time workers and apprentices are excluded from the sample of analysis. Standard errors (in parenthesis) are clustered at the workplace level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Union Delegate Wage Gaps as a Function of their Participation to Bargaining, Meetings and Strikes

	(1)	(2)	(3)
	Dep. Var.: Log Hourly Wage Gap		
	A. Bargaining	*B. Meetings*	*C. Strikes*
UD Participated	-0.0618**	-0.0628**	-0.0928***
($n^A = 206$, $n^B = 162$, $n^C = 235$)	(0.0256)	(0.0252)	(0.0290)
UD Did not participate	-	0.126***	0.0816*
($n^A = 0$, $n^B = 19$, $n^C = 4$)	-	(0.0419)	(0.0488)
Event did not take place	-0.00335	0.00339	-0.00487
($n^A = 15$, $n^B = 63$, $n^C = 9$)	(0.0820)	(0.0661)	(0.0435)
Observations	19,449	18,796	18,892
R-squared	0.760	0.763	0.763

 Notes: The table shows the results from linear regression models akin to those described by equation 4. In specification 1, they are grouped according employers' replies to the question "Over the last three year (2014-2016), has there been collective bargaining with worker representatives, in the workplace or the firms, with the objective to reach an agreement, regardless of whether it has been signed or not?". In specification 2 Union Delegates are grouped according to their reply to the following question: "Over the last three years, have you participated to a meeting organized by employee representatives?". In specification 3, they are grouped according to their replies to the following two questions "Over the last three years, have you participated to a work stoppage", and 'Over the last three years, have you participated to another type of collective action?". Note that representative counts do not add up because of non respondents, particularly numerous for the question on bargaining. All regressions are weighted using survey weights, and include the following controls: dummies for unionized representatives that are not Union Delegates, non-unionized representatives, only-unionized workers, a dummy for UDs in workplaces with missing observations, a dummy for the individual's gender, education (in 8 groups), a third order polynomial in workers age, a dummy for whether the individual has been unionized in the past, a third order polynomial in tenure, and workplace fixed effects. Part-time workers and apprentices are excluded from the sample of analysis. Standard errors (in parenthesis) are clustered at the workplace level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Union Delegate Wage Gaps Depending on Which Unions are Recognized for Bargaining

	(1)		(2)		(3)
		Dependent Variable: Log Hourly Wage			

Union Delegates pooled by:

A. Union Groups		B. Delegates in Workplaces with a Single-Union		C. Union Color of Representative	
Tough	-0.119*** (0.0414)	CGT	-0.119*** (0.0264)	CGT	-0.132*** (0.0492)
Soft	-0.0217 (0.0400)	FO	-0.247*** (0.0389)	FO	-0.116** (0.0496)
Mix	-0.0597* (0.0345)	CFDT	-0.0879 (0.0725)	CFDT	0.00630 (0.0308)
		CFTC	0.0196 (0.0507)	CFTC	0.0124 (0.0537)
		CGC	0.0276** (0.0110)	CGC	0.255*** (0.0593)
Observations	19,449		19,449		25,289
R-squared	0.76		0.76		0.769
Sample	Main		Main		Auxiliary

 Notes: The table shows the results from linear regression models akin to those described by equation 4. In specification 1, Union Delegates are grouped depending on whether they either belong to establishments where there are only Tough unions (CGT, SUD and FO), only Soft unions (CFDT, CFTC, CFE-CGC, UNSA), or a Mix of these two groups (see table D8 for a classification of unions' ideologies). In specification 2 we distinguish UDs operating in single-union establishments. That allows us to determine their precise union affiliation. We keep as a separate control UDs that are in multi-union establishments. In specification 3 we use our auxiliary sample that allows to precisely identify the color of UDs independently of the number of the unions operating in their establishments. All regressions are weighted using survey weights, and include the following controls: dummies for Union Delegates that are not in the specific groups (specifications 2 and 3), dummies for unionized representatives that are not Union Delegates, non-unionized representatives, only-unionized workers, a dummy for the individual's gender, education (in 8 groups), a third order polynomial in workers age, a dummy for whether the individual has been unionized in the past, and a third order polynomial in tenure. Part-time workers and apprentices are excluded from the sample of analysis. Standard errors (in parenthesis) are clustered at the workplace level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: Relationship between the Wage Penalty for Union Delegates and Unionization or Worker Surplus

	(1)		(2)	(3)		(4)	(5)
				Dependent Variable: Log Hourly Wage			

Union Delegates pooled by:

A. Unionization Rate		B. Workplace FE			C. Labor Share		
			Absolute	*Relative*		*Absolute*	*Relative*
0%	0.195	Q1	-0.0130	-0.0155	Q1	-0.0556	-0.0881
	(0.249)		(0.0439)	(0.0467)		(0.0730)	(0.0576)
1%-5%	-0.104*	Q2	-0.0608	-0.102*	Q2	-0.0181	-0.0360
	(0.0554)		(0.0409)	(0.0584)		(0.0480)	(0.0293)
5%-10%	-0.0868*	Q3	-0.111*	-0.0711*	Q3	-0.0634	-0.0907**
	(0.0509)		(0.0615)	(0.0380)		(0.0404)	(0.0441)
11%-20%	-0.0483	Q4	-0.0664	-0.0594	Q4	-0.0450	0.0310
	(0.0484)		(0.0410)	(0.0436)		(0.0377)	(0.0520)
>20%	-0.0030						
	(0.0396)						
Observations	19,449		17,469	17,469		19,449	19,449
R-squared	0.76		0.76	0.76		0.76	0.76

Notes: The table shows the results from linear regression models akin to those described by equation 4. In each specification Union Delegates are divided into groups depending on unionization rates (panel A.), firm fixed effects (panel B.), and firm labor share (panel C.). For panel B. and C. we consider groups by the absolute variables or relative to the 2-digit industry average. For example "Q1" of specification 2 denotes delegates that are in firms of the first quartile of the distribution of AKM fixed effects. Firm fixed effects are estimated according to a classic procedure detailed in Appendix Section C.3. The labor share is computed as the ratio of payroll costs to value added. All regressions are weighted with survey weights, and include the following controls: dummies for unionized representatives that are not Union Delegates, non-unionized representatives, only-unionized workers, a dummy for the individual's gender, education (in 8 groups), a third order polynomial in workers age, a dummy for whether the individual has been unionized in the past, a third order polynomial in tenure, and firm fixed effects. Part-time workers and apprentices are excluded from the sample of analysis. Standard errors (in parenthesis) are clustered at the workplace level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7: Workers not Joining Unions by Fear of their Career Depending on UDs Careers in their Workplace

	(1)	(2)	(3)	(4)
	Dependent Variable (non-union members only): Does not Join a Union by fear of negative consequences on future career			
Panel A (workplaces with a UD interviewed in REPONSE-Rep):				
Worker representative declares her mandate had negative effect on career	0.061*** (0.011)	0.055*** (0.008)	0.037*** (0.008)	0.035*** (0.008)
Sample Average	0.168	0.167	0.168	0.169
Observations	12,640	12,507	12,507	12,442
R-squared	0.005	0.022	0.029	0.033
Panel B (workplaces with a UD only):				
Workplace-level wage gap between UD and her colleagues	0.116** (0.048)	0.110** (0.050)	0.097* (0.054)	0.050 (0.060)
Sample Average	0.216	0.213	0.208	0.210
Observations	861	859	859	859
R-squared	0.005	0.017	0.022	0.044
Employee Controls	No	Mincer +Tenure	Mincer +Tenure	Mincer +Tenure
Workplace Controls	No	No	Size	Size+ Industry
Sample	Non-union members	Non-union members	Non-union members	Non-union members
Weighted	Yes	Yes	Yes	Yes

Notes: The table shows the results from linear regression of a dummy that takes the value one when employees declare that they are not unionized for fear of the consequences that unionization can have on their career on measures of the workplace-level penalties against representatives. Panel A measures the penalty with a dummy that takes the value one when UDs have reported that their mandate has had a negative consequence on their career. Panel B replaces that variable with the average log wage penalty of Union Delegates at the workplace level. It is computed as the difference in residuals from a regression of log hourly wages on worker "Mincer" controls and workplace fixed effects, between UDs and employees that are neither representatives nor unionized. Mincer controls are a dummy for the individual's gender, education (in 8 groups), a third order polynomial in workers age. Tenure controls are a third order polynomial in tenure. Size controls are group of dummies based on the following cutoffs: 50, 100, 250, 500, 1000 officially determined by Insée. Industry control dummies are based on the official 2-Digit classification by Insée. Standard errors (in parenthesis) are clustered at the workplace level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix to

Labor Facing Capital in the Workplace: The Role of Worker Representatives

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List of Appendices

Appendix A   Discrimination in a Simple Discrete Model with Three Employees

In this section we present a modified version of our main model, in which we consider the precise case of a firm constituted of an employer and three employees with types $\theta^L < \theta^M < \theta^H$. In this special case, we consider that the information is complete so that all types are known by everyone from the onset of the game.

The objective is to show that in this setting with complete information, under some conditions on worker types, profits per worker π, bribe b and discrimination d, there exists an equilibrium with discrimination that prevents middle types from running.

To limit the number of subcases studied, we immediately assume that the distribution of types is such that if they are elected as UDs, employees L and H are not supported by other workers, while type M is supported by both of her coworkers. Thus the surplus a worker gets in case of bargaining is $\pi/3$ if types L or H bargain, and π if type M bargains. We show that under additional conditions that we will derive, discrimination will deter the median worker M from running for UD while other workers will still be willing to do so — to get bribed for worker L, and because her utility is large enough, to bargain for worker H. Since the support obtained by worker M in bargaining is largest, discrimination can increase firms' profits in that case.

The argument runs as follow. We first make a couple of extra assumptions that allow us to derive the Nash equilibrium of the three-step game in absence of discrimination. Second, we provide the expected payoffs and solve the game in that case. Third, we provide one by one the conditions that make each possible equilibrium (7 in total) possible in the game with discrimination. Fourth, we show that under some extra conditions, only the equilibrium where the median worker does not run for UD while the two others do so is possible under discrimination. Finally, we show that in that case, the employer can have a strategic interest to discriminate, and the equilibrium with discrimination is possible. In total, this appendix confirms in a simplified version of the game with three players that discrimination may still occur when workers' types are perfectly observed.

A.1   Simplifying assumptions

We first normalize $\theta^L = 0$. We also assume that the employer is always willing to bribe the type L employee and that this employee always accepts the offered bribe. This the case if $\pi/3 \leq b \leq \pi$.[A.1] We refer to this assumption by Assumption (1). We also want to consider parameter values θ^M and θ^H such that in the game without discrimination both types are not willing to be bribed by an employer. A sufficient condition is that $\frac{\pi}{3} \leq \theta^M$ which we call Assumption (2).[A.2] Our assumptions ensure that the payoffs in the case when employees

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[A.1]The employer prefers a bribe if $3\pi - b \geq 3\pi - \pi$, which is equivalent to $b \leq \pi$. The L type accepts it if $b \geq \pi/3$.

[A.2]The maximum bribe that an employer is willing to pay when facing an M type to avoid bargaining satisfies: $3\pi - b \geq 0$, so that it is 3π (i.e. the firm surplus which is three time the surplus per worker). An M type prefers bargaining to a bribe if $\theta^M + \pi \geq b - \theta^M$. Substituting b by π (the maximum value for the bribe by Assumption

decide to run are known, so that the model can be studied using a static game representation, where workers simply choose between running (R) and not running (NR). The equilibrium depends on the triple choice of all UDs denoted (x, y, z) where $x \in \{R, NR\}$, $y \in \{R, NR\}$, and $z \in \{R, NR\}$ are respectively the actions of players L, M, and H. The payoffs can the be written as the expected ex-ante utility based on the random appointment rule. Note that we abstract from future payoffs because, for each player, they are the same for any action today, so that they do not affect present choices.

A.2 Game without Discrimination

Table A.1: Payoffs (p_L, p_M, p_H) for players L, M and H depending on running for UD (R) and not running for UD (NR) in a game where the employer will never discriminate and offers a bribe only to a UD of type L

Player H plays R		Player M		
		R		NR
Player L	R	$\frac{1}{3}b + \frac{4\pi}{9}$, $\frac{4\pi}{9} + \frac{\theta^M}{3}$, $\frac{4\pi}{9} + \frac{\theta^H}{3}$	$\frac{1}{2}\left(b + \frac{\pi}{3}\right)$, $\frac{\pi}{6}$, $\frac{\pi}{6} + \frac{\theta^H}{2}$	
	NR	$\frac{2\pi}{3}$, $\frac{2\pi}{3} + \frac{\theta^M}{2}$, $\frac{2\pi}{3} + \frac{\theta^H}{2}$	$\frac{\pi}{3}$, $\frac{\pi}{3}$, $\frac{\pi}{3} + \theta^H$	

Player H plays NR		Player M		
		R		NR
Player L	R	$\frac{1}{2}b + \frac{\pi}{2}$, $\frac{\pi}{2} + \frac{\theta^M}{2}$, $\frac{\pi}{2}$	b, 0, 0	
	NR	π, $\pi + \theta^M$, π	0, 0, 0	

In the game without discrimination if an L type runs and is selected then she always accept the bribe offer and there is no bargaining with the employer, while M and H types always reject the bribe and bargain with the employer. Table A.1 displays the expected payoffs in a static game depending on the three employees' decision to run or not run for UD. These payoffs follow from straightforward calculations. They depend on the probability that each employee running for UD is eventually appointed UD (one if one runner, one half if two runners and one third if three runners) and the outcome of the game in that case (bribed versus non-bribed UD, and share of the surplus extracted in case of bargaining).

It can easily be checked that R is a strictly dominant strategy for Player M. Consider then Player H. Conditional on Player M running, then she prefers running if $\theta^H > \frac{\pi}{6}$, which is always the case by Assumption (1). Then Player L has to choose whether to run or not conditional on other players running. Comparing payoffs implies that she runs if $b \geq \frac{2}{3}\pi$. Thus the equilibrium depends on the bribe level: if $b \in [\frac{\pi}{3}, \frac{2\pi}{3})$ then the equilibrium is $\{NR, R, R\}$ and if $b \in [\frac{2\pi}{3}, \pi]$

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(1)) in this equations yields the condition $\theta^M \geq 0$. The same reasoning for the H type gives a maximum bribe of π and the condition $\pi/3 \leq \theta^H$. Because $\theta^M < \theta^H$ we need then $\frac{\pi}{3} \leq \theta^M$.

it is $\{R, R, R\}$. In other words the bribe needs to be large enough to make player L run and forgo what she would get if someone else bargains for her.

A.3   Game with Discrimination

Payoffs. Let us assume that in the game with discrimination the employer uses the same strategy as the one outlined in the main text and consider the case when she always discriminates against UDs that bargain with her. In terms of realized payoffs, the only difference with the game without discrimination is the cost d that UDs have to pay if they are elected and they bargain with the employer. However, this extra cost for players M and H may imply that they accept the bribe when they run if d is too large, a case that we ruled out in the game without discrimination with Assumption (2). For simplicity, we exclude this possibility again, which implies the following additional condition on the discrimination penalty: $d \leq \min\{2\theta^M + \pi - b, 2\theta^H + \frac{\pi}{3} - b\}$. It can be further restricted by taking the most conservative case of $b = \pi$, which yields $d \leq \min\{2\theta^M, 2\theta^H - \frac{2\pi}{3}\}$. We refer to this condition by Assumption (3). Under this additional assumption restricting to cases where d is not too large, the expected payoffs at the beginning of the game in case of discrimination (see Table A.2) are similar to those in absence of discrimination except that they factor in the discrimination cost d for workers that are appointed UD.

Table A.2: Payoffs (p_L, p_M, p_H) for players L, M and H depending on running for UD (R) and not running for UD (NR) in a game with discrimination

Player H plays R		Player M		
		R		NR
Player L	R	$\frac{1}{3}b + \frac{4\pi}{9},\ \frac{4\pi}{9} + \frac{\theta^M - d}{3},\ \frac{4\pi}{9} + \frac{\theta^H - d}{3}$	$\frac{1}{2}\left(b + \frac{\pi}{3}\right),\ \frac{\pi}{6},\ \frac{\pi}{6} + \frac{\theta^H - d}{2}$	
	NR	$\frac{2\pi}{3},\ \frac{2\pi}{3} + \frac{\theta^M - d}{2},\ \frac{2\pi}{3} + \frac{\theta^H - d}{2}$	$\frac{\pi}{3},\ \frac{\pi}{3},\ \frac{\pi}{3} + \theta^H - d$	

Player H plays NR		Player M	
		R	NR
Player L	R	$\frac{1}{2}b + \frac{\pi}{2},\ \frac{\pi}{2} + \frac{\theta^M - d}{2},\ \frac{\pi}{2}$	$b,\ 0,\ 0$
	NR	$\pi,\ \pi + \theta^M - d,\ \pi$	$0,\ 0,\ 0$

Possible Nash equilibriums and necessary conditions to obtain them. In this new framework there are no strictly dominant strategies, so that we study the conditions, if they exist, for each triplet of possible strategies by the three players to be a Nash equilibrium of the game. Below, we derive these conditions formally for a subset of the possible game equilibria. We then summarize them in for each possible triplet of strategies (8 in total) in Table A.3. The

reader may skip the details below and directly move to the discussion of the results in Table A.3.

We derive first conditions for having an equilibrium where Player M does not run and Player H runs. Let us first consider the equilibrium (R, NR, R). The condition for NR to be a best response by Player M to Player L and Player H playing R is $d \geq \theta^M + \frac{5\pi}{6}$. The condition for R to be a best response for player H when Player L runs and Player M does not is $d \leq \theta^H + \frac{\pi}{3}$. Finally, the condition for R to be a best response for Player L when Play M does not run and Player H runs is $b \geq \pi/3$. This latter condition is satisfied by Assumption (2), so that the condition for this equilibrium to occur is $\theta^M + \frac{5\pi}{6} \leq d \leq \theta^H + \frac{\pi}{3}$. This implies an additional condition on θ^M and θ^H which is $\theta^H - \theta^M \geq \pi/2$.

Now consider the equilibrium (NR, NR, R). For this equilibrium to be possible, we derive a similar condition $\theta^M + \frac{2\pi}{3} \leq d \leq \theta^H + \frac{\pi}{3}$ which implies $\theta^H - \theta^M \geq \pi/3$. Additionally we need $b \leq \pi/3$ for player L not to deviate, which due to Assumption 1 amounts to having $b = \pi/3$. This is thus a knife edge case. Note that the condition on d for player M not to be willing to run is weaker in this equilibrium because when player L does not run, the expected payoff of player M when she does not run is higher (since she will get with certainty the bargaining gains obtained by player H). As a consequence a lower d is sufficient to deter her from running.

Can there be an equilibrium where player M runs and not player H? Let us consider the case (R,R,NR). For players M and H not to deviate we would need that $\theta^H - \frac{\pi}{6} \leq d \leq \theta^M + \pi$ and so that $\theta^H - \theta^M \leq \frac{7\pi}{6}$. For player L, we need that $b = \pi$, which again is a knife edge case. We now consider the case (NR,R,NR). Conditions on M and H yield $\theta^H - \frac{2\pi}{3} \leq d \leq \theta^M + \pi$ implying in particular $\theta^H - \theta^M \leq \frac{5\pi}{3}$.

Going forward, the conditions necessary for all possible equilibria are summarized in Table A.3:

Table A.3: Conditions for the existence of different equilibria in the repeated game with discrimination

Equilibrium	Condition on b	Condition on d	Condition on θ^M and θ^H
1) (R, NR, R)	$b \geq \frac{\pi}{3}$	$\theta^M + \frac{5\pi}{6} \leq d \leq \theta^H + \frac{\pi}{3}$	$\theta^H - \theta^M \geq \pi/2$
2) (NR, NR, R)	$b = \frac{\pi}{3}$	$\theta^M + \frac{2\pi}{3} \leq d \leq \theta^H + \frac{\pi}{3}$	$\theta^H - \theta^M \geq \frac{\pi}{3}$
3) (R, R, NR)	$b = \pi$	$\theta^H - \frac{\pi}{6} \leq d \leq \theta^M + \pi$	$\theta^H - \theta^M \leq \frac{7\pi}{6}$
4) (NR, R, NR)	$b \leq \pi$	$\theta^H - \frac{2\pi}{3} \leq d \leq \theta^M + \pi$	$\theta^H - \theta^M \leq \frac{5\pi}{3}$
5) (R, R, R)	$b \geq \frac{2\pi}{3}$	$d \leq \min\{\theta^M + \frac{5\pi}{6}, \theta^H - \frac{\pi}{6}\}$	-
6) (NR, R, R)	$b \leq \frac{2\pi}{3}$	$d \leq \min\{\theta^M + \frac{2\pi}{3}, \theta^H - \frac{2\pi}{3}\}$	-
7) (R, NR, NR)	$b \geq 0$	$d \geq \max\{\theta^M + \pi, \theta^H + \frac{\pi}{3}\}$	-
8) (NR, NR, NR)		impossible because needs $b = 0$	

Conditions so that only (R, NR, R) is a Nash equilibrium under discrimination. Taken together with Assumptions (1)-(3), Table A.3 suggests the possibility of multiple equilibriums. We derive here additional conditions for equilibrium 1) to be the only one possible to occur. In this final exercise, the conditions that make equilibrium 1 possible are supposed to be satisfied.

We first exclude from the analysis equilibria 2) and 3) because they are knife edge cases, and assume that in these cases, because player L is indifferent, she plays the action that sustain equilibria 1) and 4). We further assume that $d \geq \theta^M + \pi$, which eliminates equilibria 4) to 6) since they all require $d < \theta^M + \pi$. The condition $d \geq \theta^M + \pi$ also slightly tightens the conditions for equilibrium 1) to be possible into $\theta^M + \pi \leq d \leq \theta^H + \frac{\pi}{3}$ implying in particular $\theta^H - \theta^M \geq \frac{2\pi}{3}$. Regarding equilibrium 7), because we assume $\theta^H - \theta^M \geq \frac{2\pi}{3}$, the condition for sustainability becomes that $d \geq \theta^H + \frac{\pi}{3}$, which cannot be sustained in the conditions for equilibrium 1). Thus the slightly tightened above conditions are sufficient for equilibrium 1) to be the only one of the game with discrimination. Additionally they make sure that Assumption (3) is satisfied. To sum up, these are all conditions needed on parameters to reach the equilibrium where player M does not run under discrimination:

$$\frac{\pi}{3} \leq b \leq \pi \tag{A.1}$$

$$\frac{\pi}{3} \leq \theta^M \tag{A.2}$$

$$\theta^M + \frac{2\pi}{3} \leq \theta^H \tag{A.3}$$

$$\theta^M + \pi \leq d \leq \theta^H + \frac{\pi}{3} \tag{A.4}$$

Conditions for the employer to be willing to discriminate when the equilibrium under discrimination is (R, NR, R). Now we derive the conditions for the employer not to deviate from discriminating players M and H who will not be bribed and should therefore be systematically discriminated at equilibrium. From Theorem 1, the condition can be expressed as $c(1) \leq \frac{\delta}{1-\delta}(s_{nd} - s_d)3\pi$ where s_{nd} is the expected workers' share of the surplus in the no discrimination case which is 2/3 if $b < 2\pi/3$ and 4/9 if $b \geq 2\pi/3$; while s_d is the expected workers' share of of the surplus in the game with discrimination, which is 1/6 (since worker H has a probability 1/2 to be appointed at equilibrium and will get a third of the surplus if she is). Thus the condition becomes:

$$c(1) \leq \begin{cases} \frac{\delta}{1-\delta}\frac{3\pi}{2} & \text{if } b < 2\pi/3 \\ \frac{\delta}{1-\delta}\frac{5\pi}{6} & \text{if } b \geq 2\pi/3 \end{cases} \tag{A.5}$$

The condition is less binding with a smaller b because the employer has more to gain from discrimination, as in the case of deviation and returning to the the no-discrimination game she faces the worst equilibrium for her, where only the most supported player M runs and bargains.

Appendix B   Maximum likelihood estimator

The data consists in a set of workplaces indexed by j whose size is n_j and UD_j is an indicator for the presence of a UD in firm j. The contribution to the likelihood of workplace j is

$$p_j = \ln(P(UD|n) * UD_j + \ln((1 - P(UD|n)) * (1 - UD_j)$$

All workplaces of similar size and with a similar union status (presence or absence of UDs) contribute similarly to the likelihood. Denote c_n^1 and c_n^0 the number of workplaces of size n respectively with and without UD. We can the write the log-likelihood of the sample as follows

$$\mathcal{L} = \ln(\Pi_{j=1}^N p_j) = \sum_{n=1}^{\infty} c_n^1 \ln(P(UD|n)) + c_n^0 \ln((1 - P(UD|n)))$$

We parameterize the probability to have the discrimination equilibrium as $f(n) = 1/2 + \arctan(an + b)/\pi$ and we denote $p^i = 1 - \mathbb{P}(\theta \in [\bar{\theta}_i, +\infty[\cup[\theta_i^b, \underline{\theta}_i])$ the individual probability that a given worker will run for UD under discrimination ($i = d$) or no discrimination ($i = nd$). Parameters a, b, p^d and p^{nd} can be recovered by maximizing $\mathcal{L}(a, b, p^d, p^{nd})$ using the equation above. Our parametrization of $f(n)$ is flexible enough to accommodate functions that increase or decrease more or less rapidly and at different places of the firm size distribution.

Appendix C   Data Appendix

C.1   Administrative data sources

Worker social security records (DADS).   The DADS (*Déclaration annuelle de données sociales*[A.3]) is a data set widely used by economists. Every year employers are mandated to report a set of information regarding all their employees in each of their establishments such as the type of their job, their compensation, working duration, gender, age, occupation category. The data set is exhaustive of all French employees officially employed in a firm.

Firm tax records.   We use the FARE (*Fichiers approchés des résultats d'Esane*[A.4]) data base to obtain firm tax records. Every year for-profit firms outside of the financial and agricultural industries have to report their financial statements to the French Ministry of Finance. The data are complemented with two surveys covering about 160,000 firms. In total there are between 3,5 and 4 million firm-level observations every year. The data contains information on both balance sheets and financial statements.

C.2   Construction of the samples of analysis.

Main sample.   Our main sample is constructed by matching the REPONSE17-worker survey with the establishment-level information retrieved from the REPONSE17 employer survey. We further match the data to the FARE data sets from 2011 to 2015. We are able to match between 23,179 observations (with 2011 records) and 24,082 observations (with 2015 records). We then exclude part-time workers who self report as working part-time in the REPONSE17 survey, and are identified as part-time workers in the DADS records. We also exclude workers working less than 1,500 hours yearly (note that the legal full-time working duration in France is 1,820 hours per year corresponding to 35 hours per week). We also drop workers identified as apprentices and interns in the DADS records, as well as employees whose occupation category is employers. The final sample includes 20,708 workers representative of full-time employees in business establishments with more than 10 employees.

Auxiliary sample.   The auxiliary sample is constructed by statistically matching the 2,892 employee representatives of the REPONSE17-representative survey with the DADS social security records to retrieve wage and occupation information. More precisely, within all establishment in the REPONSE17-representative survey we match the representatives with the employees of the same establishment in the 2015 DADS records on the demographic variables that are common to the two data sets: gender, age, and four-level professional category (white collar, technician, employee or laborer). We use the 2015 data set because the REPONSE17-employee survey has itself been matched to the 2015 records by the Ministry of Labor. We are able to match 2,664 representatives. After the operation we exclude 594 representatives that held more

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[A.3]Annual declaration of social records

[A.4]"Financial statement files from Esane". Esane itself stands for "elaboration of annual firm statistics".

than one position inside their establishment in 2015, as well as 4 representatives who did not declare their unionization status. Eventually, we are left with a set of 2,066 representatives.

Extended main sample. The extended main sample is constructed by appending to the workers in the main sample, their coworkers from their establishment. We proceed by first matching statistically all workers in the REPONSE17-worker survey with the 2015 DADS data on gender, annual hours, net wage compensation, and occupation category. We are able to perfectly match 19,175 of our main sample of 20,706 workers in REPONSE17 (92.61%).[A.5] The remaining 1,531 employees (7.39%) have between two and eleven counterparts in the 2015 DADS. We exclude all these matched observations. We then consider all workers in the 2015 DADS working in one of the REPONSE17 establishments, but not matched with any REPONSE17 worker. In this sample we exclude individuals working part time or less than 1500 hours yearly, so that we match our sample restriction on REPONSE17. We are left with a sample of 1,349,763 employees from the DADS, who are the distinct colleagues of the employees in our main sample of REPONSE17 workers. The extended main sample is the concatenation of the two data sets, it contains 1,370,547 observations. Note that in the DADS we do not observe if workers hold a mandate. In the merged data set, these employees are thus put in the control group of employees neither representatives nor unionized. Therefore in the analysis using this sample we compare representatives and unionized workers to a sample that may contain a small portion of unionized workers and/or representatives. However provided that their wage compensation conditional on the sets of controls that we use in our analysis is smaller than their colleagues, which is the case in the wage gap analysis in the main sample, this assumption biases our estimated wage gaps toward 0. Note finally that in the DADS, we do not observe education. Hence, we cannot control for it when we use the extended main sample.

C.3   Construction of the AKM Fixed Effects

We detail here the procedure we used to compute the firm fixed effects used in the regressions of Table 6. We use the panel of employees from the DADS over the period 2011-2015, that constitutes 1/12 sample of the whole workforce in France. We exclude trainees, interns and executives, and keep worked aged 15 and above. Then we restrict the sample to individuals that are observed in multiple firms working more than 100 hours per year and whose hourly wage is larger than 1/4 of the minimum wage. We also exclude those whose hourly wage is above 300 times the minimum wage. Eventually, if in a given year there are multiple observations for an employee, we keep the one with the largest number of hours. We are left with a sample of about 7.5 observations, consisting of 1.4 million workers in 800,000 firms. We then resort to the R package lfe to restrict the sample to the connected set of firms. We are left with 640,000 firms. Then we use the Stata command reghdfe to estimate the fixed effects in the following

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base specification:

$$\log w_{ij} = \beta_0 + \beta_1 Age_{ij} + \beta_2 Age_{ij}^2 + \beta_3 Age_{ij}^3 + \rho_i + \tau_j + \varepsilon_{ij} \tag{A.6}$$

Where w_{ij} denotes the hourly wage, ρ_i are indicidual fixed effects, τ_i are firm fixed effects, and ε_{ij} is an error term. In two other specification, we respectively add a third degree polynomial in actual experience and a four occupation dummies (according to the French classification PCS1).

C.4 List of Survey Questions

Table C1: List of the REPONSE17 Survey Questions

Topic	Section	Question	Reference
Promotions	Employee	Over the last three years, have you received a promotion?	Table 2
		Over the next twelve months, do you think that you have chances of being promoted or getting a pay rise?	Table 2
		Over the next twelve months, do you think that you are facing the risk if loosing your job?	Table 2
Length of mandate	Employee	For how long have you held a mandate of representative? (elected or appointed)	Table 3
		For how long have you been a member of a union?	Table 3
Effect of mandate	REP	Regarding the evolution of your career in the firm/establishment, your experience of representative has been: (1) a engine (2) an obstacle (3) neither one nor the other (4) Does not know	Table D7 Figure D2
Delegation load	REP	Of how many hours are you discharged [for your activity as a representative] or how many hours are you credited with? This is the time granted, whether it is used or not, by the employer in order to practice all your duties as a representative inside the firm/establishment.	Table D7
	REP	Is the time you dedicate to your activity as a representative larger, smaller, or equivalent to this hours-credit?	Table D7
Investment of representatives	Employee	Over the last three years, have you: - Participated to a meeting organised by worker representatives? - Participated to a work stoppage (strike, walk-out) - Participated to another form of collective action (petition, public gathering, demonstration) For each question, possible answers are: (1) Yes (2) No, while one has taken place (3) No, none of these have taken place	Table 4

Table C1: List of the REPONSE17 Survey Questions (Continued)

Topic	Section	Question
Bargaining	Employer	Over the last three years (2014 - 2016), has collective bargaining been engaged with employee representatives in the firm, the establishment, or the joint-venture, with the objective to reach a collective agreement, whether it has been concluded or not.
Reason for absence of unionization	Employee	If currently you are not part of a union it is because: - There is no union is your firm - The unions(s) present in your firm do not represent you would like to - You fear that it harms the evolution of your professional career - You do not need it to defend yourself - You do not have the means to pay the union fees - For some other reason
Fluctuating Hours	Employee	Your working hours are: - The same every week - Alternate hours (2 × 8, 3 × 8, teams, brigades) - hours vary from week to week - do not know
Hours outside of regular working time	Employee	At your workplace, do you work: - In the evening (from 9PM to midnight) - At night (from minight to 5AM) - On Sundays
Possible answers: (1) Usually (2) From time to time (3) Never	Table D5	

Table C1: List of the REPONSE17 Survey Questions (Continued)

Topic	Section	Question	Reference
Subjective working conditions	Employee	A series of questions whose choice of answers are, unless specified, (a) Always (b) Often (c) Sometimes (d) Never (e) Not applicable. Numbers refer to column numbers in Table D6. The questions are: - (1) Does your work allow you to organize your personal life with satisfaction? - (2) Do you work with the same colleagues? - (3) Do your colleagues help you with your work? - (4) Do you know which colleagues you are going to work with next year? - (5) Do you know who your direct superior will be next year? - (6) Does your employer determine precise target objectives to reach? (possible answers: (a) Yes (b) No) - (7) When something unusual occurs at work, do you solve the issue yourself? - (8) Does your work allow you to learn new things? - (9) Is the true value of your work recognized? - (10) At work, do you do things that you disapprove? - (11) Do you have the feeling that your work is harmful for your health?	Table D6

Appendix D Additional Figures and Tables

Figure D1: Distributions of workers' types and UD support from coworkers
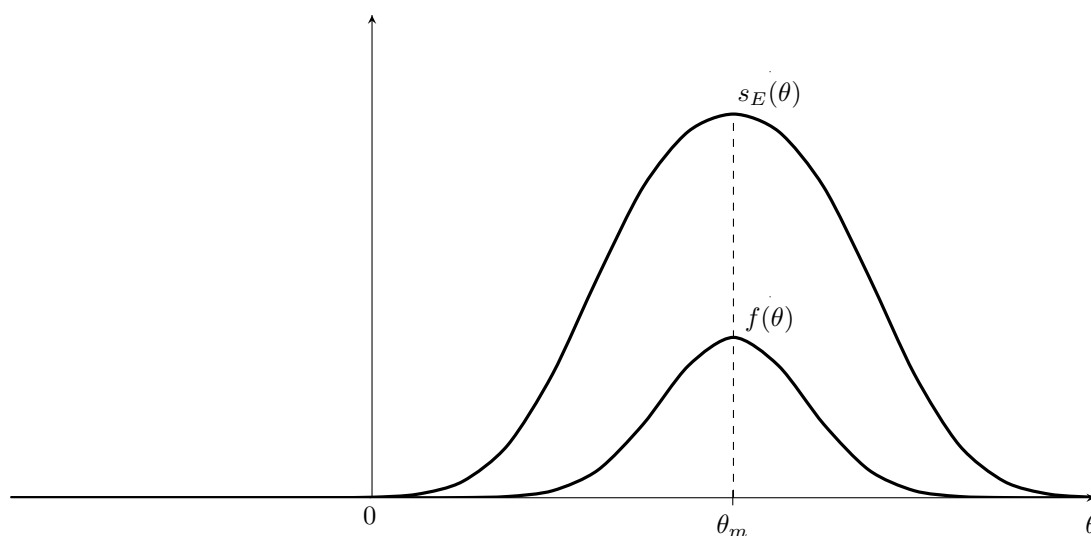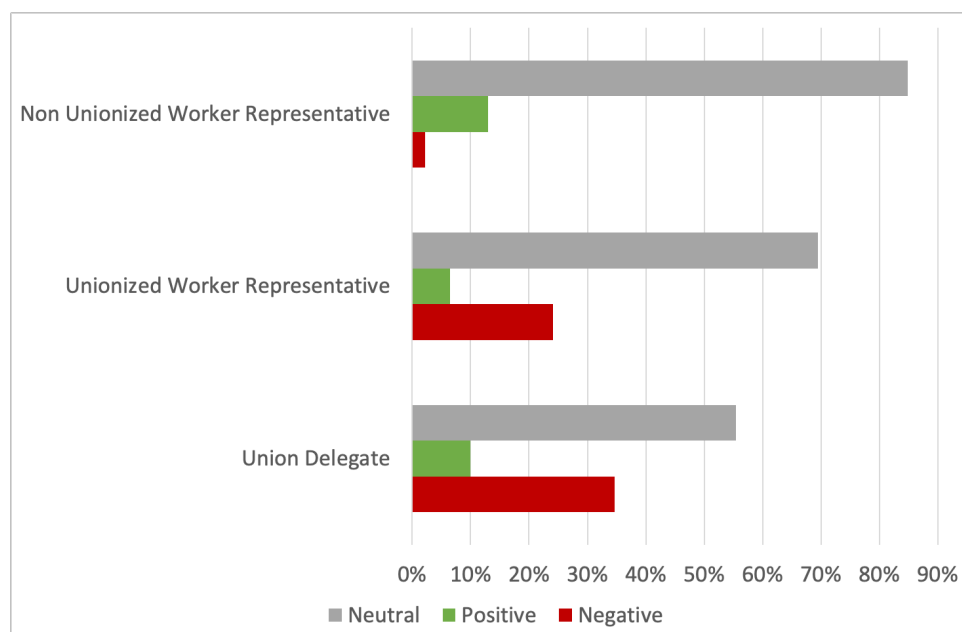

Figure D2: Effect of Holding a Representation Mandate on Career Evolution for Different Groups of Representatives.

Notes: Responses to the question "Regarding the evolution of your career in the firm/establishment, your experience of representative has been: (1) an engine (2) an obstacle (3) neither one nor the other". The sample used for the computation is REPONSE17-REP.

Figure D3: Reasons for Not Being Unionized as Functions of the Age of Individuals

(a) I fear unionization is detrimental for my career
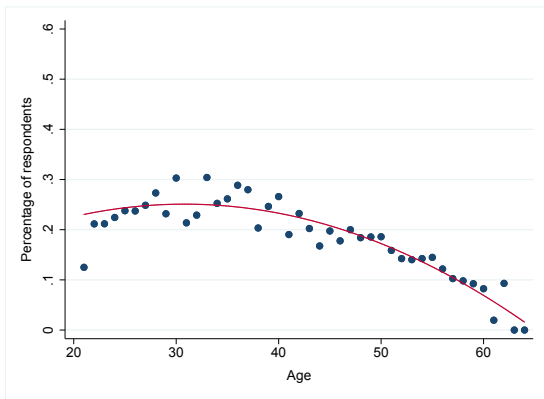
(b) Unions do not represent me well
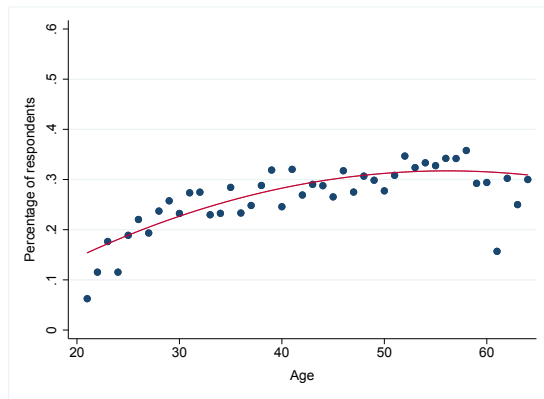
(c) I do not need unions
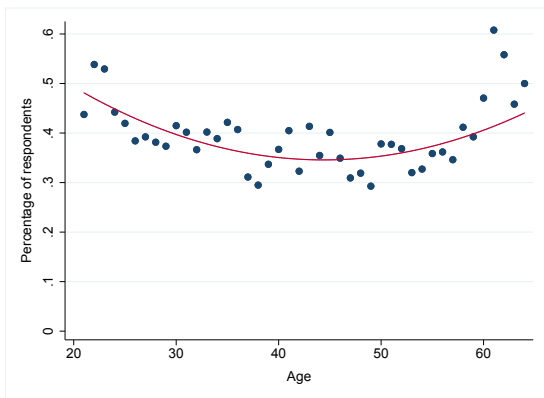
(d) I cannot pay for unionization

Notes: Each graph displays the average proportion of individuals that give that particular reason for not being unionized within age. Computations are based on the whole sample of REPONSE17-Workers aged 20 to 65. The red curve is a quadratic fit of the data.

Table D1: Characteristics of Workers Representatives surveyed in REPONSE17-REP

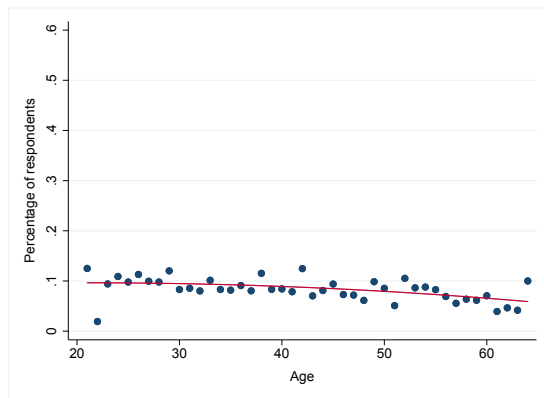|	Union Delegates	Unionized Worker Reps	Non Unionized Worker Reps
Gender			
% Female	0.29	0.54	0.52
% Male	0.71	0.46	0.48
Age (years)			
Mean	47.3	45.2	41.1
Median	48	47	40
Tenure (years)			
Mean	19.8	17.9	13.9
Median	20	16	12
Education level			
% No diploma	0.03	0.04	0.03
% Lower than Bac	0.33	0.29	0.25
% Baccalaureate	0.26	0.20	0.26
% Two-year graduate	0.23	0.24	0.26
% Bachelor or higher	0.15	0.25	0.20
Occupation category			
% Laborers	0.17	0.18	0.20
% Employees	0.19	0.28	0.28
% Intermediate	0.35	0.31	0.29
% White collars	0.29	0.23	0.33

Notes: The sample consists of the representatives surveyed in REPONSE17-REP (selected by the employer). Statistics are weighted by the probability that the delegate is matched correctly with the Social Security Records. They can be compared with those of the main sample in Table **??**.

Table D2: Worker Representation and Unionization: Workplace-Level Statistics

| | Percentage of Workplaces with: | | |
	Union Delegates	Other Worker Representatives	Average workplace unionization rate
Whole Sample	0.22	0.65	0.12
Industry			
Manufacturing	0.28	0.67	0.14
Construction	0.13	0.45	0.06
Trade	0.15	0.62	0.07
Services	0.25	0.69	0.13
Workplace size			
10-19 empl.	0.07	0.42	0.06
20-49 empl.	0.17	0.70	0.09
50-99 empl.	0.44	0.91	0.11
100-199 empl.	0.64	0.98	0.12
200-499 empl	0.82	1.00	0.15
500-999 empl	0.95	1.00	0.16
> 1,000 empl.	0.98	1.00	0.17

 Notes: Weighted statistics representing full time employees in ordinary positions (excluding apprentices and interns) of workplaces with more than 10 employees operating in the French commercial sector.

Table D3: Wage Differentials Between Worker Representatives or Union Members and their Colleagues

	(1)	(2)	(3)	(4)	(5)	**(6)**	(7)
			Dependent Variable: Log Hourly Wage				
Union Delegate	0.046	-0.011	-0.032	-0.012	-0.036	-0.052**	-0.037**
	(0.030)	(0.025)	(0.024)	(0.020)	(0.023)	(0.023)	(0.018)
Unionized Worker Rep.	0.039	-0.000	-0.015	-0.016	-0.013	-0.028**	-0.020
	(0.022)	(0.016)	(0.015)	(0.014)	(0.013)	(0.014)	(0.013)
Not Union. Worker Rep.	-0.025	-0.020	-0.013	0.015	-0.001	-0.013	-0.015
	(0.019)	(0.014)	(0.014)	(0.012)	(0.014)	(0.014)	(0.012)
Only Unionized	0.021	-0.019*	-0.024*	0.016	-0.024***	-0.028***	-0.017*
	(0.016)	(0.011)	(0.012)	(0.010)	(0.009)	(0.009)	(0.009)
Observations	20,329	20,119	20,002	19,997	19,580	19,449	19,444
R-squared	0.001	0.513	0.523	0.635	0.752	0.760	0.824
Employee Controls	No	Mincer	Mincer +Tenure	Full	Mincer	Mincer +Tenure	Full
Workplace Controls	No	Yes	Yes	Yes	FE	FE	FE
Sample	Main	Main	Main	Main	Main	Main	Main
Weighted	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table shows the results from the weighted linear wage regression models described in equation 4. Workers' sampling weights are used to estimate wage differentials that are representative of the general population. The dependent variable is the log of earnings divided by hours workers during the year 2015. "Mincer" controls include a dummy for the individual's gender, education (in 8 groups) and a third order polynomial in workers age, as well as a dummy for whether the individual has been unionized in the past. Tenure denotes a third order polynomial in the tenure declared by employees in 2017 minus 2 years. Full controls add four-category occupation dummies in 2015. Workplace controls include a dummy for the presence of a union delegate in the workplace, dummies for workplace size (8 groups) and age (6 groups) as well as industry dummies (21 groups). Part-time workers and apprentices are excluded from the sample of analysis. Standard errors (in parenthesis) are clustered at the workplace level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D4: Wage Gaps between Representatives and their Colleagues Controlling for Detailed Occupation in Extended Main Sample

	(1)	(2)	(3)
	Dependent Variable: Log Hourly Wage		
Union Delegate	-0.025**	-0.027**	-0.023*
	(0.013)	(0.013)	(0.012)
Unionized Worker Rep	-0.019**	-0.018**	-0.017**
	(0.008)	(0.007)	(0.007)
Non Unionized Worker Rep	-0.006	-0.007	-0.008
	(0.008)	(0.008)	(0.008)
Unionized Worker	-0.016***	-0.017***	-0.014***
	(0.005)	(0.005)	(0.005)
Observations	1,370,790	1,370,790	1,370,790
R-squared	0.730	0.739	0.758
Employee Controls	Mincer+Tenure + 1-digit Occup	Mincer+Tenure + 2-digits Occup	Mincer+Tenure + 3-digits Occup
Workplace Controls	FE	FE	FE
Sample	Extended Main	Extended Main	Extended Main
Weighted	No	No	No

 Notes: The table shows the results from linear regression models akin to those described by equation 4. Controls include a dummy for the individual's gender, education (in 8 groups), a third order polynomial in workers age, a dummy for whether the individual has been unionized in the past, and a third order polynomial in tenure, as well as controls for occupations. Specification (1) controls for one-digit occupation groups, specification (2) controls for two-digit occupation groups, while specification (3 controls for three-digit occupation groups. They are defined by the PCS French Classification of occupations. Part-time workers and apprentices are excluded from the sample of analysis. Standard errors (in parenthesis) are clustered at the workplace level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D5: Gaps between Representatives and their Colleagues in Terms of Working Time Conditions

Dependent variable:	(1) Fluctuating Hours	(2) Evening Shift	(3) Night Shift	(4) Sunday Shift
Union Delegate	-0.0024 (0.0499)	0.0333 (0.0394)	0.0590* (0.0330)	0.0384 (0.0402)
Unionized Worker Rep	0.0178 (0.0311)	0.0367 (0.0268)	0.0560** (0.0253)	0.0436** (0.0233)
Non Unionized Worker Rep	-0.0253 (0.0275)	-0.0472* (0.0242)	-0.0008 (0.0195)	-0.0575*** (0.0209)
Unionized Worker	0.0262 (0.0225)	0.0541** (0.0212)	0.0431*** (0.0160)	0.0341** (0.0148)
Observations	17,076	18,852	18,788	18,843
R-squared	0.424	0.445	0.490	0.577

 Notes: The table shows the results from linear probability models akin to those described by equation 4. The dependent variable in each column is an indicator for the worker declaring the corresponding practice. All regressions are weighted with survey weights, and include a dummy for the individual's gender, education (in 8 groups), a third order polynomial in workers age, a dummy for whether the individual has been unionized in the past, and a third order polynomial in tenure, as well as controls for occupations. Fluctuating hours indicates a situation where the workers does not have a fixed schedule. Part-time workers and apprentices are excluded from the sample of analysis. Standard errors (in parenthesis) are clustered at the workplace level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D6: Gaps between Representatives and their Colleagues in Terms of Subjective Working Conditions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Dependent variable:	Personal Life Balance	Work with Same Colleagues	Helping Colleagues	Knows Future Colleagues	Knows Future Manager	Precise Objectives	Solve Problems Individually	Learn New Things	Work Recognized	Disapprove Work	Work is Unhealthy
Union Delegate	-0.368*** (0.0858)	-0.127 (0.0930)	0.140 (0.0897)	0.114 (0.0766)	-0.0663 (0.0886)	-0.0358 (0.0423)	0.0855 (0.0994)	-0.0242 (0.103)	-0.198* (0.120)	0.152 (0.105)	0.296** (0.134)
Unionized Worker Rep	-0.146*** (0.0563)	-0.0230 (0.0636)	0.0010 (0.0518)	0.0204 (0.0620)	-0.104* (0.0564)	-0.0107 (0.0278)	0.127** (0.0597)	-0.145** (0.0576)	-0.211*** (0.0634)	0.133** (0.0630)	0.201*** (0.0685)
Non Unionized Worker Rep	0.125* (0.0641)	0.0824 (0.0546)	0.129*** (0.0477)	0.145*** (0.0556)	0.0975* (0.0500)	-0.0499* (0.0268)	0.0792 (0.0514)	0.121** (0.0575)	0.0684 (0.0579)	-0.0652 (0.0571)	-0.167*** (0.0559)
Unionized Worker	-0.113** (0.0462)	-0.0259 (0.0489)	0.0387 (0.0363)	-0.0441 (0.0423)	-0.149*** (0.0469)	0.00907 (0.0191)	0.0200 (0.0441)	-0.0891 (0.0545)	-0.199*** (0.0389)	0.114*** (0.0418)	0.173*** (0.0491)
Observations	19,402	19,062	19,374	19,068	19,178	19,395	19,378	19,420	19,376	19,382	19,355
0.310	0.373	0.334	0.346	0.392	0.429	0.298	0.337	0.334	0.290	0.324	

Notes: The table shows the results from linear regression models akin to those described by equation 4. Except in specification 6, the dependent variable in each column is a demeaned and standardized categorical variable measuring the degree to which the worker identifies with each stated practice (see definition in Table C1, row "Subjective working conditions"). In column 6 the dependent variable is a dummy. All regressions are weighted with survey weights, and include include a dummy for the individual's gender, education (in 8 groups), a third order polynomial in workers age, a dummy for whether the individual has been unionized in the past, and a third order polynomial in tenure, as well as controls for occupations. Part-time workers and apprentices are excluded from the sample of analysis. Standard errors (in parenthesis) are clustered at the workplace level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D7: Wage Gaps between UDs and their Colleagues as a Function of UDs Number of Delegation Hours

	(1)	(2)	(3)	(4)
	Dependent Variable: Log Hourly Wage			
Union Delegate	0.0103 (0.0196)		-0.0447 (0.0370)	-0.0265 (0.0379)
Mandate had negative effect		-0.0810*** (0.0237)		
Mandate had neutral or positive effect		0.0488*** (0.0131)		
UD x Delegation Load			0.0447 (0.0370)	0.0213* (0.123)
UD Overtime Delegation Work				-0.0851** (0.0420)
Observations	25,928	26,249	25,558	25,545
R-squared	0.770	0.770	0.769	0.769
Sample	Auxiliary	Auxiliary	Auxiliary	Auxiliary
Weighted	No	No	No	No

 Notes: The table shows the results from linear regression models akin to those described by equation 4 run on our Auxiliary sample. Specification 2 splits UDs according to the answer they give when questioned regarding the effect of their experience of representative one the evolution on their career. In specification 3 the delegation load is the time granted by the employer for the practice of the duties as representative. All regressions include the following controls: dummies for unionized representatives that are not Union Delegates, non-unionized representatives, only-unionized workers (except specification 2), a dummy for the individual's gender, education (in 8 groups), a third order polynomial in workers age, and a third order polynomial in tenure. Standard errors (in parenthesis) are clustered at the workplace level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D8: Description of the Main French Unions in 2016

Union Name	Historical and Ideological Roots	Representation
Confédération Française Démocratique du Travail (CFDT)	Socialist/Reformist	26.37%
Confédération Générale du Travail (CGT)	Marxist	24.85%
CGT-Force Ouvrière (FO)	Trotskyism	15.59%
Confédération Générale des Cadres (CGC)	White collars	10.67%
Confédération Française des Travailleurs Chrétiens (CFTC)	Christians	9.49%
Union Nationale des Syndicats Autonomes (UNSA)	Reformist and secular	5.35%
Union Syndicale Solidaires (SUD)	Class warfare unionism	3.46%
Others (generally local or sector specific unions)		3.99%

Notes: The last column gives the electoral results of all votes cast at all elections of representatives during the period 2013-2016. These numbers determine the representativeness of unions at the French national level.

Table D9: Union Delegate Wage Gaps Depending on Firm Economic Performance

VARIABLES	(1) Labor Productivity	(2) Profits per Employee	(3) Return on Equity	(4) Total Factor Productivity
	Dependent Variable: Log Hourly Wage			
Union Delegate Q1	-0.0175	-0.0671	0.0258	-0.0425
	(0.0423)	(0.0526)	(0.0510)	(0.0386)
Union Delegate Q2	-0.00594	-0.0480	-0.0517	-0.0572
	(0.0417)	(0.0419)	(0.0677)	(0.0558)
Union Delegate Q3	-0.0379	-0.0472	-0.0479	-0.0266
	(0.0457)	(0.0331)	(0.0341)	(0.0398)
Union Delegate Q4	-0.0990*	-0.0161	-0.0985**	-0.0505
	(0.0555)	(0.0520)	(0.0405)	(0.0617)
Observations	19,449	19,449	19,449	19,449
R-squared	0.76	0.76	0.76	0.76

 Notes: The table shows the results from linear regression models akin to those described by equation 4. In each specification Union Delegates are divided into four groups depending on performance of the firm in which they operate. For example "Union Delegate Q1" of specification 1 denotes delegates that are in firms of the first quartile of the distribution of value added per employee relative to the 2-digit industry average. Profits per employee are computed using accounting profits, while Total Factor Productivity is estimated as the residual of a regression of the log of value added on the log of fixed assets and the log of payroll costs over the period 2014-2016 including year and 2-digit industry fixed effects. All regressions are weighted with survey weights, and include the following controls: dummies for unionized representatives that are not Union Delegates, non-unionized representatives, only-unionized workers, a dummy for the individual's gender, education (in 8 groups), a third order polynomial in workers age, a dummy for whether the individual has been unionized in the past, and a third order polynomial in tenure. Part-time workers and apprentices are excluded from the sample of analysis. Standard errors (in parenthesis) are clustered at the workplace level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D10: Wage Penalty Depending on Having One or Many Unions in the Workplace

	(1) Dep. Var.: Log Hourly Wage
UD in single-union workplace	-0.0978*** (0.0366)
UD in multiple-union workplace	-0.0521*** (0.0293)
Observations	19,449
R-squared	0.760

Notes: The table shows the results from linear regression models akin to those described by equation 4. All regressions include the following controls: dummies for unionized representatives that are not Union Delegates, non-unionized representatives, only-unionized workers, a dummy for the individual's gender, education (in 8 groups), a third order polynomial in workers age, a dummy for whether the individual has been unionized in the past, and a third order polynomial in tenure. Part-time workers and apprentices are excluded from the sample of analysis. Standard errors (in parenthesis) are clustered at the workplace level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.